



Harnessing Local Aspirations for Green and Inclusive Livelihoods

Establishing the Impact of
Rural Enterprise Clusters in India

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The Society for Technology and Action for Rural Advancement (TARA)
B-32, Tara Crescent, Qutub Institutional Area
New Delhi - 110 016, India
Tel: +91 11 2654 4100, 2654 4200
Email: tara@devalt.org
Website: www.tara.in

AUTHORS

Saundharaya Khanna, Deena Hari Krishna, Shubham Singh, Mohak Gupta, Sudhir Sah and
Aparajita M Matthew

DEVELOPED UNDER GUIDANCE FROM

Dr Arun Kumar, Zeenat Niazi and Dr Swayam Prabha Das

RESEARCH SUPPORTED BY

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Website: www.imedf.in

COVER PHOTO BY

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DESIGNED BY

Binu K George

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Women artisans working in the Mat Craft Cluster in West Medinipur, West Bengal

EXECUTIVE SUMMARY



Rural Enterprise Clusters as Engines of Change

Rural India is an important part of the country's green and inclusive growth trajectory. It houses 65% of the country's population and thereby, represents majority. It also contributes 46% to the national income, which makes it unneglectable economically. This is recognized in the Economic Survey of India 2022-23 and the Union Budget 2023-24¹ that offers purview to a slew of government programmes for promoting rural livelihoods. In order to develop Rural India holistically, however, environmental sustainability, social inclusion and equity will also have to be kept in mind while designing and implementing such solutions. In this context, the rural enterprise clusters, driven by local aspirations and based out of the local community, can become engines of change.

Rural enterprise clusters strengthen the micro economies by generating local employment, demanding locally produced raw materials and distributing the profits among the local shareholders. Socially, they empower women, youth and other disadvantaged groups by enabling equal and productive participation in the decision-making and value-creation of the enterprise. By shifting to renewable energy, sustainably consuming water and efficiently managing their waste, these clusters also promote sustainable consumption and production practices.



The Study

This report is based on a detailed investigation of four rural enterprise clusters supported by the Indian Micro Enterprises Development Foundation (IMEDF) as a Nodal Agency under the SFURTI Scheme. It takes a stock of the clusters' economic, environmental and social impact – in the process, building a case for investing into these enterprises towards a green and inclusive economy. In order to do so, this report adopts a three-pronged methodological framework as given below: -

1. **Methodology for Selection of the Clusters:** There are seven broad categories of clusters under the SFURTI Scheme. In consultation with IMEDF, one textile cluster, one handicraft and two agro clusters were selected based on a minimum operational maturity of 2 years. These were the Natural Dyed Handloom Cluster at Shivamogga, Karnataka, the Mat Craft Cluster at West Medinipur, West Bengal, the Medicinal Plant Cluster at Barauliya, Uttar Pradesh and the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha respectively.

¹ Union Budget 2023-24. Accessed at https://www.indiabudget.gov.in/doc/bspeech/bs2023_24.pdf

2. **Methodology for Finalization of the Sustainability Assessment Framework (SAF):**
A thorough review was conducted of the Global Reporting Initiative (GRI), the Global Impact Investing Network's IRIS+, and other sustainability to draw an initial set of impact indicators. These were refined through piloting with the rural enterprise clusters. The final framework had 15 indicators spread across environmental sustainability, local economic distribution and social inclusion and equity.
3. **Methodology for Data Collection and Analysis:** Two semi-structured questionnaires were designed – for the implementation agency and for sampling with the SPV members (artisans and farmers) -- as per indicators finalized under the sustainability assessment framework. A mix of inductive and deductive approach was undertaken to collect data. For the survey with SPV members, a sample size of 30% of the total members was taken, leading to a total of 264 surveys with artisans and farmers across the four rural enterprise clusters.



Key Findings

The sustainability assessment of the rural enterprise clusters establishes reliable evidence of their environmental, economic and social impact.

- **Environmental Sustainability** of these clusters were assessed based on efficiency of consumption, circularity of production and end of pipeline for energy, waste and water.
 - About **72%** of the total energy consumption averaged across the best three cases among the assessed clusters were found to be from solar panels.
- **Local Economic Distribution** was assessed on attributes capturing the percentage increase in income of artisans and farmers before and after SFURTI as well as SFURTI vis-à-vis other alternative livelihoods. Other attributes were localized demand for raw material and employment generation as well as net additional job created per crore of investment under SFURTI. Taking a best three of the four clusters assessed,
 - Livelihoods were generated for **889** artisans and farmers and **160** employees, who were now earning **182%** more than what they would earn before².
 - Moreover, with **64%** of the raw materials (except machinery) sourced from the local market, and **99%** of total wages/pay-outs being to local artisans, farmers and employees, these clusters were positively feeding back into the local rural economy³.

² Averaged across the three clusters.

³ Defining a local market or area can be difficult, considering that most of the rural enterprise clusters are based in the outskirts of towns/cities, and the closest local market may actually be far off. Based on the interviews with the Cluster Executive Officers (CEOs), '*local*' in the context of this investigation is defined as a market/resource within a radius of 100 kilometres from the Common Facility Centre/processing unit.

- **Social Inclusion and Equity** was assessed through finding the representation of vulnerable groups by gender, caste and age among SPV and board members of the cluster. The pay parity was also assessed for the profiles where both vulnerable and non-vulnerable groups were engaged. The assessment results were encouraging, demonstrating: -
 - As many as **85%** women and **91%** belonging to SC/ST/OBC categories among the SPV members.
 - An **established pay parity** between gender and caste categories.
 - A further scope of enhancing scope of enhancing participation of youth (aged 18 years to 29 years) through employment and in enterprise governance.

The findings of the report establish a strong case for similar assessments to generate more robust evidence on the sustainability impacts of such clusters through expanding the sampling base to include additional sectors and geographies. This would, over a period of time, enable benchmarking to compare cost-effectiveness of investment and money worth of impact.



Key Recommendations

Through adequate policy, financial, marketing and capacity support, processes of the remaining 355 SFURTI and many other non-SFURTI clusters in India could be optimized to amplify their economic, environmental and social impact. This necessitates creating an enabling ecosystem for the mainstreaming of the rural enterprise clusters. Policymakers, private investors, civic society network, academia and other actors have a key role to play in this. An enabling ecosystem for mainstreaming of the rural enterprise clusters can be created through,

1. **Enabling policies** including: -
 - a. **Convergence of Central Sector, Centrally Sponsored and State Schemes** dedicated to setting up and upgradation of rural enterprise clusters.
 - b. **Setting up of a common platform** to enable information exchange, licensing (including Udyam and GeM registration) and benefit transfer to rural enterprise clusters.
 - c. Leveraging alignments to the regional specialization under **One District One Product (ODOP)** along with **geo-tagging** and **government certification** (such as India Brand Handloom) for the cluster products.
 - d. Provisioning of tax credits and subsidies, fee redemptions and other **fiscal and non-fiscal incentives** under public finance.

2. **Fostering Financial Innovation** through: -
 - a. Provisioning for the “mature” rural enterprise clusters to raise capital through the mechanisms such as the **Social Stock Exchange**.
 - b. Enabling **Credit Guarantee Schemes for Micro and Small Enterprises** (CGTMSE) with differential interest rates for local and green rural enterprise clusters.
 - c. Developing **Credit Rating Model** based on the sustainability assessment of the clusters for green financing, with linkages to geo-spatial data analytics for digital processes.
 - d. In a longer run, linking these clusters as projects under **Green Credit Programme (GCP)**, notified in October 2023 as an innovative market-based mechanism designed to incentivize voluntary environmental action across industries and companies.⁴
3. **Strengthening Business and Market Linkages** by: -
 - a. Establishing **rigorous benchmarking, monitoring and quality regulation** mechanisms.
 - b. Developing **Product Certification and Standards** or linking the cluster products to existing standards like Fairtrade and EarthSeer.
 - c. Setting up **Enterprise Ranking and Award System**, on same lines as the ranking frameworks based on the ESG ratings but customized to the model of rural enterprise clusters.
4. **Facilitating Partnerships and Collaboration** through: -
 - a. Fostering **Public-Private Partnership** for technical and product innovation.
 - b. Setting up an **industry-academia-civic society consortium** for mentorship and dedicated consultations.

Building local ecosystems led by communities can address interconnected grassroot challenges, reduce negative impact on the environment while ensuring next generation rural youth engage and scale these in a sustainable manner. This can be maximised through informed decisions, data driven tools, relevant solutions and business models.

4 Ministry of Environment, Forest and Climate Change, “Notification issued for Green Credit Program (GCP) and Ecomark Scheme under LIFE Initiative to promote sustainable lifestyle and environmental conservation,” October 2023. Accessed at <https://pib.gov.in/PressReleaselframePage.aspx?PRID=1967476#:~:text=These%20initiatives%2C%20the%20Green%20Credit,the%20ideas%20of%20LiFE%20concept.>

1. INTRODUCTION

India has registered an average population growth rate of 1-1.9% every year. About 53% of the country's current population is under 30 years of age, with estimates of another 101 million people getting added in the working age population between 2020-30, 61 million in 2030-40 and 21 million in 2040-50 respectively. This offers India a massive demographic dividend that can boost the GDP growth from the current US\$ 3 trillion to US\$ 9 trillion by 2030, and US\$ 40 trillion by 2047. Capitalizing on this potential, however, requires that the country not only generates enough jobs to be able to productivity and meaningfully tap into the youth potential but also generate these in a manner that it reaches the economically and socially excluded strata, which have so far been invisible from the country's growth story. It would also have to be mindful of the pressure on the natural resources, considering that the country is already consuming more than the ecosystems within its boundaries can provide.⁵ Thus, making sustainable production a pre-requisite to meaningful job creation. Rural enterprise clusters, driven by local aspirations and feeding back into the local economy, can become engines of a radical change in this context.

Rural enterprise clusters can take the form of a Farmer Producer Organization, a Self-Help Group or a Society, among others. As collectives based out of the community, these institutions strengthen the micro economies by generating local employment, demanding locally produced raw materials and distributing the profits among the local shareholders. Socially, they empower women, youth and other disadvantaged groups by enabling equal and productive participation in the value-creation and decision-making of the enterprise. Alongside these economic and social benefits, by shifting to renewable energy, sustainably consuming water and efficiently managing their waste, the rural enterprise clusters can promote sustainable consumption and production practices.

Rural enterprise clusters in India are supported under schemes by the Ministry of Micro, Small and Medium Enterprises (MoMSME), Ministry of Agriculture and Farmers' Welfare (MoA&FW), the Small Farmers' Agribusiness Consortium (SFAC), the National Bank of Agriculture and Rural Development (NABARD) at the Central level and non-farm cluster development initiatives by State Governments like that of Karnataka⁶. Non-governmental initiatives anchored by the civil society network and supported by the Corporate Social Responsibility (CSR) have also proven paramount to facilitating local livelihoods and climate change resilience through setting up or upgradation of rural enterprise clusters. Mainstreaming these clusters for harnessing the local aspirations towards green and inclusive livelihoods requires much more in terms of financing, capacity building, policy and market support. In this context, there is an increasing need for documenting these

5 Confederation of Indian Industries (CII), "India's Ecological Footprint: A Business Perspective," 2008. Accessed at http://www.indiaenvironmentportal.org.in/files/IndiaEcological_Footprint_Report08.pdf

6 Non-Farm Cluster Development Programme, Government of Karnataka. Accessed at <https://ksrlps.karnataka.gov.in/new-page/Non-farm%20Livelihoods%20-%20-%20Cluster%20Development/en>

clusters for their operating models and impact, the best practices and scope of optimization to be able to generate transparent and credible business case for them. This investigation follows along these lines.

1.1 THE STUDY

This report is based on a detailed study of four rural enterprise clusters supported by the Indian Micro Enterprises Development Foundation (IMEDF), which is a Nodal Agency under the SFURTI Scheme. It takes a stock of the clusters' economic, environmental and social impact – in the process, building a case for investing into these enterprises towards a green and inclusive economy.



ABOUT THE SCHEME

Launched in 2005 by the Ministry of Micro, Small and Medium Enterprises (MoMSME) and revised hence, the Scheme of Funds for Regeneration of the Traditional Industries (SFURTI) focuses on organising the traditional industries and artisans into collectives to make them competitive, ensure sustainable employment for the traditional industry artisans/producers and enhance the marketability of products.

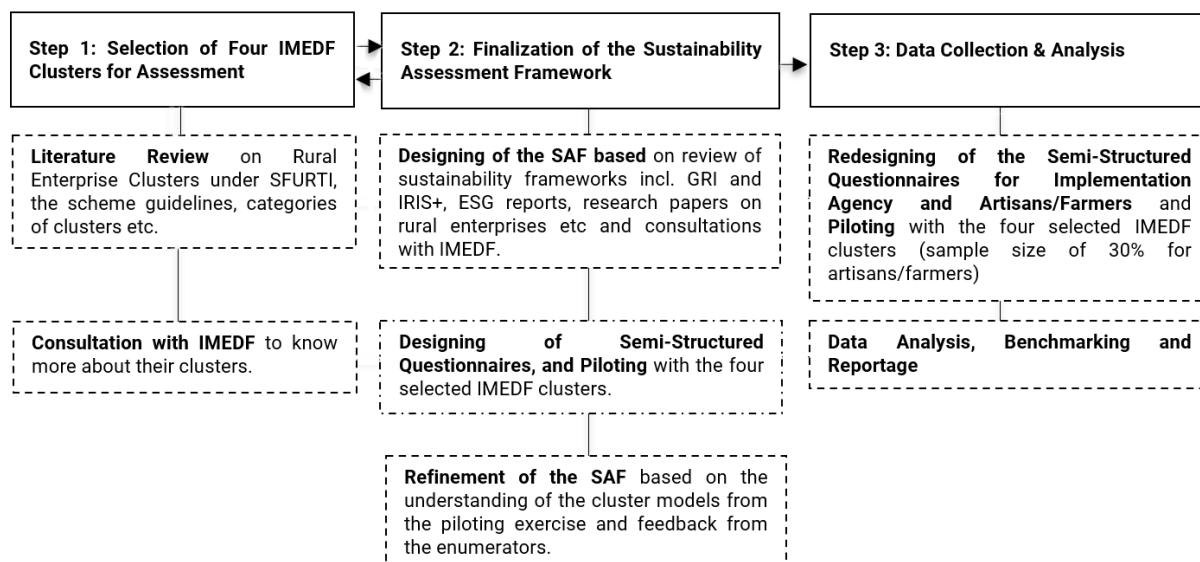
As of January 2024, as many as 359 clusters have been set up across 28 States in India. Categorised under agriculture, bamboo, coir, handicraft, honey, khadi and textile, these clusters provide direct livelihoods to about two lakh artisans. The scope of these enterprises to support climate action through adopting greener production practices, especially in energy, water, and waste management, has found cognizance under the scheme.

The assessment is undertaken based on a sustainability assessment framework, designed through a socio-technical approach (i.e., involving direct participation of the end-users in the designing processes). It enlists enlists critical social, economic and environmental parameters and their related attributes to assess the clusters. The overall methodological framework for the investigation is provided below.

1.2 METHODOLOGICAL APPROACH

The methodology for this investigation adopts three distinct yet interconnected approaches- each for selection of the sample, creating a Sustainable Assessment Framework, as well as piloting it with the selected rural enterprise clusters. This is explained below.

Figure 1: Methodological Framework for Sustainability Assessment of Rural Enterprise Clusters



1.2.1 SELECTION OF CLUSTERS

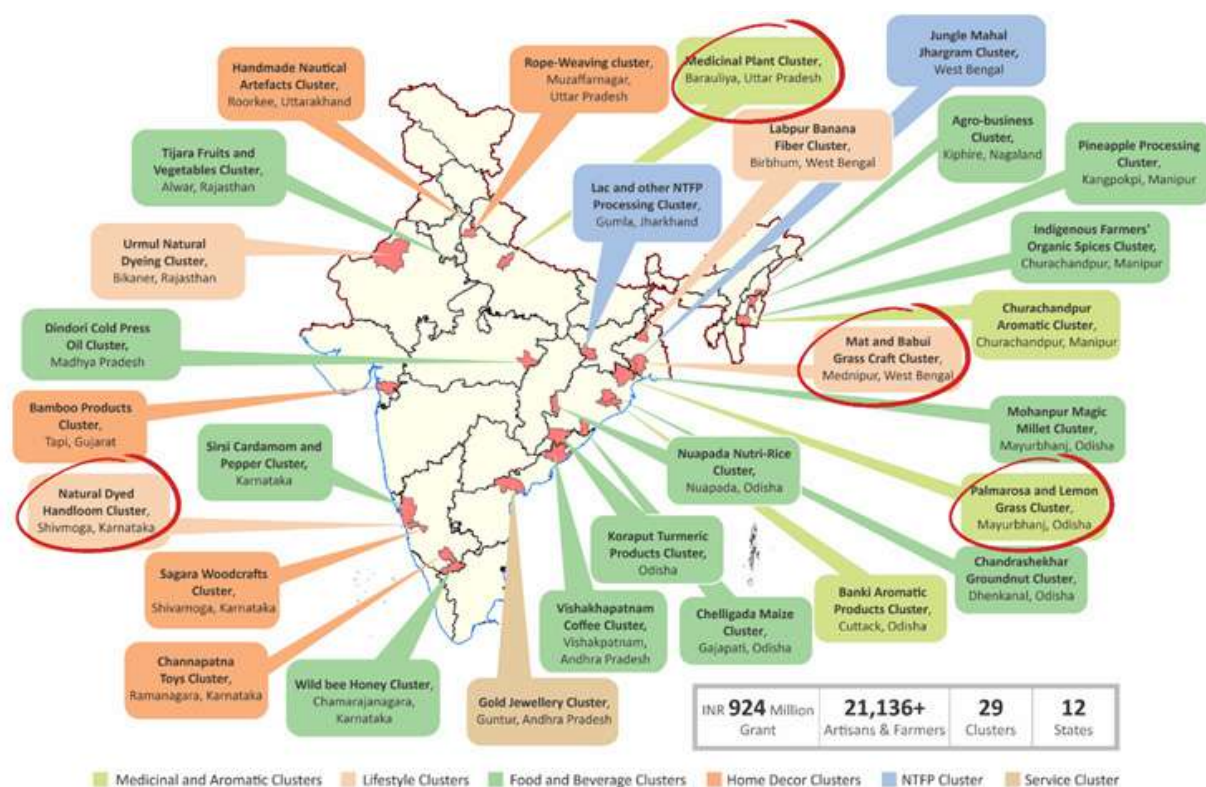
There are 359 functional SFURTI rural enterprise clusters, spread across seven sectors namely agro, bamboo, coir, handicraft, honey, khadi and textile. These clusters are supervised by 15 national institutions with sectoral expertise serving as the nodal agencies. The Indian Micro Enterprises Development Foundation (IMEDF) is one of these agencies with a portfolio of 29 SFURTI clusters across 11 States.

In consultation with IMEDF, one textile cluster, one handicraft and two agro clusters were selected based on a minimum operational maturity of 2 years. These were the Natural Dyed Handloom Cluster at Shivamogga, Karnataka, the Mat Craft Cluster at West Medinipur, West Bengal, the Medicinal Plant Cluster at Barauliya, Uttar Pradesh and the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha. This selection was supplemented with a review of their Detailed Project Reports, annual reports and other documents.

1.2.2 DESIGNING OF SUSTAINABILITY ASSESSMENT FRAMEWORK (SAF)

A thorough review of the sustainability frameworks and standards, including but not limited to the Global Reporting Initiative (GRI) and the Global Impact Investing Network's IRIS+, was conducted to identify the key environment, social, economic and governance attributes for impact assessment. Acknowledging that these frameworks are not adjusted to the scale and operating model of micro and small enterprises, including the rural enterprise clusters, a review

Figure 2: Selected IMEDF Clusters for Assessment



of existing literature on the social, environmental and economic impact of the clusters was undertaken to refine the attributes. This was supplemented by consultations with IMEDF.

The resultant framework was piloted with the rural enterprise clusters to check for its robustness and impact coverage. Based on the piloting, the framework was restructured and refined.

SUSTAINABILITY PARAMETERS AND ATTRIBUTES

The investigation considers three overarching parameters of cluster sustainability: Environmental Sustainability, Economic Distribution, and Social Equity & Inclusion. These parameters are further broken down into attributes.

A. Environmental Sustainability – Efficiency and Circularity

The parameter of environmental sustainability focuses on efficiency and circularity for energy, water and waste. First, the efficiency of resource use is examined, scrutinizing clusters' efforts to optimize energy, water, and raw material consumption while minimizing waste. Second, circularity practices are evaluated, gauging the extent to which clusters embrace recycling, reusing, and extending material lifecycles to reduce reliance on new resources.

B. Economic Distribution – Income Enhancement, Localization and Job Creation

In economic distribution, the evaluation encompasses three fundamental attributes. It assesses income enhancement strategies, determining clusters impact on economic prosperity of workers and local communities. Additionally, it examines localization efforts, gauging how clusters contribute to local economies by sourcing materials locally and nurturing nearby industries. Lastly, the attribute of job creation is scrutinized, exploring the diversity and quality of employment opportunities generated by clusters, thus impacting overall economic stability.

C. Social Equity & Inclusion – Inclusive Employment, Equitable Pay and Inclusive Decision-Making

Within the social equity and inclusion parameter, the analysis concentrates on three pivotal attributes of inclusive employment, equitable pay and inclusive decision-making. Inclusive employment is assessed, considering cluster's endeavors to provide job opportunities that embrace diverse demographics, including marginalized groups and individuals with disabilities. Equitable pay practices are examined, ensuring fairness in compensation irrespective of gender, ethnicity, or other factors. Lastly, the clusters' engagement of vulnerable groups in decision making processes is also examined, fostering transparency, collaboration, and collective ownership.

FRAMEWORK DEVELOPMENT

From the identified parameters and attributes, a total of 15 indicators are formulated. Each indicator meticulously contextualised to the model of the rural enterprise clusters, and their quantification methods are aligned with the research goals. The complete framework with parameters, attributes and indicators is provided in Annexure 3.

1.2.3 DATA COLLECTION AND ANALYSIS

Based on the framework, the data was collected in a systematic manner, leveraging a combination of strategies. For quantitative data, surveys were administered to cluster representatives at the implementation agency to gather information on predefined indicators. Qualitative insights were obtained through semi-structured interviews with the artisans/farmers, while archival documents were also analyzed to provide context.

DESIGNING OF SURVEY QUESTIONNAIRE

Data collection for the assessment of sustainability within these clusters involved the use of two types of questionnaires. The first questionnaire was designed for the implementation



Survey team interacting with the SPV members in the Naturally Dyed Handloom Cluster in Shivamogga, Karnataka.

agency (IA) responsible for overseeing SFURTI interventions. This questionnaire relied on voluntary disclosures from the IA and aimed to gather information on the clusters' practices and initiatives related to sustainability. The voluntary nature of the disclosures ensured that the IA had the flexibility to provide detailed insights into their sustainability efforts. The second type of questionnaire was designed for the artisans and farmers engaged in the cluster as members of the Special Purpose Vehicle (SPV). These interviews were conducted to gather data on various aspects of income, occupation, and social dimension.

QUESTIONNAIRE PILOTING

A multidimensional approach, incorporating both inductive and deductive modes, was adopted for collection of data on both questionnaires based on the Sustainability Assessment Framework. The research strategies applied included Voluntary Disclosure, Empirical, Archival, and Analytical. These are explained below.

A. Inductive and Deductive Approach

The research design was rooted in an inductive approach, seeking to derive insights and patterns from specific cases of industrial clusters. Additionally, a deductive approach was utilized to apply existing theoretical frameworks to the Indian context under the SFURTI scheme. This dual approach facilitated a holistic analysis of the sustainability factors at play within the clusters.

B. Main Research Strategies

i. Voluntary Disclosure

It involved the collection of self-reported sustainability practices from the rural enterprise clusters. Information on their environmental, economic, and social initiatives was voluntarily provided by the clusters, offering firsthand insights into their sustainability efforts.

ii. Empirical Strategy

It encompassed the collection of primary data through survey samples, interviews, and on-site observations. A structured questionnaire was designed to assess the sustainability performance of the clusters based on predetermined indicators. In-depth interviews were conducted with the artisans to gather qualitative insights into their practices and challenges.

iii. Archival Strategy

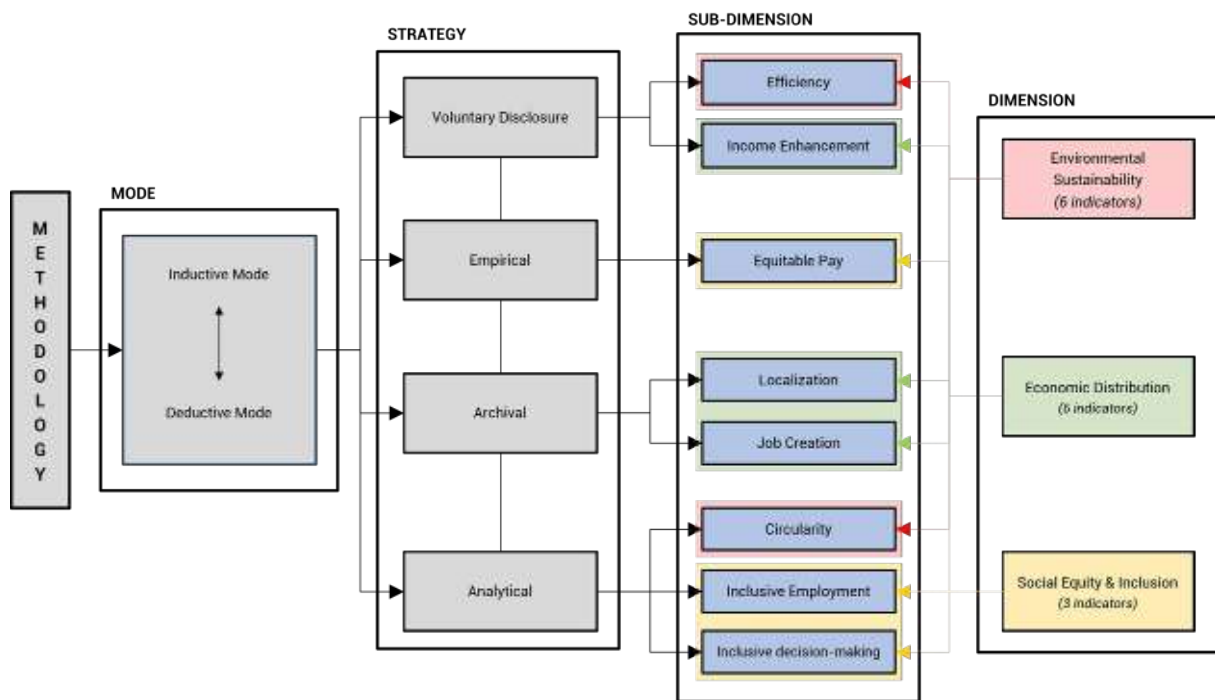
In addition to primary data collection, this strategy involved a thorough review of documents, reports, and records related to the operational strategies and policies of the selected industrial clusters. This approach provided insights into the clusters' past and present initiatives, offering valuable context for understanding their alignment with sustainable development goals and the SFURTI scheme.

iv. Analytical Strategy

It encompassed the application of statistical and qualitative analysis techniques to the collected data. Quantitative data were subjected to descriptive statistics in the form of graphs and charts to identify relationships between sustainability indicators. Qualitative data from interviews and voluntary disclosures underwent thematic analysis to extract meaningful patterns and insights.

SAMPLING OF ARTISANS/FARMERS

Figure 3: Methodology for data collection on questionnaires



To ensure the statistical validity and feasibility of the analysis for inferential purposes, a targeted approach was adopted for the selection of participants in the second questionnaire. Specifically, a sample size equivalent to 30% of the all artisans and farmers in the respective cluster was deemed appropriate. The selection of this sample was based on the type of cluster processes and/or the CFC they were associated with. By considering the type of cluster processes and CFCs, the sample composition was designed to capture a representative cross-section of the population under investigation. The sample size collected from piloting of each cluster is given in Table 1.

Table 1: Sample size of each cluster

Cluster Name	Sample Size
West Medinipur Mat Craft Cluster	100
Barauliya Medicinal Plant Cluster	30
Shivamogga Natural Dyed Handloom Cluster	70
Mayurbhanj Palmarosa and Lemongrass Cluster	64
Total	264

METHOD FOR DATA ANALYSIS

The data collected through the surveys and interviews underwent thematic analysis using statistical instruments. The quantification logic used for calculating the clusters' impact on the parameters, attributes and indicators of the sustainability assessment framework are provided under Annexure 6.

The subsequent section presents the findings and insights derived from the application of this methodology.

2. CLUSTERS' PROFILE & ANALYSIS

2.1 CLUSTER SNAPSHOTS

CLUSTER 1

Mat Craft Cluster

West Medinipur, West Bengal



CLUSTER 2

Natural Dyed Handloom Cluster

Shivamogga, Karnataka



CLUSTER 3

Medicinal Plant Cluster

Barauliya, Uttar Pradesh



CLUSTER 4

Palmarosa and Lemongrass Cluster

Mayurbhanj, Odisha



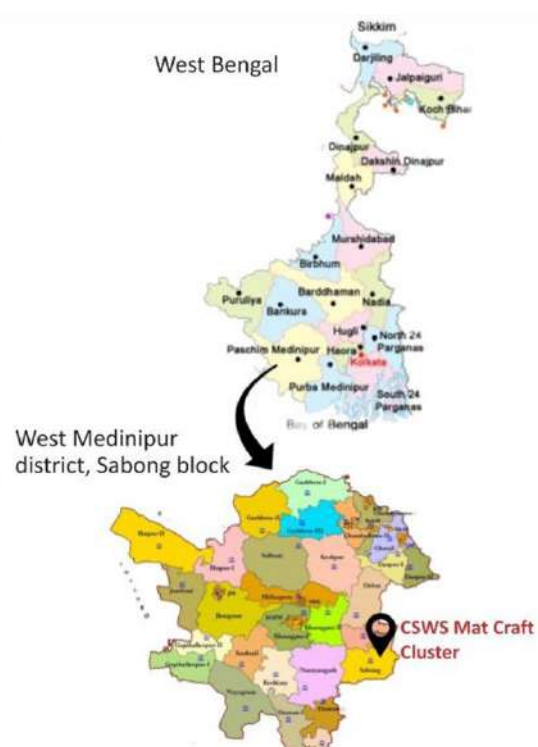
CLUSTER 1

Mat Craft Cluster West Medinipur, West Bengal

CLUSTER SNAPSHOT

Nature	Babui Grass Mats and Utility Items
Implementing Agency (IA)	Child and Social Welfare Society (CSWS)
Cluster	Mat Craft Cluster
Launch of the Cluster	1993
Coverage under SFURTI	2020
Investment under SFURTI	Rs. 2.25 Crore

Figure 4: Tailoring Unit of the Cluster



A. Background of the Cluster

The Mat Craft Cluster was started by the Child and Social Welfare Society in 1993 and employed a small group of women from the village to weave products out of the Madhirkathi grass. It registered under SFURTI Scheme seven years later, in 2020, to avail financing for purchasing machines and scaling operations. Currently, it employs more than 500 local artisans, mostly women, from villages in and around Mankandachak in West Medinipur.

Figure 5: IMEDF-SAF team in the field with the Resource Person from the Implementation Agency



B. Products

The Mat Craft Cluster utilizes locally grown Madurkathi grass, crafting over 200 eco-friendly products the categories of home, fashion and office utility. The Mat Craft Cluster was started by the Child and Social Welfare Society in 1993 and employed a small group of women from the village to weave products out of the Madhirkathi grass. It registered under SFURTI Scheme seven years later, in 2020, to avail financing for purchasing machines and scaling operations. The

cluster has introduced diversified mat weaving looms and sewing machines. While traditional items cater to local markets, non-traditional products are available on Tribes India (TRIFED's e-commerce site) and are exhibited at various national fairs, showcasing their biodegradable and eco-friendly nature.

C. Processes

The Mat Craft Cluster sources Madurkathi from farmers via intermediaries and other inputs from nearby cities. They use natural dyes to color the grass. The water left from the dyeing process is treated and reused in the same process multiple times before finally discarding. The cluster is powered by on-grid solar energy, soon switching to off-grid. They involve 300+ households, registered as units under Udyam, where trained women weave independently. They receive raw materials through vouchers and are paid per unit, earning Rs.5000 to Rs.12000 monthly. The cluster had a partnership with Fabindia earlier. Now, it sells the products through direct markets in Kolkata and otherwise on Tribes India. They are also part of the Fair-Trade Forum.

D. Way Ahead

Connectivity is one of the key challenges faced by the cluster – affecting its marketing prospects. Due to the remoteness of the village, the cluster finds it difficult to register and onboard themselves on e-commerce platforms such as Amazon and Flipkart, as the pickup of the individual products poses an issue. Their engagement with Tribes India has been possible only because the products are picked up in bulk, not requiring much to and fro.

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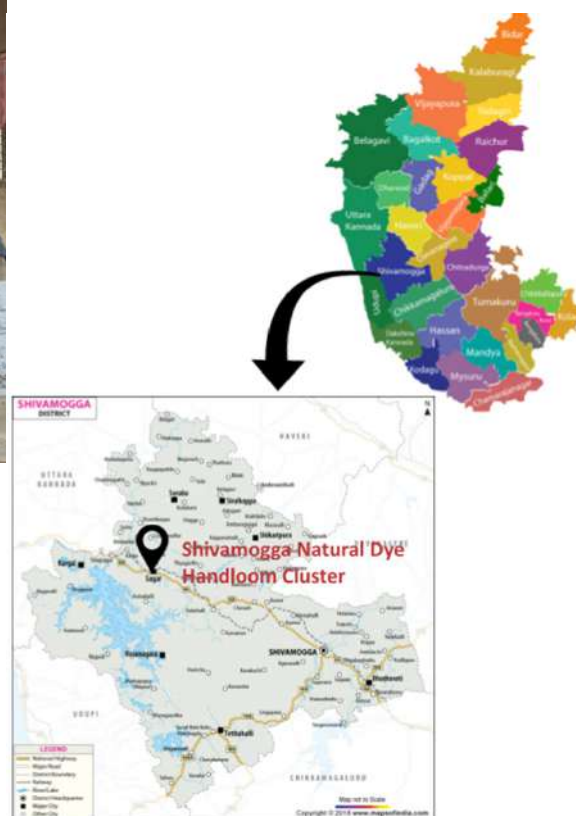
CLUSTER 2

Natural Dyed Handloom Cluster Shivamogga, Karnataka

CLUSTER SNAPSHOT

Nature of Programme	Artisanal Products (Cotton wears)
Implementation Agency (IA)	DESI Trust
Launch of the Cluster	4 October, 1996
Coverage under SFURTI from	2019
Investment under SFURTI	Rs. 1.84 Crore

Figure 6: Printing unit of the handloom cluster



A. Background of the Cluster

Charaka, a sustainable handloom industry in Sagara taluk, Western Ghats, promotes decentralized employment. They train individuals in handloom processes, encouraging home-based units. This enables weavers, dyers, and tailors, especially women, balancing work and home life.

Numerous handloom units operate in Sagara taluk, along with outsourced weaving. The fabric is processed at a Common Facility Centre (CFC), then sold in wholesale or used for garment production. Quality control is rigorous, and they engage in natural dye block printing.

Charaka's marketing arm - the DESI Stores, has its retail outlets across Karnataka. It acts as a bridge between the rural and urban communities through making available traditionally made products.

The cooperative society, mostly women, uses a decentralized stitching and centralized cloth cutting model. It operates in 100 villages, producing 25,000 to 30,000 meters of cloth monthly. Profits are shared among weavers and artisans. Through grant under the SFURTI Scheme, the cluster set up additional infrastructure to expand the production.

Figure 7: Weaving unit set-up for women artisans in their homes



B. Process

Charaka uses mechanically spun local cotton from the National Handloom Development Corporation Ltd (NHDC), which then undergoes heat scouring for natural dye receptivity. They focus on a limited, six-color palette from natural dyes like indigo, pomegranate skins, and Indian madder, making the process safer for people and the environment. Yarn preparation and loom setup take about a day for simple designs. UNNATI program offers training for aspiring weavers.

After weaving, fabric undergoes washing, drying, block printing, or other dyeing methods, followed by quality inspection. In addition to the women from Shivamogga, the cluster also employs artisanal women from North Karnataka. Fabrics are sent to them and the final products are received with due payment for their services. Sarees are stocked on-campus; yardage goes for tailoring or sale. The campus has a design unit for new ideas. All scraps from the cutting processes are used for making book jackets and other products. Those that are too small to be used for it, are used for filling pillows or patched together for making quilts.

C. Way Ahead

The natural dye cluster grapples with adapting to price fluctuations and changing market demand for product. This leads to unsold stock. The artisans engaged in the village do also sometimes resist shifting to production of a different item when the item they were trained on goes out of demand. Overcoming these hurdles necessitates increased technical agency involvement for efficiency, addressing working capital issues, and promoting artisan diversification through training and support.

CLUSTER 3

Medicinal Plant Cluster Barauliya, Uttar Pradesh

CLUSTER SNAPSHOT

Nature	Agriculture-based Products
Implementation Agency	Treat Foundation
Launch of the Cluster	January 2018
Coverage under SFURTI from	2020
Investment under SFURTI	Rs. 2.25 Crore

Figure 8: Entrance of the Common Facility Centre



A. Background of the Cluster

The Treat Foundation's medicinal plant cluster, operating in Barauliya and Hariharpur Village, specializes in producing up to 25 medicinal products. Its goal is to establish a sustainable agricultural entrepreneurship ecosystem, increase farmers' income, and ensure high-quality medicinal products. The cluster employs modern packaging and state-of-the-art processing infrastructure for product quality and hygiene.

It holds several certifications, including the state-level UPSOCA organic certification, FSSAI certification, and product verification by the Regional Food Research and Analysis Centre. Additionally, the cluster is GST registered, has a PAN, and secures capital from both the SFURTI scheme and individual investors.

Figure 9: Chilli Powder Packaging Machine in Operation



B. Products

The medicine cluster includes two brands: Raw & Kind, known for organic products like essential oils, turmeric latte, and green teas, and Pavni, which offers spices like chilli, coriander, and turmeric powder. Turmeric powder sales are significant for the cluster. Raw & Kind is currently pursuing a patent for their star product, Turmeric Latte. Pavni, launched about 6-7 months ago, has a strong customer retention rate, with 80% of sales from repeat customers.

C. Processes

Cluster farmers cultivate medicinal plants like Turmeric, Ginger, Gilloy, Mint, and Basil but face challenges with Vetiver due to soil concerns and waterlogging. The cluster provides training to farmers and staff to enhance skills and efficiency, along with insurance coverage for staff, machines, and stock.

Turmeric is sourced from Sitapur, Uttar Pradesh, packaging from Lucknow, and machinery from Hyderabad. Marketing is done via Facebook, Instagram, and Twitter, with partnerships like Potli and Alaska Agroventures Organic. Products are sold locally or on e-commerce platforms.

Raw & Kind products are shipped to Mumbai, Hong Kong, or sold on Amazon and Indialane. Pavni products are sold within a 30-40 km radius of the Common Facility Centre (CFC). The cluster faces competition from 7-8 nearby masala enterprises, currently holding a 25% market share.

D. Way Ahead

The brand is actively pursuing partnerships with restaurant chains to source their products, with a focus on Raw & Kind's Turmeric Latte. Pavni's products primarily sell through local community demand. The agency is actively exploring various avenues, both physical and digital, to expand their business reach. They aspire to increase exports but require additional resources and trained professionals to facilitate this growth.

CLUSTER 4

Palmarosa and Lemongrass Cluster Mayurbhanj, Odisha

CLUSTER SNAPSHOT

Nature	Agriculture-based Products
Implementing Agency (IA)	Social Organization of Various Aspects (SOOVA)
Launch of the Cluster	2020
Coverage under SFURTI from	September, 2020
Investment under SFURTI	Rs. 3.83 Crore

Figure 10: Entrance of Common Facility Centre 1 under Palmarosa and Lemongrass cluster



A. Background of the Cluster

The Mayurbhanj PLemongrass and Palmarosa Cluster comprises 1250+ farmers from tribal and landless families in Udala. These families were originally paddy cultivators. Due to water issues, crop pest and diseases, the yield would often fluctuate. SOOVA, the implementation agency, supported these families in shifting to essential oil production from lemongrass and palmarosa instead. Managed by Hingula Agri Producer Company Limited, this cluster spans 400+ acres. It established a Farmer Producer Company (FPC) for commercial success and social impact, distinguishing it from NGO-run clusters. These grasses require minimal maintenance and yield three cuts annually. Ownership is 75% tribal and 30-40% female, with farmers earning Rs. 6,000 to 7,000 monthly on average.

Figure 11: Filtration of Oil from oil-water mix



B. Product and Production

The cluster leases land from farmers, provides them training and inputs (seeds and other raw material) for growing lemongrass and palmarosa, and procures the produced grass for oil production. The grass is manually or mechanically cut, and the oil is extracted via steam distillation. The residual grass is used as fuel for steamers.

The oil is sold in bulk to PurePetal Alliance Limited, which uses it to create its own products. Farmers are compensated through land lease payments, payment for cutting grass, and dividends from shareholding. They are also encouraged to engage in additional activities like beekeeping and fruit cultivation for additional income.

Unlike other clusters, it has four CFCs and one main office spread across different locations within the tribal area to streamline

processing, reducing transportation costs and inconvenience. Thus, the FPC operations in the district are decentralized yet clustered. The small metal box shown in the lower end of Figure 11 is where the filtration of oil from the oil-water mix takes place.

C. Way Ahead

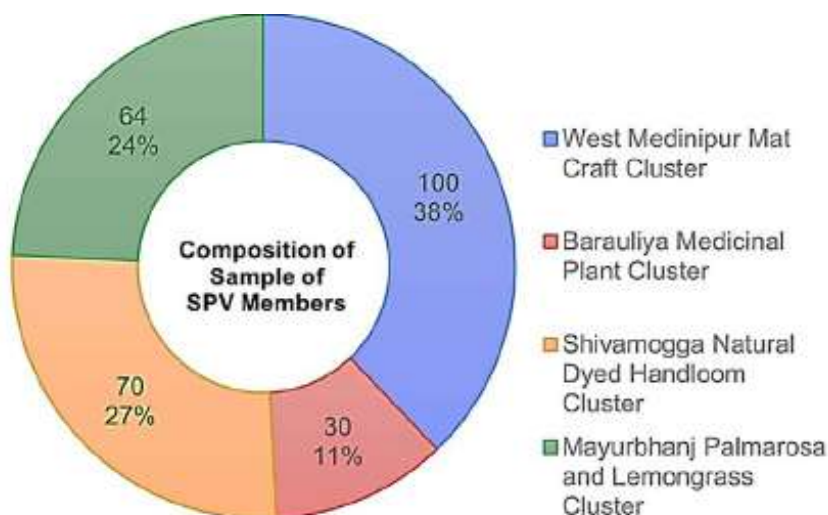
The cluster plans to use the aromatic waste water which is separated from oil in the filtration process, for producing phenyl. In addition, Hingula has installed a machine to package the oil in-house, this is yet at a nascent stage.

2.2 RESPONDENTS' PROFILE

Two surveys were designed and conducted under this study.

The first was for the Implementation Agency to document cluster level data (including financials, number and composition of the SPV members, resource consumption in the cluster, end of pipeline etc). The Cluster Executive Officer acted as the main respondent for this survey, and were all male, based locally and aged between 40-55 years.

Graph 1: Composition of Sample of SPV Members



The second survey was designed the SPV members i.e., artisans and farmers engaged in the cluster to understand the cluster's impact on their livelihoods among other factors. A random sample of **30%** of all SPV members was taken for each of the four clusters. A total sample of **264** artisans and farmers were surveyed through this, of which **23%** were youth (aged between 18 to 29 years), **82%** were women and **90%** belonged to Scheduled Caste, Scheduled Tribe and Other Backward Classes.

The cluster had generated **new employment** as **62%** of women and **58%** of those marginalized (belonging to SC/ST/OBC category) were unemployed with zero personal income before.

The cluster had also **increased income** of those who were already working before joining the cluster. About **31%** of those sampled – who were already working as artisan – experienced an average of **64%** increase in monthly income. Another **14%** were working as agricultural labourers before and witnessed an average of **10%** increase in monthly income.

Graph 2: Composition of Sample



2.3 ANALYSIS OF DATA

The data was analyzed across three broad parameters of Environmental Sustainability, Local Economic Distribution and Social Equity and Inclusion.

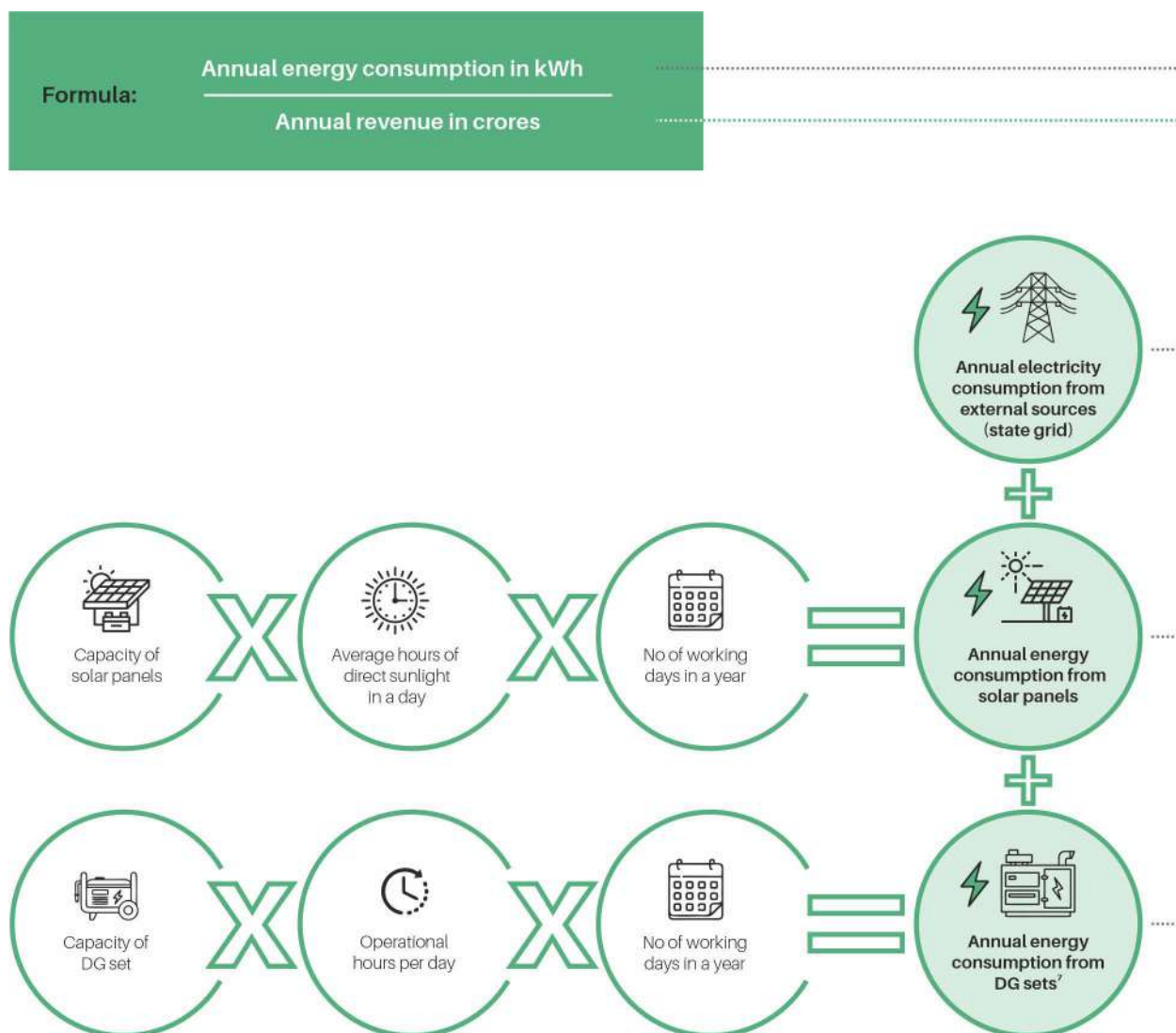
ENVIRONMENTAL SUSTAINABILITY

There are a total of six indicators within environmental sustainability, spread across efficiency and circularity in use of energy, water and waste. These are detailed below.

Indicator 1- Gross Energy Consumption per crore of Revenue

This indicator serves as a valuable tool to assess the clusters' energy intensity, identify opportunities for cost reduction by optimizing energy consumption, and adopting clean energy practices wherever applicable.

A. Formula for Calculation and the Data Points



7 The DG set is run only as per the need, thus, utilizing 100% of the generated electricity.

Table 2: Data Points and Sources for Indicator 1 under Environmental Sustainability

S.No	Data Points	Source
1	Electricity consumption from external source (State grid)	Voluntary disclosure
2	Capacity of solar panels	Voluntary disclosure
3	Direct sunlight hours	Secondary research
4	Capacity of DG sets	Voluntary disclosure
5	Operational hours of the DG set	Voluntary disclosure
6	No. of working days of cluster	Voluntary disclosure
7	Annual revenue	Financial statements

B. Performance of the Clusters



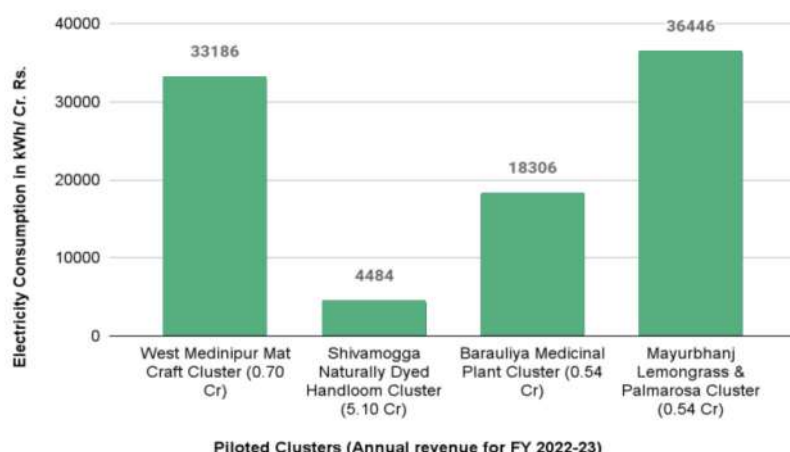
	 Gross energy consumption per crore of revenue	 Annual revenue (FY: 2022-23)
Cluster 1		
West Medinipur Mat Craft Cluster	33,186 kWh	Rs. 0.70 crore
Cluster 2		
Shivamogga Naturally Dyed Handloom Cluster	4,484 kWh	Rs. 5.10 crore
Cluster 3		
Barauliya Medicinal Plant Cluster	18,306 kWh	Rs. 0.54 crore
Cluster 4		
Mayurbhanj Lemongrass & Palmarosa Cluster	36,446 kWh	Rs. 0.54 crore

Figure 12: Performance of the clusters for Indicator 1 under Environmental Sustainability



C. Interpretation & Findings

The clusters' performance on this indicator can struggle due to two factors: - a high or inefficient energy consumption and/or a low annual revenue.

ANALYSIS: The Natural Dyed Handloom Cluster at Shivamogga, Karnataka stands out as the most efficient with a gross energy consumption per crore of revenue of 4,484 kWh/Crore. This is followed by the Medicinal Plant Cluster at Barauliya, Uttar Pradesh and Mat Craft Cluster at West Medinipur, performing at 18,306 kWh/Crore and 33,186 kWh/Crore respectively. The Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha ranks low on the indicator with the highest gross energy consumption per crore of revenue at 36,446 kWh/Crore, driven by the solar energy consumption across its four CFCs where oil is distilled⁸.

OBSERVATION: While important for establishing a business case through efficiency in resource consumption, the indicator of Gross Energy Consumption per Crore of Revenue suffers from market volatilities in terms of pricing and demand. This is evident in case of Mat Craft Cluster at West Medinipur, West Bengal that suffers from the issue of a high unsold stock pulling its annual revenue and thereby net electricity consumption per crore of revenue down. These volatilities can be avoided by calculating net energy consumption against the cost of production instead of revenue. This is attempted in Indicator 1.1. In both cases though, the gross energy consumption per crore of revenue is driven by considerable unspent solar energy in the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha.

⁸ The cluster also has an administrative building, which at the time of this study (2022-23), was used for non-SFURTI value addition, record keeping and other activities. The energy consumption for this building has not been covered under the analysis.

Indicator 1.1 Gross Energy Consumption per Crore Cost of Production

This indicator assesses the energy intensity in the production process against the money worth of goods produced. It provides insights into the sustainability and cost-effectiveness of energy use in rural enterprises, permitting stakeholders to evaluate the economic viability and environmental impact of the production activities within the cluster. A lower value net energy consumption per crore cost of production indicates a more efficient use of energy resources in relation to the overall production costs.

A. Formula for Calculation and the Data Points

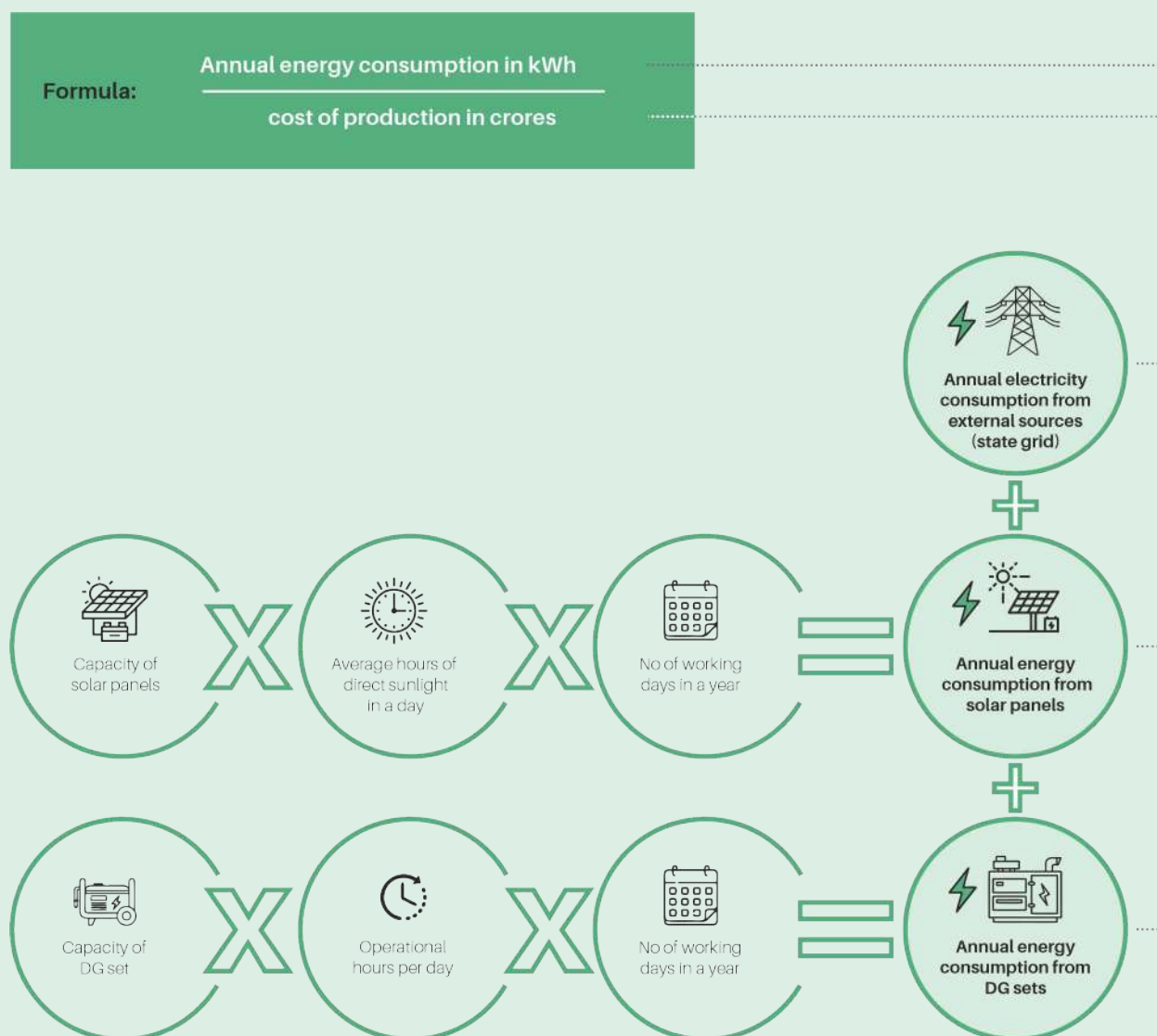


Table 3: Data Points and Sources for the Indicator

S.No	Data Points	Source
1	Electricity consumption from external source (State grid)	Voluntary disclosure
2	Capacity of Solar Panels	Voluntary disclosure
3	Direct sunlight hours	Secondary research
4	Capacity of DG sets	Voluntary disclosure
5	Operational hours of the DG set	Voluntary disclosure
6	No. of working days of cluster	Voluntary disclosure
7	Cost of production	Financial statements

B. Performance of the Clusters



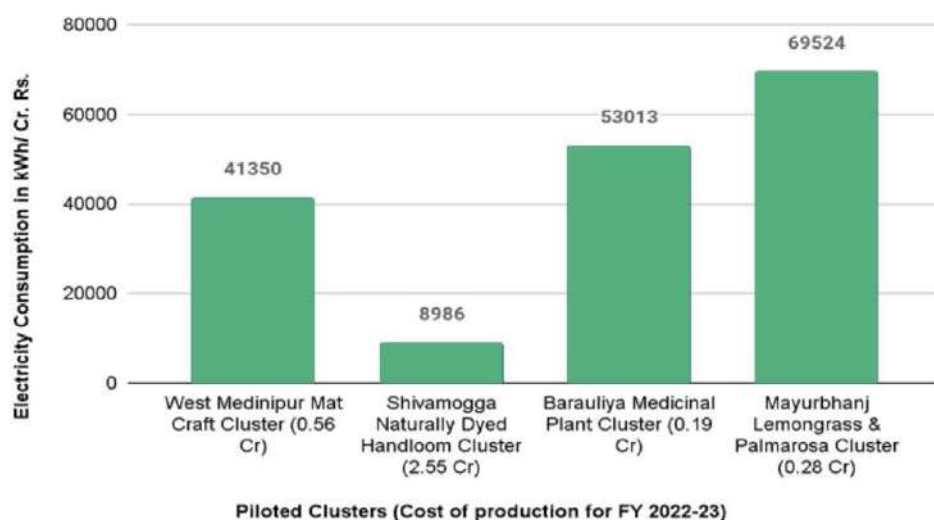
	 Gross electricity consumption per crore cost of production	 Cost of production (FY: 2022-23)
Cluster 1		
West Medinipur Mat Craft Cluster	41,350 kWh	Rs. 0.56 crore
Cluster 2		
Shivamogga Naturally Dyed Handloom Cluster	8,986 kWh	Rs. 2.55 crore
Cluster 3		
Barauliya Medicinal Plant Cluster	53,013 kWh	Rs. 0.19 crore
Cluster 4		
Mayurbhanj Lemongrass & Palmarosa Cluster	69,524 kWh	Rs. 0.54 crore

Figure 13: Performance of the clusters



The Natural Dyed Handloom Cluster in Shivamogga, Karnataka exhibits a gross energy consumption of 8,986 kWh per crore of cost of production, followed by the Mat Craft Cluster at West Medinipur, West Bengal at 41,350 kWh, the Medicinal Plant Cluster at Barauliya, Uttar Pradesh at 53,013 kWh and lastly, the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha at 69,524 kWh per crore cost of production. **In comparison to the gross energy consumption per crore of revenue, indicator 1.2 adjusts for market volatilities as is evident from the revised positioning of the Mat Craft Cluster at West Medinipur, West Bengal against the other three clusters.**

RECOMMENDATION: Corrective measures both in terms of improving energy efficiency and optimizing the cost of production are required. The underutilization of solar energy could be mitigated by channelizing the unused solar power for by-product manufacturing. Regular energy audits are necessary for the clusters to keep a close check on the energy usage and identify areas of inefficiency/energy leaks for correction. These audits currently are not regularized in practice amongst the clusters.

Indicator 2- Net Water Consumption per Crore of Revenue

This indicator gauges how efficiently water resources are utilized by the clusters in the production process. By monitoring and improving water efficiency, the rural enterprise clusters can not only exhibit environmental stewardship by becoming responsible consumers of natural resources but financially, can optimize cost and become more viable.

A. Formula for Calculation and the Data Points

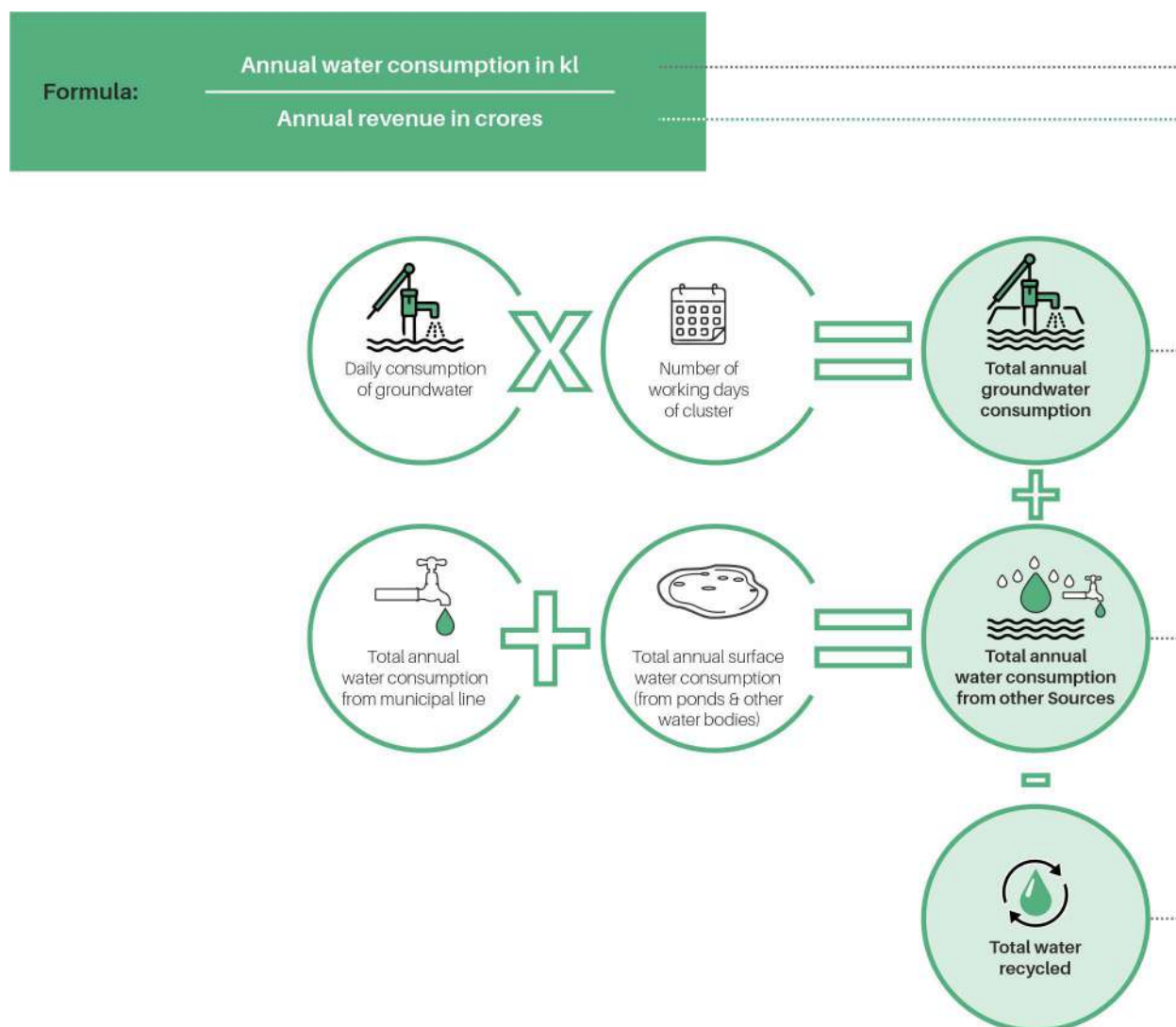


Table 4: Data Points and Sources for Indicator 2 under Environmental Sustainability

S.No	Data Points	Source
1	Water source	Voluntary disclosure
2	Quantity of water consumption	Voluntary disclosure
3	Quantity of water recycled	Voluntary disclosure
4	No. of working days of cluster	Voluntary disclosure
5	Annual revenue	Financial statements

B. Performance of the Clusters



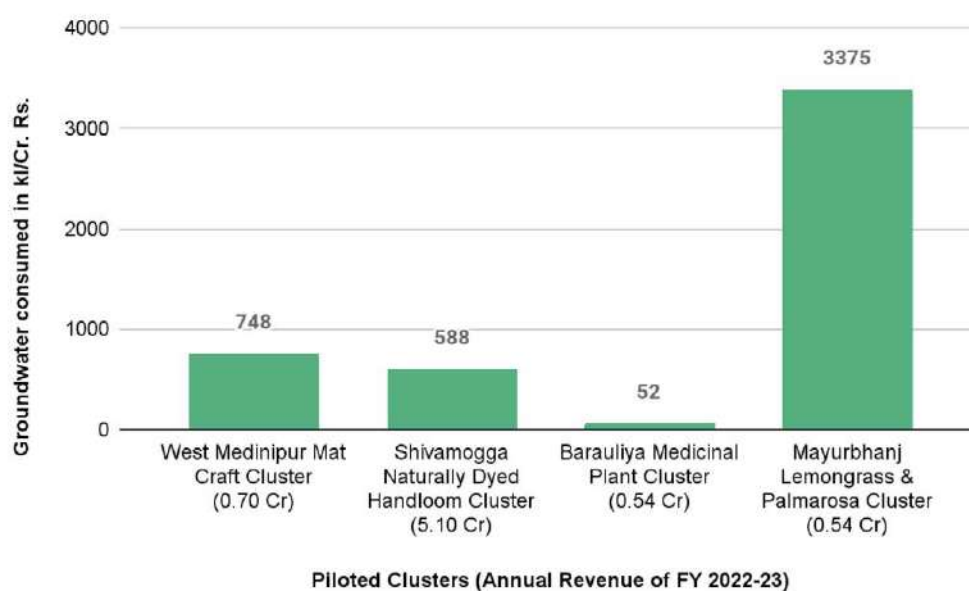
	 Net water consumption per crore of revenue	 Annual revenue (FY: 2022-23)
Cluster 1		
West Medinipur Mat Craft Cluster	748 kl	Rs. 0.70 crore
Cluster 2		
Shivamogga Naturally Dyed Handloom Cluster	588 kl	Rs. 5.10 crore
Cluster 3		
Barauliya Medicinal Plant Cluster	52 kl	Rs. 0.54 crore
Cluster 4		
Mayurbhanj Lemongrass & Palmarosa Cluster	3,375 kl	Rs. 0.54 crore

Figure 14: Performance of the clusters for Indicator 2 under Environmental Sustainability



C. Interpretation & Findings

Similar to the energy consumption, the clusters' performance on net water consumption per crore of revenue can be negatively affected by high water consumption and/or low annual revenue of the cluster.

ANALYSIS: The Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha registers the highest net water consumption at 3,375 kl per crore of revenue. This is followed by the Mat Craft Cluster at West Medinipur, West Bengal at 748 kl per crore of revenue, despite treating and reusing 17% of water, and the Natural Dyed Handloom Cluster at Shivamogga, Karnataka at 588 kl per crore of revenue. The Medicinal Plant Cluster at Barauliya, UP, by nature of its operation, registers the lowest water consumption at 52 kl per crore of revenue.

OBSERVATION: The water-intensity of the production process has a considerable impact on the clusters' performance on this indicator. The Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha exhibits high water consumption due to the water intensiveness of the oil distillation processes and **cannot be compared against the performance of the other three clusters**. Water consumption at the Mat Craft Cluster at West Medinipur, West Bengal and the Natural Dyed Handloom Cluster at Shivamogga, Karnataka is driven by the mat/cloth washing and dyeing processes as much as the rest of the production. The Medicinal Plant Cluster at Barauliya, UP uses water for washing the farm produce, but otherwise runs a dry processing for masala manufacturing. This water intensiveness, or lack thereof, of operations reflects when the water consumption is pegged against the output. This is attempted in Indicator 2.1.

Indicator 2.1 - Net Water Consumption per ton of Output

This indicator indicator pegs efficiency of water usage against the total production output in metric tons. A high value on this indicator depicts high water intensiveness of operations.

A. Formula for Calculation and the Data Points

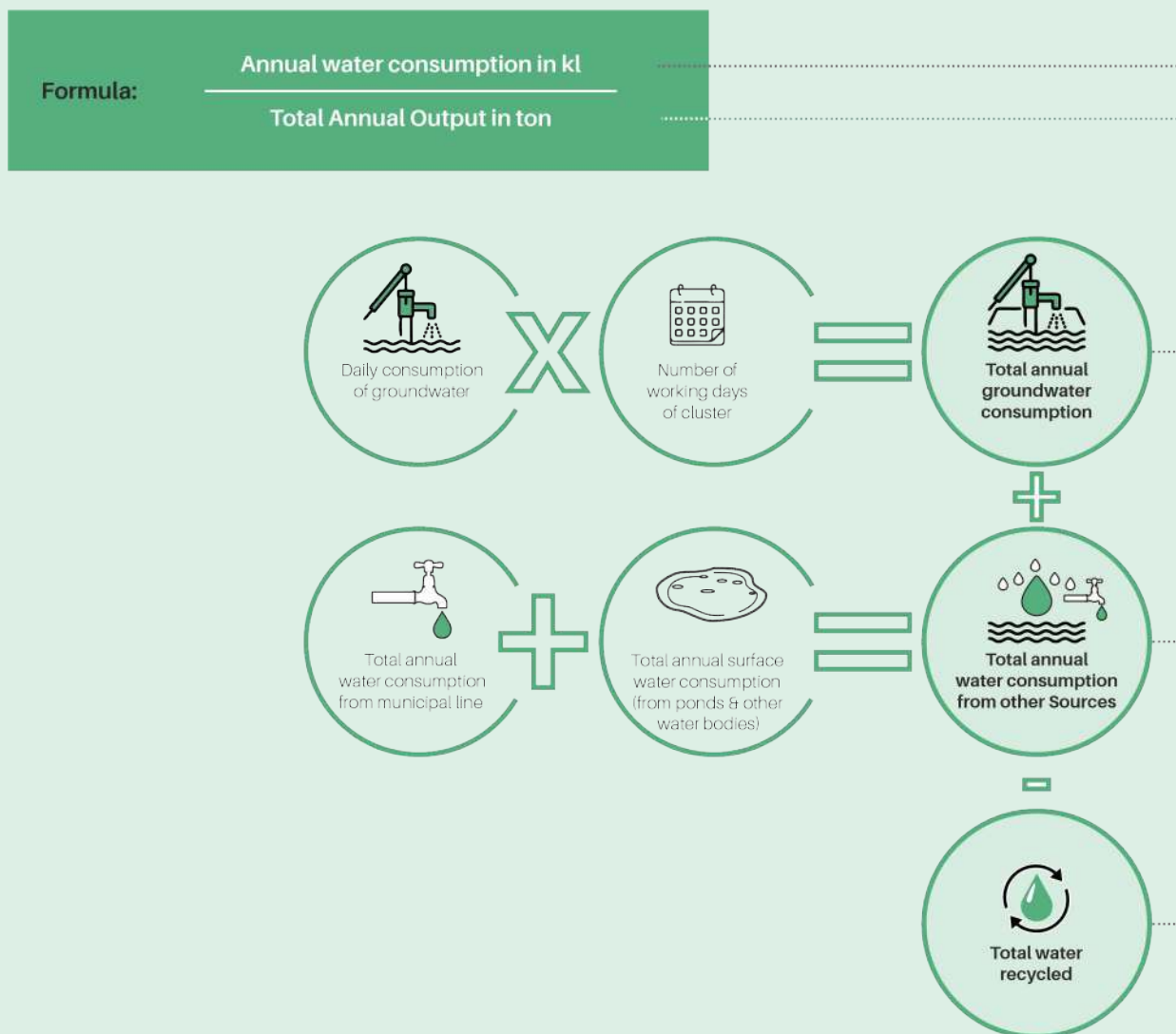


Table 5: Data points and sources for the Indicator

S.No	Data Points	Source
1	Water source	Voluntary disclosure
2	Quantity of water consumption	Voluntary disclosure
3	Quantity of water recycled	Voluntary disclosure
4	Total Annual Output	Voluntary disclosure

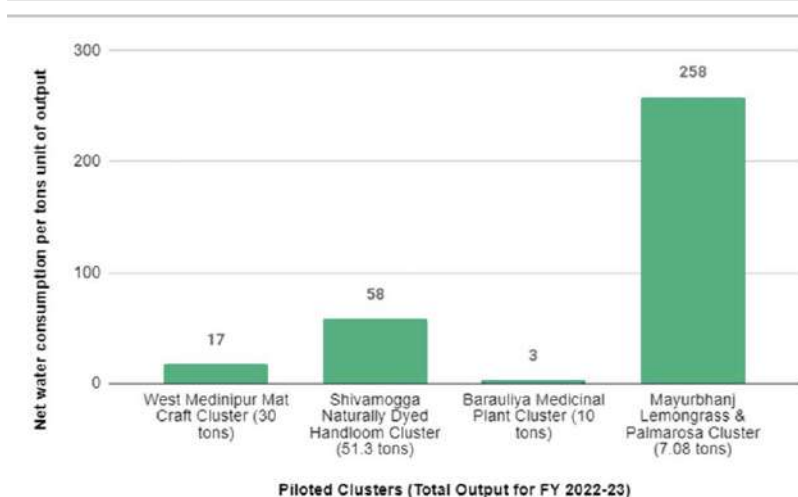
B. Performance of the Clusters



Net water consumption per ton of output

Cluster 1	
West Medinipur Mat Craft Cluster	17.33 kl
Cluster 2	
Shivamogga Naturally Dyed Handloom Cluster	58.48 kl
Cluster 3	
Barauliya Medicinal Plant Cluster	2.80 kl
Cluster 4	
Mayurbhanj Lemongrass & Palmarosa Cluster	257.78 kl

Figure 15: Performance of the Clusters



The Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha registers the highest net water consumption per tons of output at 258 kl. This is followed by the Natural Dyed Handloom Cluster at Shivamogga, Karnataka at 58 kl per tons of output, the Mat Craft Cluster at West Medinipur, West Bengal at 17kl per tons of output and finally, the Medicinal Plant Cluster at Barauliya, UP at 3 kl per tons of output. **When compared against the results of the net water consumed per crore unit of revenue, the West Medinipur and Shivamogga clusters can be found to have switched ranks. This is due to the high annual revenue of the Shivamogga cluster, potentially driven by market pricing of the kind of product produced, pulling the net water consumption per crore unit of revenue figures down.**

RECOMMENDATION: Water consumption for all clusters should be optimized – both in terms of reducing the consumption of the first-use water and increasing reapplication of the treated water in the production processes. The Shivamogga cluster treats the water but uses it for watering and cleaning purposes instead. This should be fed back into the manufacturing process while the water treated and reused for multiple cycles can still be used for other purposes as and when it becomes unfit for the manufacturing process, as long as it is safe for disposal.

Indicator 3- Net quantity of waste generated per crore of revenue

This indicator quantifies waste generation relative in money worth terms against the clusters' revenue. By monitoring and reducing waste disposal per unit of revenue, the clusters can save on cost by recycling the raw materials while contributing to environmental sustainability.

A. Formula for Calculation and the Data Points

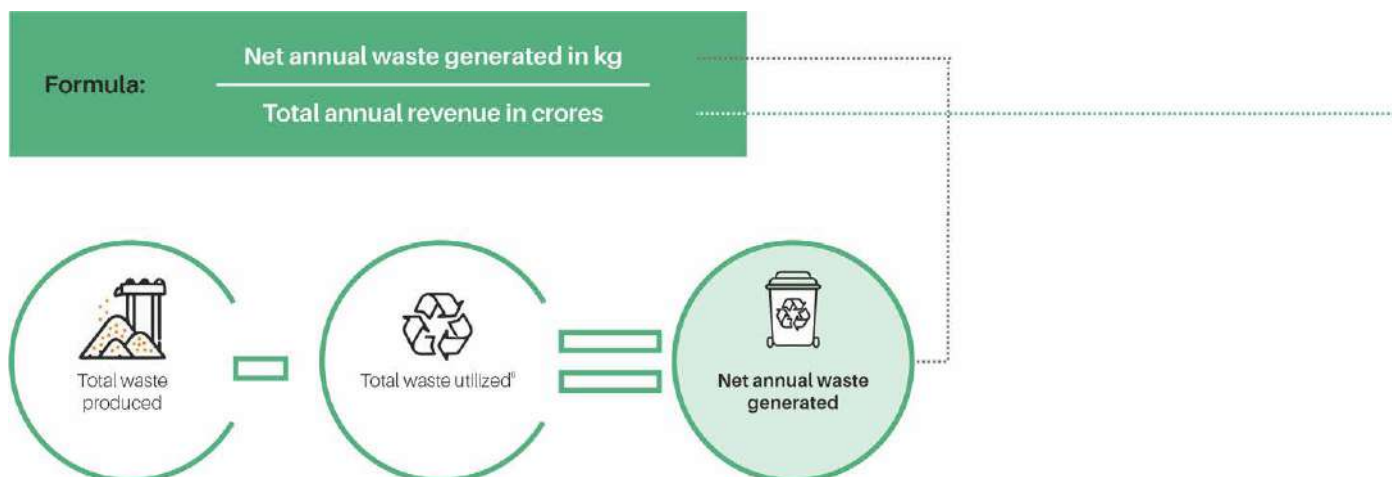


Table 6: Data points and sources for Indicator 3 under Environmental Sustainability

S.No	Data Points	Source
1	Quantity of waste disposed	Voluntary disclosure
2	Quantity of waste recycled/reused	Voluntary disclosure
3	Quantity of waste composted	Voluntary disclosure
4	Annual revenue	Financial statements

Total waste utilized refers to the waste diverted from landfill (recycled/composted/reused)

B. Performance of the Clusters



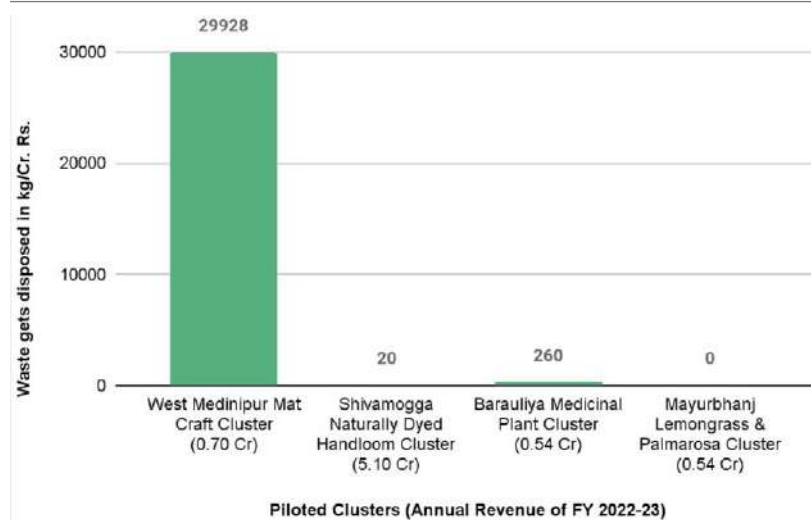
	 Net quantity of waste generated per crore of revenue	 Annual revenue (FY: 2022-23)
Cluster 1		
West Medinipur Mat Craft Cluster	29,928 kg	Rs. 0.70 crore
Cluster 2		
Shivamogga Naturally Dyed Handloom Cluster	20 kg	Rs. 5.10 crore
Cluster 3		
Barauliya Medicinal Plant Cluster	260 kg	Rs. 0.54 crore
Cluster 4		
Mayurbhanj Lemongrass & Palmarosa Cluster	0 kg	Rs. 0.54 crore

Figure 16: Performance of the clusters for Indicator 3 under Environmental Sustainability



C. Interpretation & Findings

ANALYSIS: The Mat Craft Cluster at West Medinipur, West Bengal registers the highest net waste generation at 29,928 kgs per crore of revenue. The Medicinal Plant Cluster at Barauliya, UP and the Natural Dyed Handloom Cluster at Shivamogga, Karnataka demonstrate low net waste generation per crore of revenue at 260 kgs and 20 kgs respectively. The Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha does not generate any net waste.

OBSERVATION: Similar to the previous indicator, the net waste generated per crore of revenue is heavily dependent can be masked by the revenue figures and the material intensity of the production process, though the performance can be improved with recycling and reuse. This can be measured through material efficiency as given under Indicator 3.1

Indicator 3.1 - Material efficiency as a % of output to input

This indicator evaluates how much a cluster gets out of its raw materials to promote resource optimization and subsequent cost reductions. Given that the material efficiency depends upon the nature of the production process, the clusters are divided into categories of extractive (extracting from the raw material such as in case of the Mayurbhanj and Barauliya clusters) and value added (non-extractive processes, such as in case of the Shivamogga and West Medinipur clusters) for analysis. For value-added clusters, highest the material efficiency, better the performance. For extractive clusters, performance can only be checked by comparing it with that of similar production processes. A benchmark for masala manufacturing and oil distillery is taken for comparison with the material efficiency of Barauliya and Mayurbhanj clusters respectively.

A. Formula for Calculation and the Data Points

$$\text{Material efficiency factor} = \frac{\text{Total output of finished products in kg}}{\text{Total input of raw materials in kg}}$$

Table 14: Data points and sources for Indicator 3.3 under Environmental Sustainability

S.No	Data Points	Source
1	Quantity of finished products	Product Register
2	Quantity of raw materials	Process matrix

B. Performance of the Clusters



Material Efficiency

Cluster 1	
West Medinipur Mat Craft Cluster	73%
Cluster 2	
Shivamogga Naturally Dyed Handloom Cluster	57%
Cluster 3	
Barauliya Medicinal Plant Cluster	64%
Cluster 4	
Mayurbhanj Lemongrass & Palmarosa Cluster	1%

Figure 18: Material Efficiency of the clusters - Value addition based

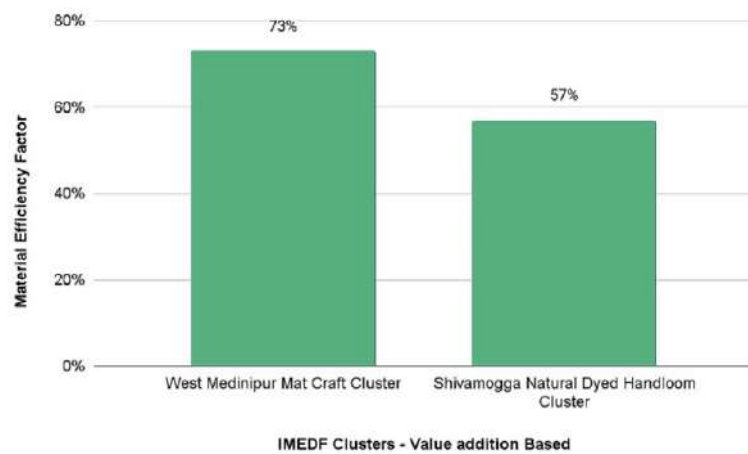
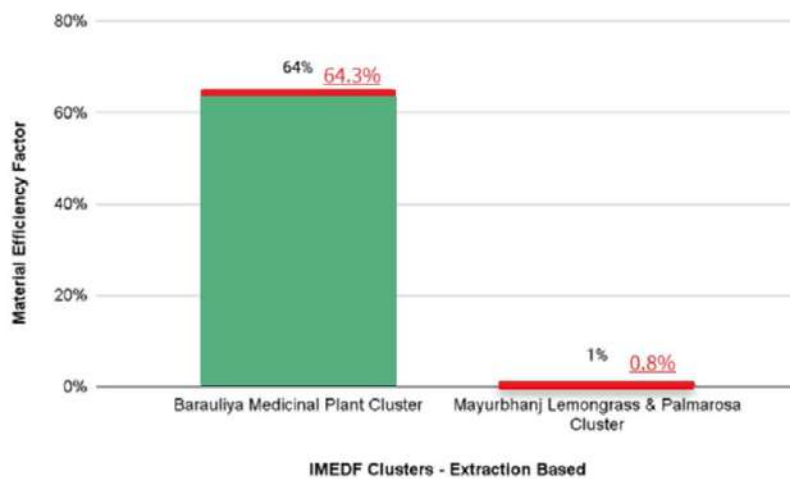


Figure 19: Material Efficiency of the clusters - Extraction based



The Mat Craft cluster at West Medinipur, West Bengal and the Natural Dyed Handloom Cluster at Shivamogga, Karnataka register material efficiency of 73% and 57% respectively. This could be improved for the latter. In the case of the extractive clusters, the material efficiencies are closer to the averages – even though the Mayurbhanj cluster performs slightly better and Barauliya cluster lags.

Indicator 4- Renewable energy (solar) as a % of the total energy consumption

This indicator indicates the proportion of clean, renewable energy sources like solar power in the overall energy mix. It serves as a crucial metric for the clusters looking to transition to greener energy sources for reducing carbon emissions and increasing energy independence. By monitoring and increasing the percentage of solar energy, these rural enterprise clusters can make significant strides towards a more sustainable and environmentally friendly energy portfolio.

A. Formula for Calculation and the Data Points

Formula:
$$\frac{\text{Total annual energy consumption from solar panel in kWh}}{\text{Total annual energy consumption by the cluster in kWh}} \times 100$$



Table 8: Data points and Sources for Indicator 4 under Environmental Sustainability

S.No	Data Points	Source
1	Actual Consumption from solar panels	Voluntary disclosure
2	Direct sunlight hours	Secondary research
3	No. of working days of cluster	Voluntary disclosure
4	Annual revenue	Financial statements

B. Performance of the Clusters


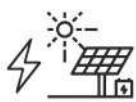
	 Total energy consumption	 Percentage of renewable energy (solar)
Cluster 1		
West Medinipur Mat Craft Cluster	23,065 kWh	$(11,775.15 \text{ kWh} / 23,065 \text{ kWh}) * 100\% \approx 51.03\%$
Cluster 2		
Shivamogga Naturally Dyed Handloom Cluster	22,785 kWh	$(16,832.90 \text{ kWh} / 22,785 \text{ kWh}) * 100\% \approx 73.96\%$
Cluster 3		
Barauliya Medicinal Plant Cluster	9,900 kWh	0% (no solar energy used)
Cluster 4		
Mayurbhanj Lemongrass & Palmarosa Cluster	19170 kWh	$(19170 \text{ kWh} / 19170 \text{ kWh}) * 100\% \approx 100\%$

Table 9: Source of energy for the clusters

Piloted Clusters (Annual Energy Consumption)	External Sources (State Grid)	Solar Panel	DG Set
West Medinipur (23,065 kWh)	35%	51%	14%
Shivamogga (22,785 kWh)	26%	74%	0%
Barauliya (9,900 kWh)	36%	0%	64%
Mayurbhanj (34,493 kWh)	0%	100%	0%

C. Interpretation & Findings

ANALYSIS: The Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha relies entirely on solar power to run its oil distillation units. This is followed by the Natural Dyed Handloom Cluster in Shivamogga, Karnataka, that sources 74% of its annual energy consumption from the solar panels and the Mat Craft Cluster in West Medinipur, West Bengal at 51% of energy from solar panels. The Medicinal Plant Cluster in Barauliya, Uttar Pradesh, doesn't use solar panels due to cost and capacity issues.

OBSERVATION: There are two extreme cases of the Medicinal Plant Cluster at Barauliya, Uttar Pradesh and the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha. The former is the only one with no amount of power being sourced through solar panels due to issues related to costing and capacity. The latter, on the other hand, by nature of operations requires very little electricity since the boilers for oil distilling are run on dried grass. All of this is sourced from solar panels. This also demonstrates a massive unspent solar energy, which could be directed towards alternative uses, such as for running machines for bottling and packaging the oil in-house.

RECOMMENDATIONS: The Lemongrass and Palmarosa Cluster should assess surplus solar energy for potential diversification. Continuous optimization of solar energy and exploration of alternative sources is recommended for all clusters.



Solar panels set up in the Common Facility Centre of Naturally Dyed Handloom Cluster in Shivamogga, Karnataka

Indicator 5- Percentage of water recycled/reused viz total consumption

This indicator showcases the effectiveness of water conservation and recycling efforts. It offers valuable insights for clusters to optimize their water management practices, reduce environmental impact, and ensure long-term water resource sustainability. By monitoring and increasing the percentage of recycled/reused water, these clusters can make significant progress towards responsible water stewardship and resilience in the face of water scarcity challenges.

A. Formula for Calculation and the Data Points

Formula:
$$\frac{\text{Total quantity of water recycled or reused in a year in kl}}{\text{Total annual water consumption in kl}} \times 100$$

Table 10: Data points and Sources for Indicator 5 under Environmental Sustainability

S.No	Data Points	Source
1	Quantity of water consumption	Voluntary disclosure
2	Quantity of water recycled	Voluntary disclosure

B. Performance of the Clusters



	 Annual water consumption	 Percentage of water recycled/reused
Cluster 1		
West Medinipur Mat Craft Cluster	520 kl	$(17 \text{ kl} / 520 \text{ kl}) \times 100\% \approx 3.27\%$
Cluster 2		
Shivamogga Naturally Dyed Handloom Cluster	3000 kl	0%
Cluster 3		
Barauliya Medicinal Plant Cluster	28 kl	0%
Cluster 4		
Mayurbhanj Lemongrass & Palmarosa Cluster	1825 kl	0%

Table 11: Water consumption by the clusters

Piloted Clusters (Source: Groundwater)	Daily consumption in kl (Net Water Consumption = Total Water Consumption - Water Reused)	Annual Consumption (in kl)	Percentage of water getting recycled against annual consumption
West Medinipur	$3 - 0.5 = 2.5$	520	17%
Shivamogga	$10 - 0 = 10$	3000	0%
Barauliya	$0.1 - 0 = 0.1$	28	0%
Mayurbhanj	$5 - 0 = 5$	1825	0%

C. Interpretation and Findings

ANALYSIS: The Mat Craft Cluster in West Medinipur, West Bengal, is the only cluster which actively recycles and reuses water at 17%. The other three clusters are not recycling water at the moment.

OBSERVATION: About 17% of the annual water consumption, primarily at the mat dyeing stage of the operations, is filtered for removing the natural dyes and chemical catalysts and is reused in the same process a number of times after which, it is filtered one last time and disposed in the field. The Natural Dyed Handloom Cluster at Shivamogga, Karnataka treats the water used in the cloth dyeing processes but instead of reusing it in operations, directs it towards watering and cleaning purposes. This offers potential for the cluster to cut on the total annual water consumption and save on cost by redirecting the treated wastewater, partially or wholly, back in the manufacturing process.

The Medicinal Plant Cluster at Barauliya, Uttar Pradesh does not have any mechanism for treating and reusing the wastewater, all of which currently gets disposed into the field. The case of Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha is the same. Interview with the implementation agency however revealed the interest in reusing the wastewater from the distillation processes for creating by-products. The water that gets separated from the oil at the final stage of the distillation retains the smell and properties of lemongrass and palmarosa and can be used for producing phenyl.

RECOMMENDATIONS: The amount of water treated and reused in the manufacturing process needs to be regularly monitored and the water registers maintained. Concrete data over a continued period will enable identifying trends of water usage and areas of optimization.

Indicator 6- Amount of waste utilized (reused & composted) per ton of output

This indicator demonstrates the effectiveness of waste reduction and recycling initiatives in relation to production output. Increasing waste diversion is not only environmentally friendly but also cost effective as it reduces the total consumption of raw materials due to recycling.

A. Formula for Calculation and the Data Points

Formula:
$$\frac{\text{Total annual waste diverted from the landfill in kg}}{\text{Total waste generated annually in kg}} \times 100$$



Table 12: Data points and sources for Indicator 6 under Environmental Sustainability

S.No	Data Points	Source
1	Quantity of waste disposed	Voluntary disclosure
2	Quantity of waste recycled/reused	Voluntary disclosure
3	Quantity of waste composted	Voluntary disclosure

B. Performance of the Clusters






	 Annual waste generated	 Percentage of waste disposed	 Percentage of waste reused	 Percentage of waste composted	 Waste diverted from landfill = (Percentage reused + Percentage composted)
Cluster 1					
West Medinipur Mat Craft Cluster	27,040 kg	77%	0%	23%	0% + 23% = 23% (6,239.2 kg per ton of output)
Cluster 2					
Shivamogga Naturally Dyed Handloom Cluster	500 kg	20%	80%	0%	80% + 0% = 80% (400 kg per ton of output)
Cluster 3					
Barauliya Medicinal Plant Cluster	1,040 kg	25%	25%	50%	25% + 50% = 75% (780 kg per ton of output)
Cluster 4					
Mayurbhanj Lemongrass & Palmarosa Cluster	905 kg	0%	100%	0%	100% + 0% = 100% (kg per ton of output)

Table 13: Waste composition of the clusters

Piloted Clusters	Disposed	Reused	Composted
West Medinipur (27040 kg)	77%	0%	23%
Shivamogga (500 kg)	20%	80%	0%
Barauliya (1040 kg)	25%	25%	50%
Mayurbhanj (905 kg)	0%	100%	0%

C. Interpretation and Findings

ANALYSIS: The Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha uses the dried grass as fuel for running boilers, thus, achieving a 100% waste recycling rate. This is followed by the Natural Dyed Handloom Cluster at Shivamogga, Karnataka at 80% of recycling and the Medicinal Plant Cluster at Barauliya, UP at 25% of recycling. The Mat Craft Cluster lags at 0% waste recycled/reused, even though it composts 23% of its waste.

OBSERVATIONS: The Mat Craft Cluster at West Medinipur, West composts 23% of its total waste but doesn't reuse or recycle any. The case of the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha is a unique case, disposing no waste per crore of revenue. All grass after extraction of oil is dried and used as a fuel to run boilers.

RECOMMENDATIONS: Considering that the waste is in the form of dyed mat and cloth cuttings, Mat Craft Cluster at West Medinipur, West could use it for producing briquettes. Cross-exchange of recycling ideas from Shivamogga cluster may help. In case of the Lemongrass and Palmarosa Cluster, a follow-up assessment on the carbon emissions due to burning of the dried grass and the trade off with benefits of waste management may be commissioned to get a clear visibility of its impact on this indicator. In case the practice of burning grass for running steamers cannot be stopped, the dried grass could be converted to low-carbon fuel for reducing emissions.



Quilts made from the cloth-cuttings at the Naturally Dyed Handloom Cluster in Shivamogga, Karnataka.

LOCAL ECONOMIC DISTRIBUTION

There are a total of six indicators capturing local economic distribution for the rural enterprise clusters across the attributes of income enhancement, localization and job creation. These are explained under:-

Indicator 1- Percentage increase in monthly average income of SPV members before and after SFURTI

This indicator captures the extent to which the income of artisans and farmers engaged in the assessed rural enterprise clusters has increased vis-à-vis their income levels before joining the cluster. In this sense, this indicator is a direct factor of the livelihood impact.

A. Formula for Calculation and the Data Points

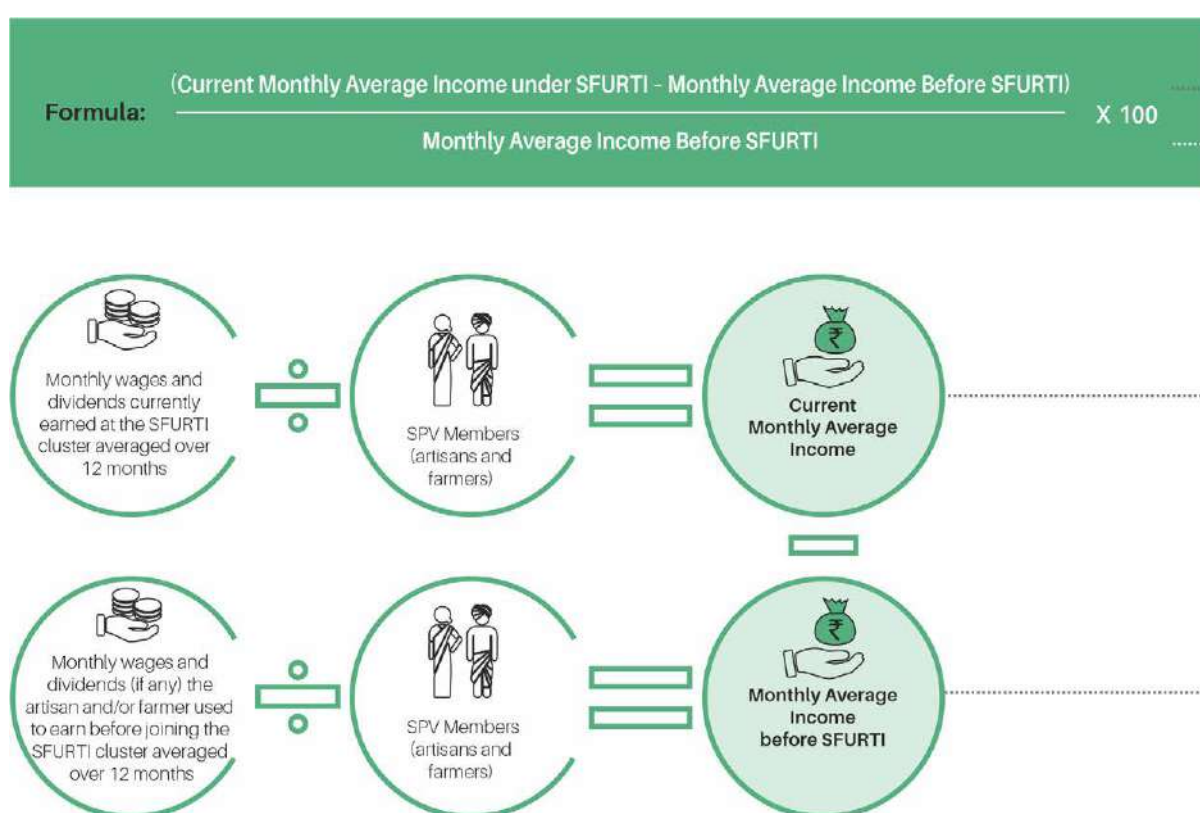


Table 15: Data Points and Sources for Indicator 1 under Local Economic Distribution

S.No	Data Points	Source
1	Currently Monthly Income	Field Survey
2	Monthly Income before SFURTI	Field Survey

B. Performance of the Clusters




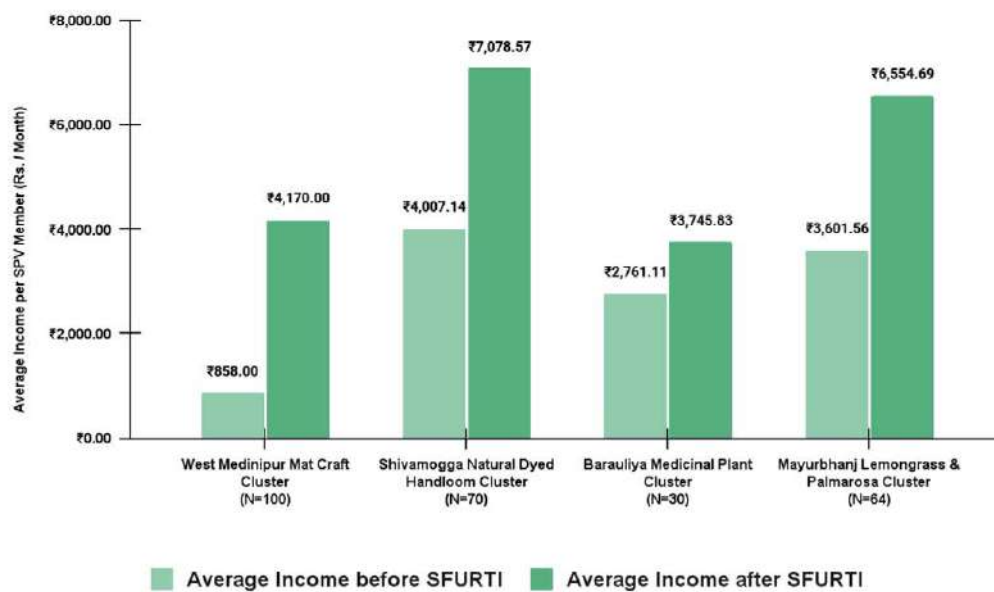
	 Percentage Increase in Income of SPV Members	 Monthly Average Income of the SPV Members before SFURTI	 Monthly Average Income of the SPV Members after SFURTI
Cluster 1			
West Medinipur Mat Craft Cluster	386%	~ Rs. 858	~ Rs. 4,170
Cluster 2			
Shivamogga Naturally Dyed Handloom Cluster	76.65%	~ Rs. 4,008	~ Rs. 7,079
Cluster 3			
Barauliya Medicinal Plant Cluster	35.66%	~ Rs. 2,761	~ Rs. 3,746
Cluster 4			
Mayurbhanj Lemongrass & Palmarosa Cluster	82%	~ Rs. 3,602	~ Rs. 6,555

Figure 20: Performance of the clusters for Indicator 1 under Local Economic Distribution



C. Interpretation & Findings

ANALYSIS: The West Medinipur Cluster demonstrates the highest change in monthly average income before and after SFURTI at 386%. Mayurbhanj registers the second highest increase at 82%, followed by Shivamogga at ~77% and Barauliya at ~36%.

OBSERVATIONS: In the Mat Craft Cluster at West Medinipur, West Bengal, about 86% of the women artisans were unemployed and had no income before. The remaining 14% were earning a marginal amount through menial and seasonal employment. About 58% of women engaged in the Natural Dyed Handloom Cluster at Shivamogga, Karnataka had no earnings before. In contrast, majority of those engaged in the agro-based clusters of Medicinal Plant at Barauliya, Uttar Pradesh and Lemongrass and Palmarosa at Mayurbhanj, Odisha were existing farmers. Across all four clusters, about 31% of the sample worked as artisans before and witnessed an average of 64% increase in income after engaging with the cluster. About 29% were housewives, and 14% were agricultural laborers. The other occupations that found mention in the surveys were daily wage and factory labourer, fishermen, school helper etc.



Woman artisan with the loom machine provided by the Mat Craft Cluster in West Medinipur, West Bengal for weaving products out of dyed babui grass. The cluster provides training to the women artisans on these machines at the Common Facility Centre (CFC). Those who complete the training are provided with looms at their homes to be able to engage in value addition at their own pace and comfort.

Indicator 2- Percentage difference in monthly average income of SPV members under SFURTI vis-à-vis alternative livelihoods

This indicator compares the income generation of the artisans and farmers under SFURTI clusters with other livelihood options they may have availed had they not been engaged with the cluster. A positive difference showcases a comparative advantage of engagement with SFURTI clusters for income enhancement. A negative difference implies that the artisans and farmers would be better off undertaking alternative livelihood options. This indicator is critical for the enterprise clusters and in effect, for the policymakers and investors, to identify the efficacy of setting up these clusters as livelihood engines.

A. Formula for Calculation and the Data Points

Formula:
$$\frac{\text{Current Monthly Average Income under SFURTI} - \text{Monthly Average Income from Alternative Livelihoods}}{\text{Monthly Average Income from Alternative Livelihoods}} \times 100$$

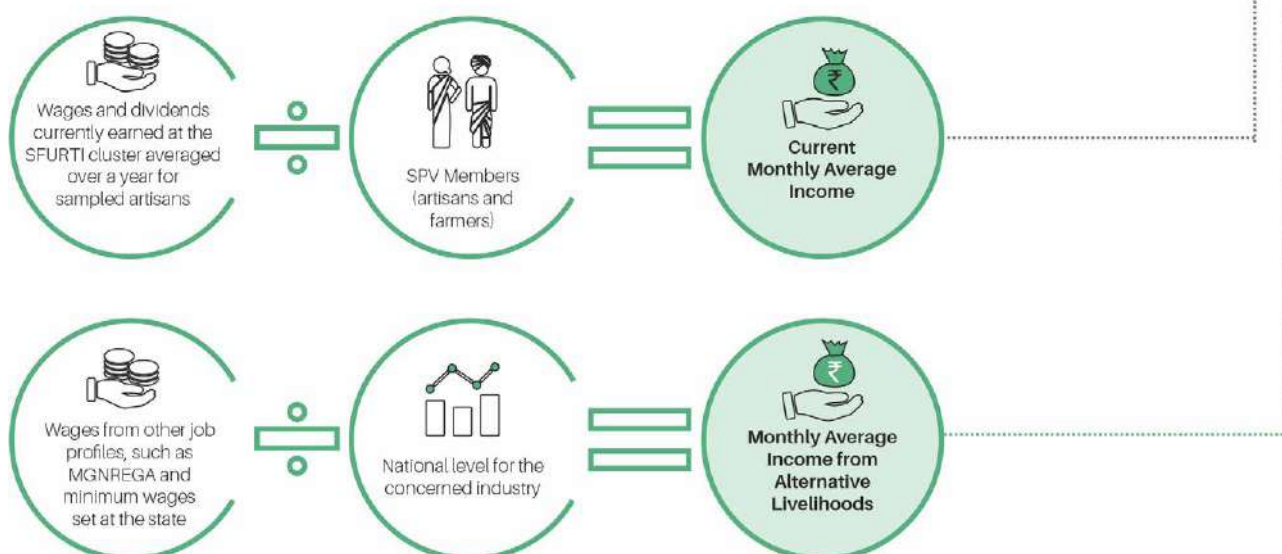


Table 15: Data Points and Sources for Indicator 1 under Local Economic Distribution

S.No	Data Points	Source
1	Currently Monthly Income of Artisans & Farmers	Field Survey
2	Monthly Average Income from Alternative Livelihoods	Secondary Research

B. Performance of the Clusters

Benchmarking: Since the wage rates differ by occupation, type of area (rural/urban) and State, for statistical coherence, this investigation adopts for comparison the average wage earning (in Rs.) of casual workers in works other than public work, as defined for rural area (April to June 2022) for respective states. This is calculated for 20 days of work a month. Similar inference can be drawn by comparing SFURTI earnings by artisans and farmers by different indices such as Living Wage, Living Income, Natural Rural Poverty Line, World Bank Poverty Line etc.

*For casual workers in work other than public works, the before data pertains to year 2020.

Cluster 1 - West Medinipur Mat Craft Cluster:

Income Comparison	SFURTI	Casual Workers in work other than Public Works
Monthly Average Income before	~ Rs. 858	~ Rs. 4,280
Monthly Average Income after	~ Rs. 4,170	~ Rs. 5,610
% Growth in Income	386%	~ 31%
Percentage Difference in Income of SPV Members viz Alternative Livelihood ~ -26%		

Cluster 2 - Shivamogga Naturally Dyed Handloom Cluster:

Income Comparison	SFURTI	Casual Workers in work other than Public Works
Monthly Average Income before	~ Rs. 4,008	~ Rs. 4,750
Monthly Average Income after	~ Rs. 7,079	~ Rs. 7,000
% Growth in Income	~ 77%	~ 47%
Percentage Difference in Income of SPV Members viz Alternative Livelihood ~ 1%		

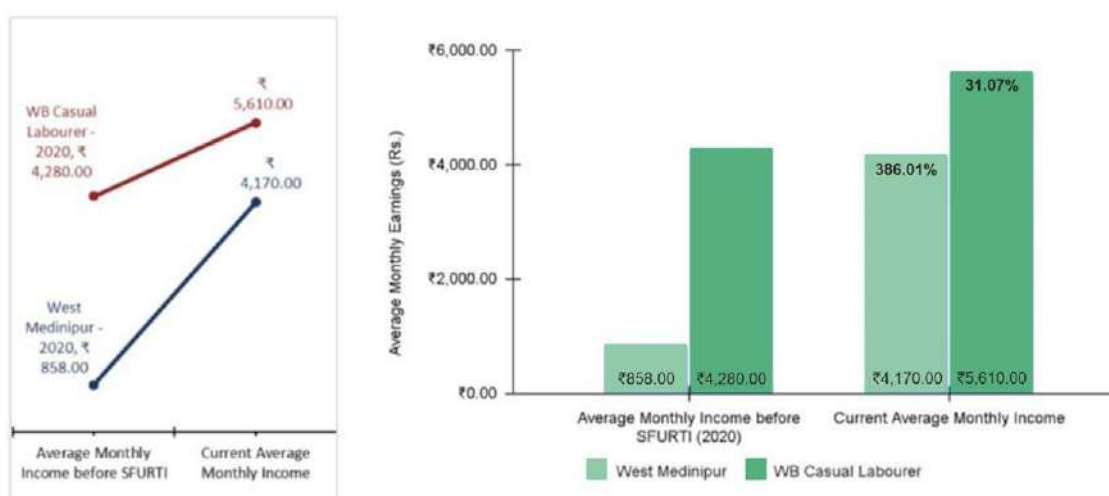
Cluster 3 - Barauliya Medicinal Plant Cluster:

Income Comparison	SFURTI	Casual Workers in work other than Public Works
Monthly Average Income before	~ Rs. 2,761	~ Rs. 5,510
Monthly Average Income after	~ Rs. 3,746	~ Rs. 6,410
% Growth in Income	~ 36%	~ 16%
Percentage Difference in Income of SPV Members viz Alternative Livelihood ~ -42%		

Cluster 4 - Mayurbhanj Lemongrass & Palmarosa Cluster:

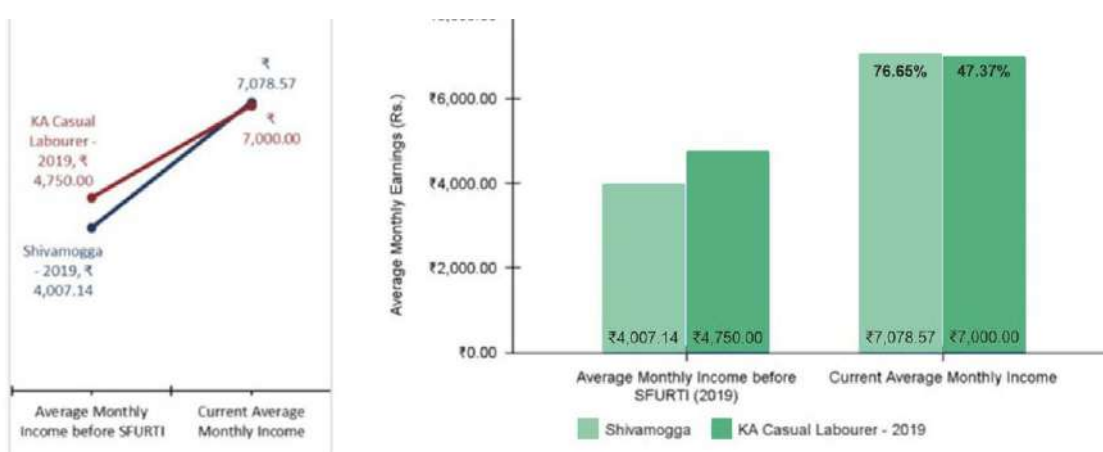
Income Comparison	SFURTI	Casual Workers in work other than Public Works
Monthly Average Income before	~ Rs. 3,602	~ Rs. 5,610
Monthly Average Income after	~ Rs. 6,555	~ Rs. 5,700
% Growth in Income	~ 82%	~ 2%
Percentage Difference in Income of SPV Members viz Alternative Livelihood ~ 15%		

Figure 21: Income and Income Growth Comparison of SFURTI viz Alternative Livelihoods for Mat Craft Cluster in West Bengal



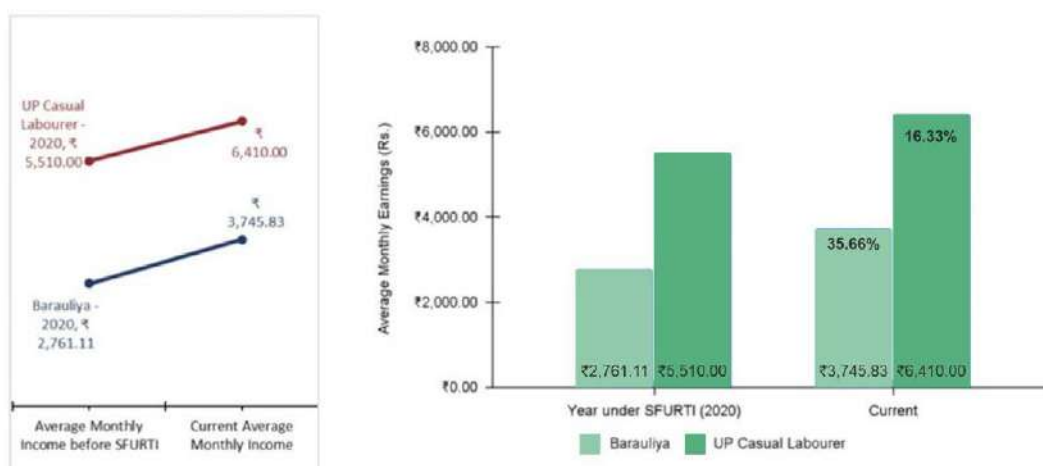
*Casual Labourer data taken from Average Wage Earning received by Casual Labourers in works other than Public Works Rural, for 20 days/month of work; Periodic Labour Force Survey, West Bengal, 2020, 2022

Figure 22: Income and Income Growth Comparison of SFURTI viz Alternative Livelihoods for Natural Dyed Handloom Cluster at Shivamogga, Karnataka



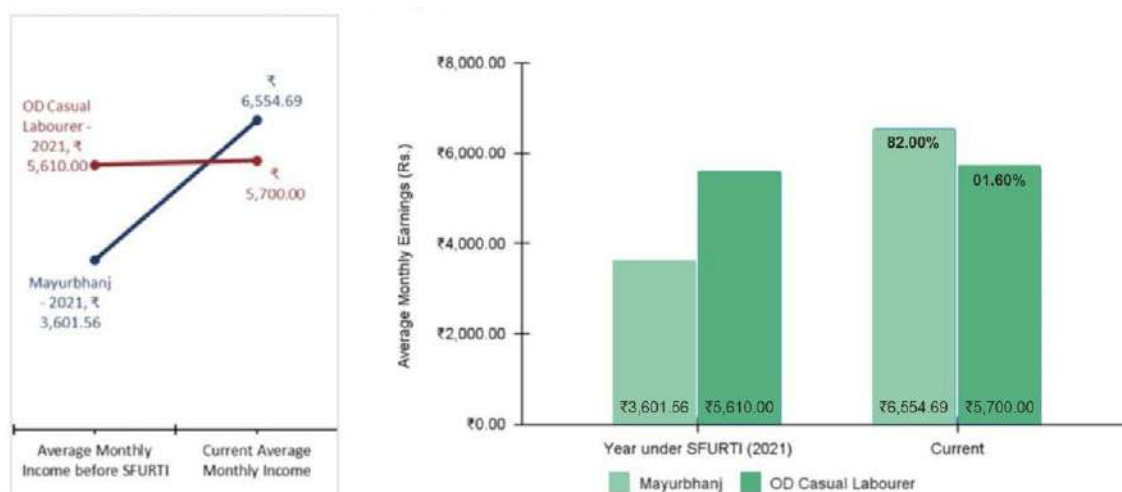
*Casual Labourer data taken from Average Wage Earning received by Casual Labourers in works other than Public Works Rural, for 20 days/month of work; Periodic Labour Force Survey, Karnataka, 2019, 2022

Figure 23: Income and Income Growth Comparison of SFURTI viz Alternative Livelihoods for Medicinal Plant Cluster at Barauliya, Uttar Pradesh



*Casual Labourer data taken from Average Wage Earning received by Casual Labourers in works other than Public Works Rural, for 20 days/month of work; Periodic Labour Force Survey, Uttar Pradesh, 2020, 2022

Figure 24: Income and Income Growth Comparison of SFURTI viz Alternative Livelihoods for Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha



*Casual Labourer data taken from Average Wage Earning received by Casual Labourers in works other than Public Works Rural, for 20 days/month of work; Periodic Labour Force Survey, Odisha, 2021, 2022

C. Interpretation and Findings

ANALYSIS: Farmers engaged in the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha are earning 15% more per month under SFURTI than the benchmarked earning under alternative livelihood. This moderates out for the Natural Dyed Handloom Cluster at Shivamogga, Karnataka at 1%. The Mat Craft Cluster at West Medinipur, West Bengal and the Medicinal Plant Cluster, on the other hand, demonstrates a negative of 26% and 42% respectively in the income comparison.

OBSERVATIONS: In the case of all clusters, the income growth before and after SFURTI outpaces the growth in defined average earnings of casual workers. This is 386% against 31% in case of West Medinipur, 77% against 47% in Shivamogga, 36% against 16% in Barauliya and 82% against 2% in Mayurbhanj. This implies that while the income under SFURTI clusters may yet not have reached the level of defined average earnings of casual workers in some cases, it shows a progressive trend and could soon compare to the benchmark.

Indicator 3 – Local Procurement of Inputs (except machinery and wages)

This indicator is one of the three critical indicators on local contribution to the economy. It captures the extent to which the cluster augments local demand of raw materials, except machinery and human resources, and thus, feeds into the local economy. A higher contribution to the local economy is paramount to creating resilient micro economies that sustain livelihoods.

A. Formula for Calculation and the Data Points

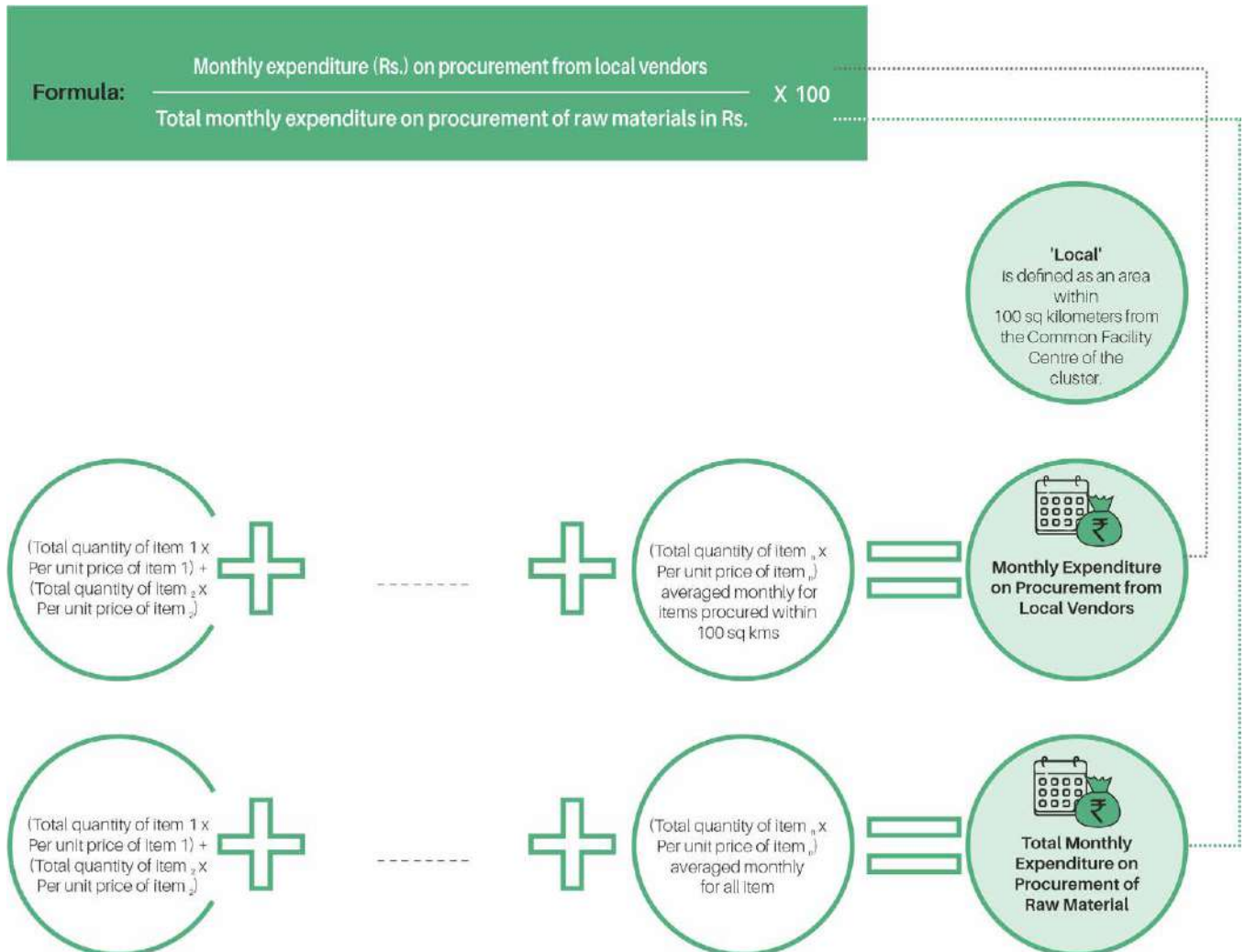


Table 17: Data Points and Sources for Indicator 3 under Local Economic Distribution

S.No	Data Points	Source
1	Total quantity (kg) of raw material purchased per item	Voluntary Disclosure
2	Per unit (kg) price of raw material per item	Voluntary Disclosure
3	Distance of the location of procurement from the CFC	Voluntary Disclosure

B. Performance of the Clusters




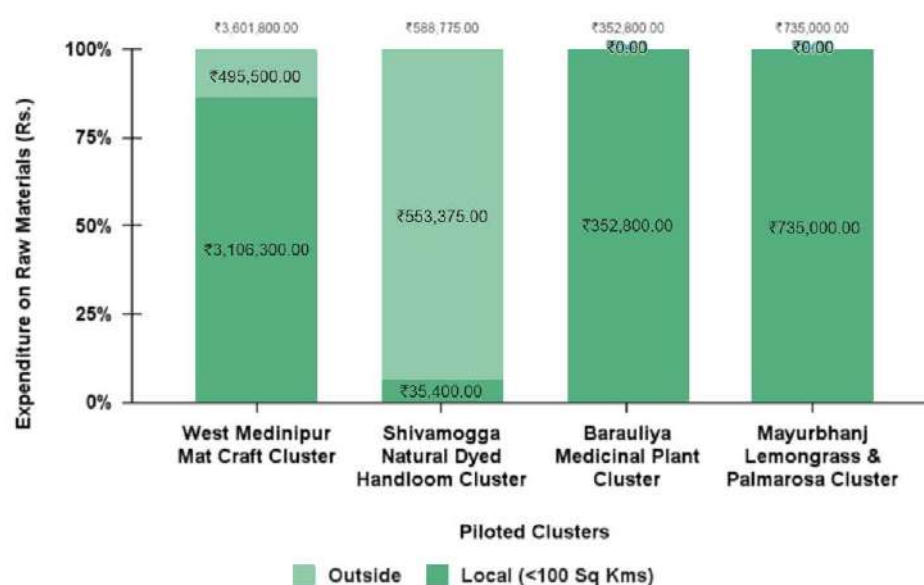
	 Percentage of Local Procurement of Inputs	 Total monthly expenditure on procurement of raw material	 Monthly Expenditure on procurement from local vendors
Cluster 1			
West Medinipur Mat Craft Cluster	86.24%	~ Rs. 36,01,800	~ Rs. 31,06,300
Cluster 2			
Shivamogga Naturally Dyed Handloom Cluster	6%	~ Rs. 5,88,775	~ Rs. 35,400
Cluster 3			
Barauliya Medicinal Plant Cluster	100%	~ Rs. 3,52,800	~ Rs. 3,52,800
Cluster 4			
Mayurbhanj Lemongrass & Palmarosa Cluster	100%	~ Rs. 7,35,000	~ Rs. 735,000

Figure 25: Performance of the clusters for Indicator 3 under Local Economic Distribution



C. Interpretation and Findings

ANALYSIS: The Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha and Medicinal Plant Cluster at Barauliya, Uttar Pradesh have a 100% local procurement rate, followed by the Mat Craft Cluster at West Medinipur, West Bengal at 87%. The Natural Dyed Handloom Cluster at Shivamogga, Karnataka has the lowest local procurement at 6%.

OBSERVATION: Agro-based clusters are handholding farmers to grow the grass/agricultural produce locally, thereby their 100% local procurement rate. The Mat Craft Cluster at West Medinipur, West Bengal sources the *Madurkathi* grass – the main raw material – locally. Other supplies, about 13% of the procurement, are sourced from markets in Kolkata located at a distance of 105 km from the cluster. In contrast, 94% of the raw material of the Natural Dyed Handloom Cluster at Shivamogga, Karnataka comes from Bangalore with one or two products (dyes) sourced from Chennai. These raw materials are at present not locally available. Depending upon the feasibility, local farmers could be encouraged to grow plants to retrieve dyes being currently sourced from outside.



Women artisan working in Natural Dyed Handloom Cluster, Shivamogga, Karnataka

Indicator 4 –Wage Expenditure on Local Artisans and Farmers

This indicator captures the percentage of the total wages spent on local artisans and farmers vis-à-vis migrants and becomes highly crucial in context of the rural enterprise clusters being perceived as agents of meaningfully employing local communities into productive occupations. Each cluster should strive to achieve a high performance on this indicator as a measure of their impact on augmenting local livelihoods.

A. Formula for Calculation and the Data Points

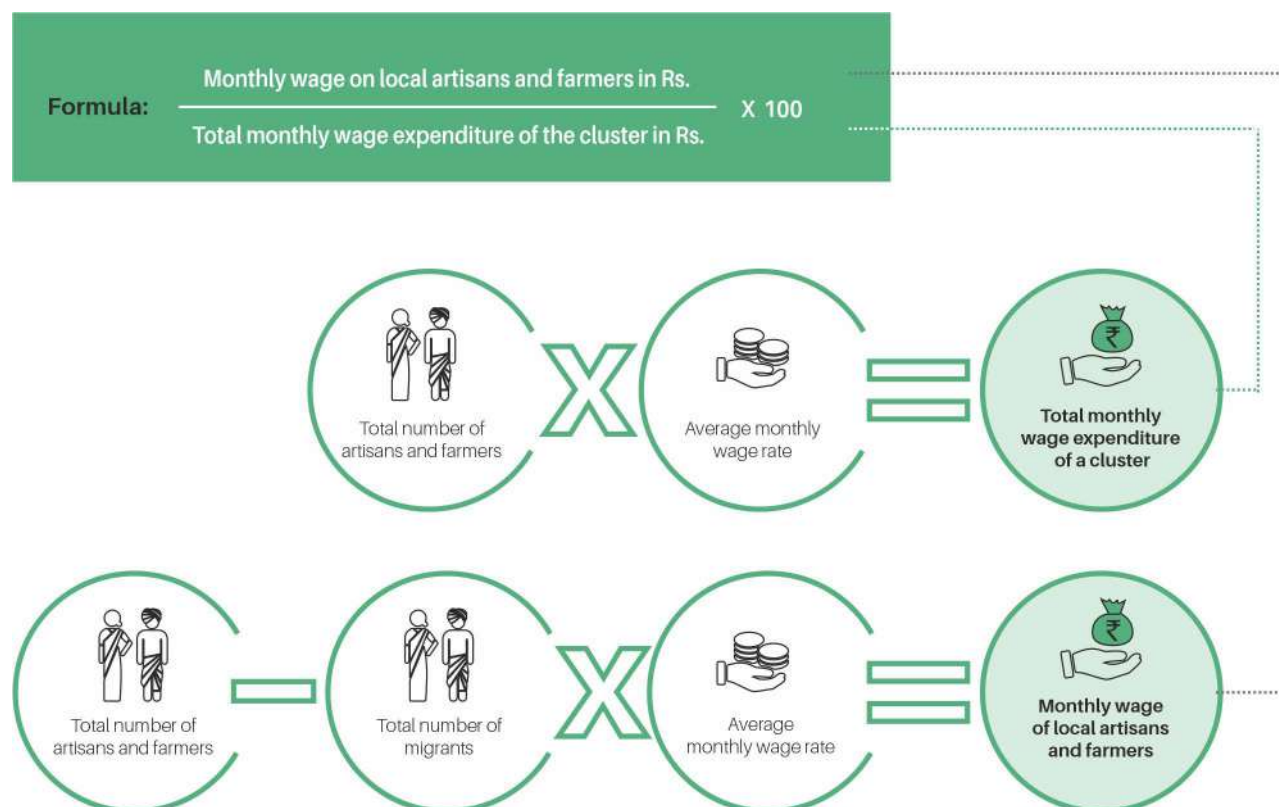


Table 18: Data Points and Sources for Indicator 4 under Local Economic Distribution

S.No	Data Points	Source
1	Total number of artisans and farmers at cluster	Voluntary Disclosure
2	Total number of migrants	Voluntary Disclosure
	Wage rate per worker	Voluntary Disclosure

B. Performance of the Clusters




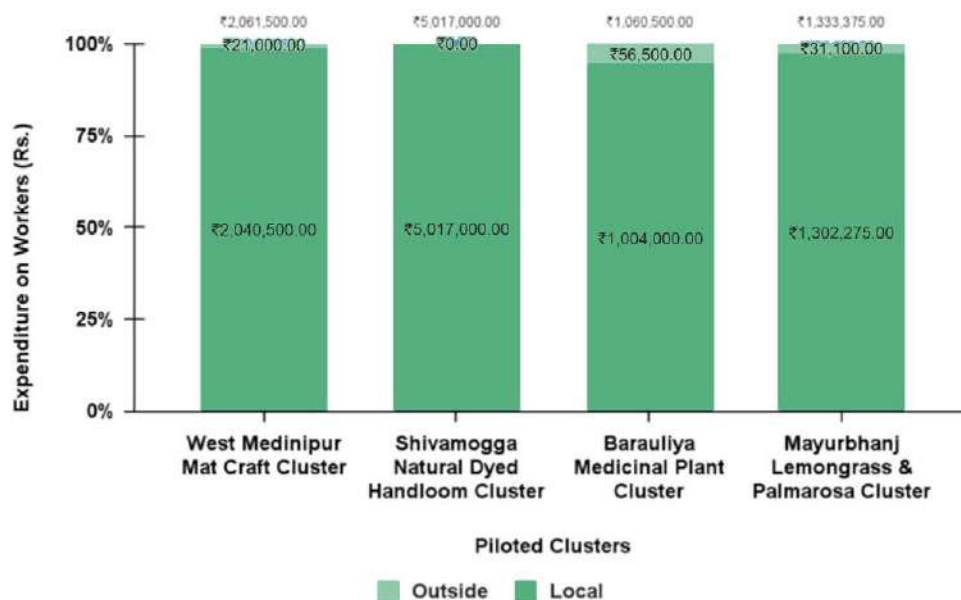
	 Percentage of Wage Expenditure on Local Artisans and Farmers	 Total monthly wage expenditure	 Monthly wage expenditure on local artisans and farmers
Cluster 1			
West Medinipur Mat Craft Cluster	~ 99%	~ Rs. 20,61,500	~ Rs. 20,40,500
Cluster 2			
Shivamogga Naturally Dyed Handloom Cluster	100%	~ Rs. 50,17,000	~ Rs. 50,17,000
Cluster 3			
Barauliya Medicinal Plant Cluster	~ 95%	~ Rs. 10,60,500	~ Rs. 10,04,000
Cluster 4			
Mayurbhanj Lemongrass & Palmarosa Cluster	~ 98%	~ Rs. 13,33,375	~ Rs. 13,02,275

Figure 26: Performance of the clusters for Indicator 4 under Local Economic Distribution



C. Interpretation and Findings

Almost all artisans and farmers engaged across the four SFURTI clusters belong to the local community – supporting livelihood generation and resilience building of the local economy.

Indicator 5 – Local Retention of Profits

As rural enterprise clusters, their profits should be distributed among the SPV members i.e., artisans and farmers as dividends on a proportionate basis. This indicator demonstrates whether and to what extent this distribution is happening at the cluster level.

A. Formula for Calculation and the Data Points



Table 19: Data Points and Sources for Indicator 5 under Local Economic Distribution

S.No	Data Points	Source
1	Annual Profits	Profit and Loss Statements
2	Total amount of dividends paid	Voluntary Disclosure, verified by annual financial report of the cluster

B. Performance of the Clusters




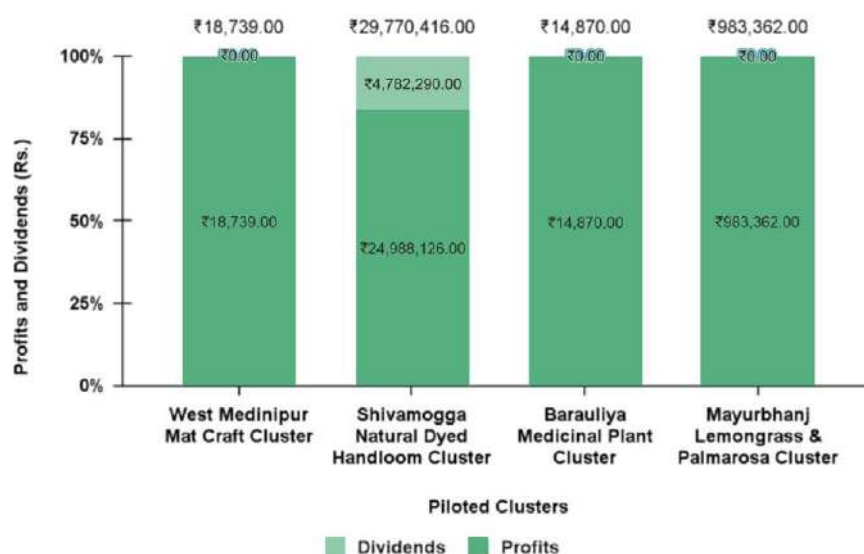
	 Percentage of dividends paid off out of total profits	 Total annual profit	 Total annual distribution of dividend
Cluster 1			
West Medinipur Mat Craft Cluster	0%	~ Rs. 18,739	Rs. 0
Cluster 2			
Shivamogga Naturally Dyed Handloom Cluster	~ 19%	~ Rs. 2,49,88,126	~ Rs. 47,82,290
Cluster 3			
Barauliya Medicinal Plant Cluster	0%	~ Rs. 14,870	Rs. 0
Cluster 4			
Mayurbhanj Lemongrass & Palmarosa Cluster	0%	~ Rs. 9,83,362	Rs. 0

Figure 27: Performance of the clusters for Indicator 5 under Local Economic Distribution



C. Interpretation and Findings

ANALYSIS: The Natural Dyed Handloom Cluster at Shivamogga, Karnataka is the only cluster distributing dividends among the artisans and farmers at 19%. This remains nil for the other clusters assessed under this study.

OBSERVATIONS: Against the Shivamogga cluster that has attained “maturity” and is attaining an annual profit of Rs. 2,97,70,416, the Mat Craft Cluster at West Medinipur, West Bengal, the Medicinal Plant Cluster at Barauliya, Uttar Pradesh and the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha have lower profit ranges and are currently feeding it back into operations for infrastructural and technological upgradation of the cluster.

Indicator 6 – Total Jobs Facilitated and Net Additional Job Created per Crore of SFURTI Investment

This indicator comprises two separate indices, one that captures the cumulative number of artisans and farmers facilitated with a job by the SFURTI cluster and the second that captures the number of **additional** artisans and farmers the cluster supported/supports **apart from those initially mobilized and accounted for in the Detailed Project Report** – both per crore of SFURTI investment. These indices shall aid capturing impact of the cluster on livelihood generation.

A. Formula for Calculation and the Data Points

Formula for
Total Jobs Facilitated per Crore of SFURTI Investment:

$$\frac{\text{Total Number of Jobs Facilitated in the 3 Years}}{\text{Total Investment under SFURTI Scheme}}$$



Formula for
Net Additional Jobs Created per Crore of SFURTI Investment:

$$\frac{\text{Net Additional Jobs Created}}{\text{Total Investment under SFURTI Scheme}}$$

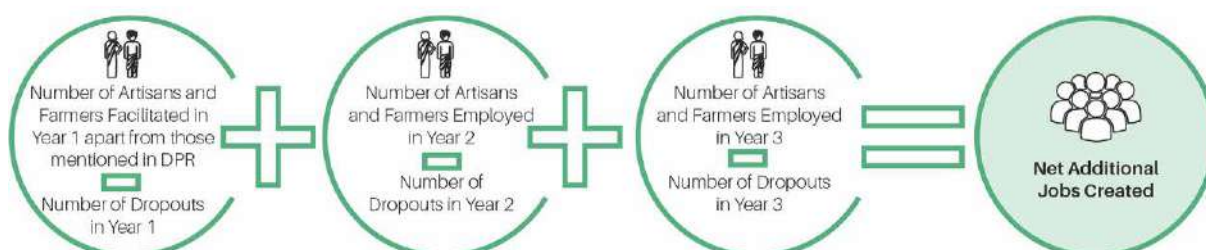


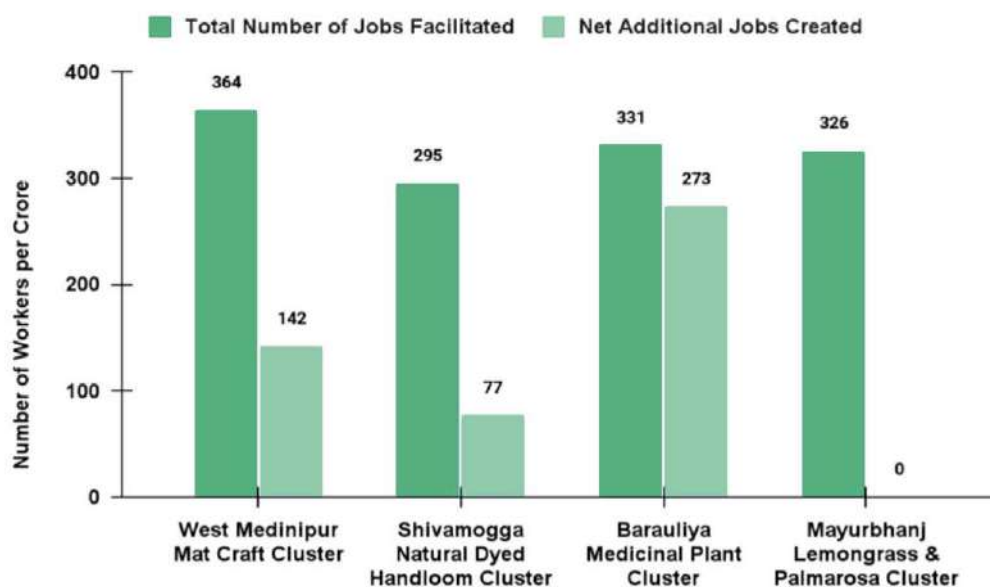
Table 20: Data Points and Sources for Indicator 6 under Local Economic Distribution

S.No	Data Points	Source
1	Base Number of Artisans and Farmers	Detailed Project Report (DPR)
2	Number of Artisans and Farmers facilitated each year	Voluntary Disclosure
	Number of Dropouts each year	Voluntary Disclosure
	Amount of Investment under SFURTI	Cluster Documents

B. Performance of the Clusters

	Base Number (A)	Net Additional Job Created (B)	Total Jobs Facilitated (A + B)	Investment under SFURTI (C) in Rs. Crore	Net Additional Jobs Created / Crore of SFURTI Investment (B / C)	Total Jobs Facilitated / Crore of SFURTI Investment ((A+B)/C)
Cluster 1						
West Medinipur Mat Craft Cluster	500	320	820	2.25	142	364
Cluster 2						
Shivamogga Naturally Dyed Handloom Cluster	400	142	542	1.84	77	295
Cluster 3						
Barauliya Medicinal Plant Cluster	130	614	744	2.25	274	331
Cluster 4						
Mayurbhanj Lemongrass & Palmarosa Cluster	1250	0	1250	3.83	0	326

Figure 28: Performance of the clusters for Indicator 6 under Local Economic Distribution



C. Interpretation and Findings

ANALYSIS: The Mat Craft Cluster at West Medinipur, West Bengal has facilitated a total of 364 jobs per crore unit of investment in the three years' span, followed by the Medicinal Plant Cluster at Barauliya, Uttar Pradesh, the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha and the Natural Dyed Handloom Cluster at Shivamogga, Karnataka with a total job facilitation per crore unit of investment of 331, 326 and 295 jobs respectively.

OBSERVATIONS: The Barauliya cluster has added the most artisans and farmers on the roll (excluding dropouts), in addition to those already accounted for in the DPR. The Mayurbhanj cluster is the only one with neither any additional job creation nor any dropouts – the number of artisans and farmers engaged in the cluster has remained the same at 1250.

SOCIAL EQUITY AND INCLUSION

The parameter of social equity and inclusion accounts for equal opportunity to vulnerable groups by age, caste and gender not only in terms of employment generation but also decision-making. Three attributes namely, Inclusive Employment, Inclusive Decision Making and Equitable Pay are identified under this parameter with the respective indicators of representation of vulnerable groups in SPV members, representation of vulnerable groups in Board members and pay parity/disparity by gender and caste for same profile of work in the cluster. These are explained below.

Indicator 1- Percentage of SPV members belonging to the vulnerable section of society

This indicator demonstrates the inclusivity of the cluster in its engagement of artisans and farmers by gender, caste and age. ¹⁰Rural enterprises, especially the enterprise clusters offer opportunity for women, youth and those belonging to the Scheduled Caste, Scheduled Tribe, and Other Backward Classes to tap into their energies and aspirations for earning livelihoods. This indicator, in that sense, is paramount to the social impact. The value on this indicator is individually represented in percentage terms.

A. Formula for Calculation and the Data Points¹¹

$$\text{Formula for Percentage of Vulnerable Groups by Gender among SPV Members: } \frac{\text{Number of Female SPV Members}}{\text{Total Number of SPV Members}} \times 100$$

$$\text{Formula for Percentage of Vulnerable Groups by Caste among SPV Members: } \frac{\text{Number of SC/ST/OBC SPV Members}}{\text{Total Number of SPV Members}} \times 100$$

$$\text{Formula for Percentage of Vulnerable Groups by Age among SPV Members: } \frac{\text{Number of Youth among SPV Members}}{\text{Total Number of SPV Members}} \times 100$$

¹⁰ As per the National Youth Policy of India, youth is an individual between 15 years and 29 years of age. This investigation adopts a range of 18 years to 29 years, barring for those underaged legally to work.

¹¹ The investigation acknowledges that the vulnerability by age, caste and gender is not exclusive i.e., an SPV member could be a woman and also recognized herself as a scheduled caste or youth. For scoring purposes, the report leverages survey data to identify those SPV members who are vulnerable in some way or the other (by sex, social category or age).

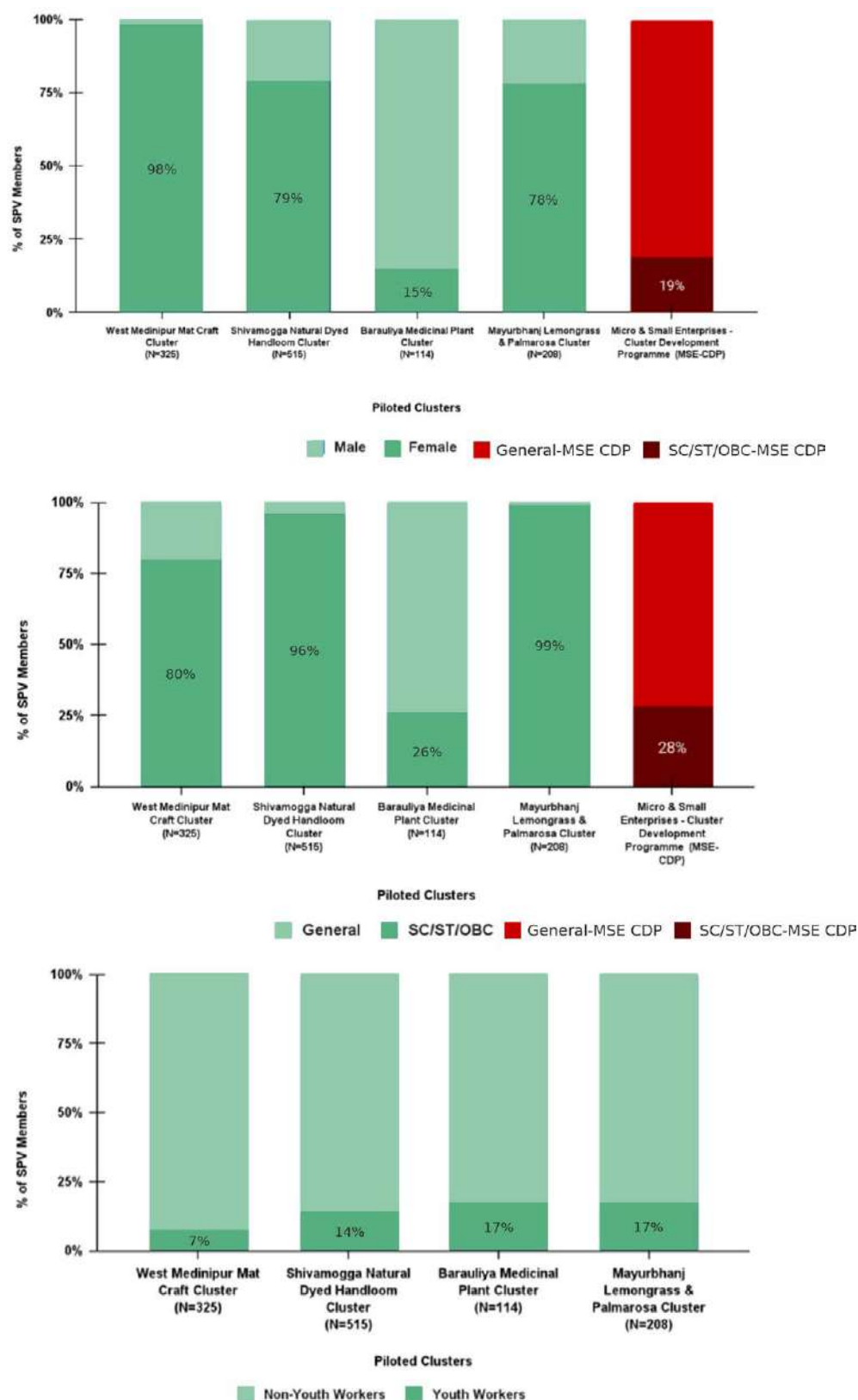
Table 21: Data Points and Sources for Indicator 1 under Social Equity & Inclusion

S.No	Data Points	Source
1	Total Number of SPV Members	Voluntary Disclosure, verified with Annual Report
2	Number of SPV members that recognized as women, youth or Scheduled Caste/ Scheduled Tribe/Other Backward Classes	Voluntary Disclosure

B. Performance of the Clusters

	Total SPV Members	Percentage of female SPV Members of total	Percentage of SPV Members belonging to SC/ST/OBC category of total	Percentage of SPV Members that qualify as youth of total
Cluster 1				
West Medinipur Mat Craft Cluster	325	98%	~ 80%	~7%
Cluster 2				
Shivamogga Naturally Dyed Handloom Cluster	515	~ 69%	~ 96%	~ 14%
Cluster 3				
Barauliya Medicinal Plant Cluster	114	~ 15%	~26%	~ 17%
Cluster 4				
Mayurbhanj Lemongrass & Palmarosa Cluster	208	~ 78%	~ 99%	~ 17%

Figure 29: Performance of the clusters for Indicator 1 under Social Equity & Inclusion



C. Interpretation and Findings

Women Representation: The Mat Craft Cluster at West Medinipur, West Bengal leads in case of women representation among the SPV members at 98%, closely followed by the Natural Dyed Handloom Cluster at Shivamogga, Karnataka at 79% and the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha at 78%. The Medicinal Plant Cluster at Barauliya is the only cluster with a low women participation ratio at 15%. The male artisans in case of Shivamogga are engaged in dyeing processes and in case of Mayurbhanj, in running the machines for oil distillation in addition to male farmers. These clusters fare extremely well in comparison to the women participation ratio of 15% under the Micro and Small Enterprises Cluster Development Programme (MSE-CDP), another initiative focused on rural enterprise clusters by the Ministry of MSME.

Representation by Caste: The Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha and the Mat Craft Cluster at West Medinipur, West Bengal fare well in terms of representation of SC/ST/OBC among SPV members at 99% and 80% respectively. This is because these are located at a tribal dominated area and the fishermen community belonging to Scheduled Caste respectively. The Natural Dyed Handloom Cluster at Shivamogga, Karnataka also demonstrates 96% inclusion by caste. The Medicinal Plant Cluster at Barauliya, Uttar Pradesh is again an outlier with the inclusion rate of only 26%.

In comparison to the caste inclusion under MSE-CDP, all clusters except Barauliya performs at the higher end on the indice.

Representation by Age: All four clusters demonstrate potential in terms of representation of youth among the SPV members with inclusion rate of 17% each for the Mayurbhanj and Barauliya clusters, 14% for Shivamogga cluster and 7% for West Medinipur. Further probing during field surveys revealed youth migration from these areas to nearby cities and towns and the need of specific skills for some profiles as some factors contributing to the low inclusion. Through youth engagement activities, these clusters can generate impact visibility for the local communities, and thus, a sense of belonging among the youth. This could help expand the basket of those available and willing to engage with these clusters.

Indicator 2- Percentage of Vulnerable Groups among Board Members

This indicator is a factor of **enterprise governance** and runs along the same line as the previous indicator while capturing inclusivity in decision-making by gender, caste and age. The value on this indicator is individually represented in percentage terms.

A. Formula for Calculation and the Data Points¹²

Formula for
Percentage of Vulnerable Groups by Gender among Board Members: $\frac{\text{Number of Female Board Members}}{\text{Total Number of Board Members}} \times 100$

Formula for
Percentage of Vulnerable Groups by Age among Board Members: $\frac{\text{Number of Youth among Board Members}}{\text{Total Number of Board Members}} \times 100$

Formula for
Percentage of Vulnerable Groups by Age among SPV Members: $\frac{\text{Number of Youth among SPV Members}}{\text{Total Number of SPV Members}} \times 100$

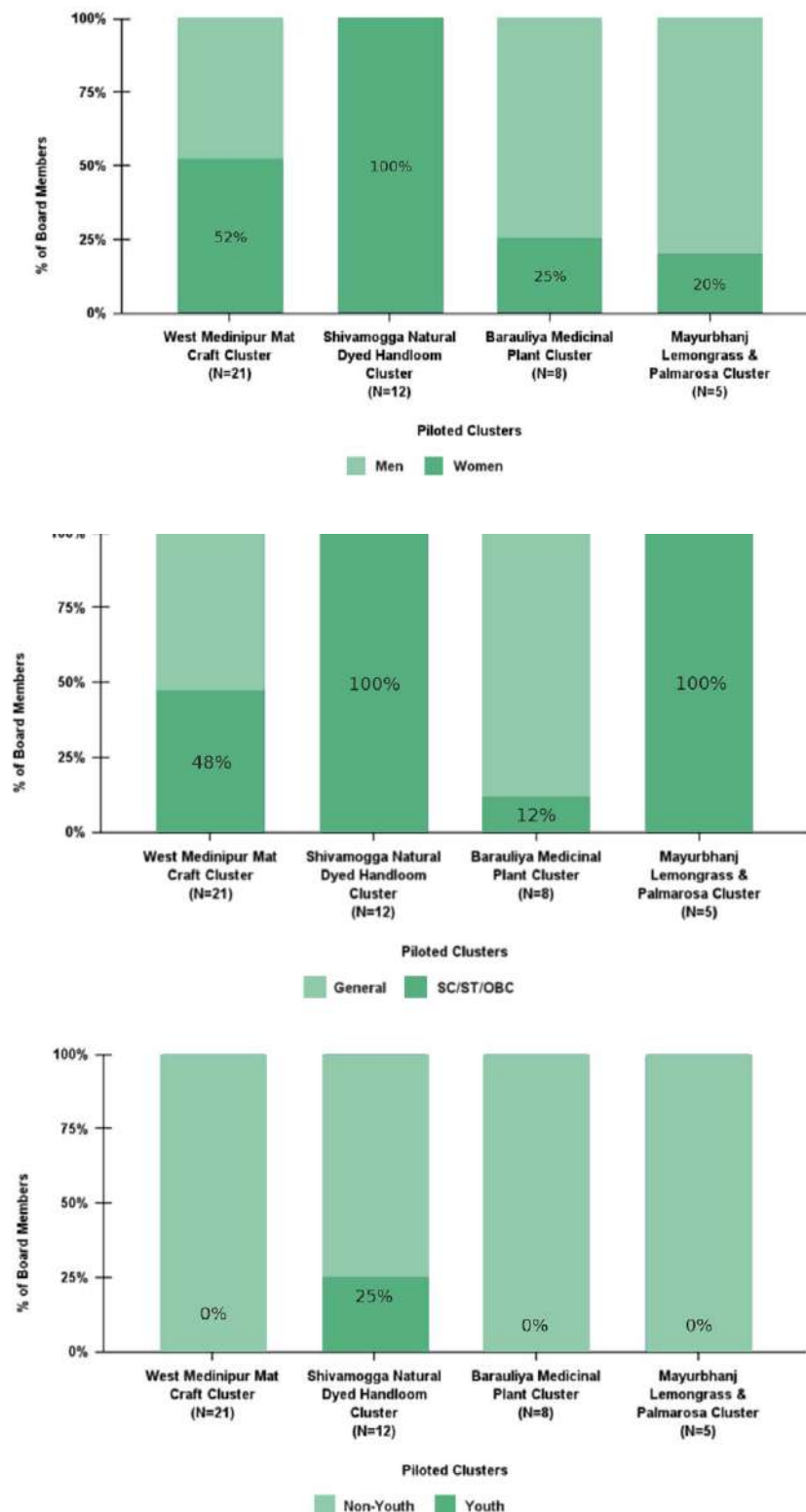
Table 22: Data Points and Sources for Indicator 2 under Social Equity & Inclusion

S.No	Data Points	Source
1	Total Number of Board Members	Voluntary Disclosure, verified with Annual Report
2	Number of Board members that recognized as either women, youth or Scheduled Caste/Scheduled Tribe/Other Backward Classes	Voluntary Disclosure

B. Performance of the Clusters

	Total Board Members	Percentage of female Board Members of total	Percentage of Board Members belonging to SC/ST/OBC category of total	Percentage of Board Members that qualify as youth of total
Cluster 1				
West Medinipur Mat Craft Cluster	21	~ 52%	~48%	0%
Cluster 2				
Shivamogga Naturally Dyed Handloom Cluster	12	100%	100%	25%
Cluster 3				
Barauliya Medicinal Plant Cluster	8	25%	~13%	0%
Cluster 4				
Mayurbhanj Lemongrass & Palmarosa Cluster	5	20%	100%	0%

Figure 30: Performance of the clusters for Indicator 2 under Social Equity & Inclusion



12 The investigation acknowledges that the vulnerability by age, caste and gender is not exclusive i.e., an SPV member could be a woman and also recognized herself as a scheduled caste or youth. To account for this, the percentages are calculated separately.

C. Interpretation & Findings

Women Representation: The Natural Dyed Handloom Cluster at Shivamogga, Karnataka boasts of 100% inclusivity with all 12 Board Members being women. This moderates out for the Mat Craft Cluster at West Medinipur, West Bengal at 52%, dropping further to 25% for the Medicinal Plant Cluster at Barauliya, Uttar Pradesh and 20% for the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha.

Representation by Caste: The Natural Dyed Handloom Cluster at Shivamogga, Karnataka performs high on caste inclusivity among board members at 100%. Given its location, the Lemongrass and Palmarosa Cluster at Mayurbhanj, Odisha demonstrates 100% as well. The Mat Craft Cluster at West Medinipur, West Bengal shows a moderate caste inclusivity rate of 48% among Board members. This is even when the cluster is in a fishermen community dominated by SCs. The Medicinal Plant Cluster at Barauliya, Uttar Pradesh ranks low with 12% caste inclusivity rate.

Representation by Age: Like the case of youth representation among SPV members, the inclusivity rate among Board Members shows a non-zero figure only for the Natural Dyed Handloom Cluster at Shivamogga, Karnataka.

Overall, the clusters show remarkable trend in women inclusivity in employment and governance. The performance is positive in case of caste-based inclusivity as well. There is, however, a considerable scope of enabling more youth to become a part of the enterprise processes both as artisans/farmers and in enterprise governance role.

Indicator 3- Pay Parity/Disparity by Gender and Caste among SPV Members

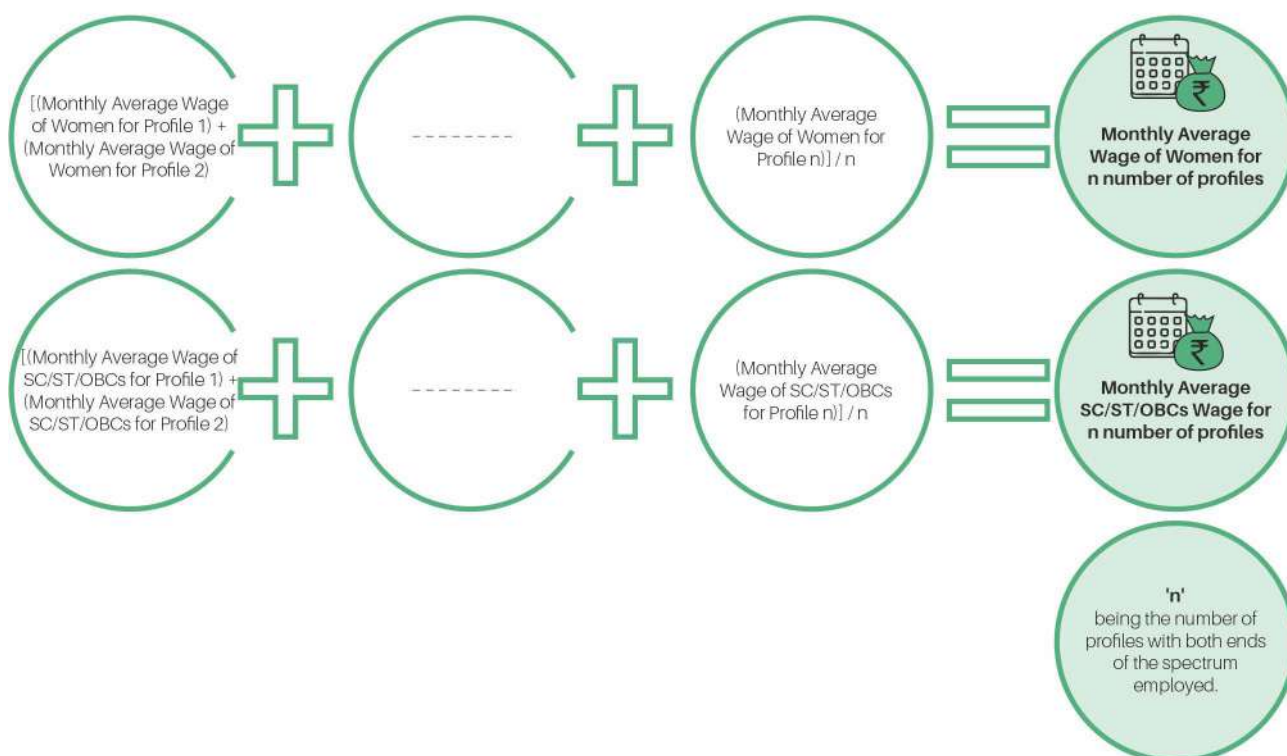
This indicator captures the cluster's progress on social equity through assessing women's wage as % of men's and that of reserved category artisans/farmers as % of those belonging to reserved category. This is calculated as an average of only those profiles that employ both ends of gender and caste categories for comparison of wages. The closer the value to 100%, the better the performance on the indicator. In cases where women earn more than men, or reserved category artisans and farmers earn more than non-reserved category, the value could also exceed 100%.

Please note that this indicator does not account for social equity by age, since wages could rationally increase with an increase in the number of years of experience in a particular trade or work.

A. Formula for Calculation and the Data Points¹³

$$\text{Formula for Women's Wage as \% of Men's: } \frac{\text{Monthly Average Wage of Women}}{\text{Monthly Average Wage of Men for n number of profiles with both employed}} \times 100$$

$$\text{Formula for SC/ST/OBCs Wage as \% of General Category's: } \frac{\text{Monthly Average Wage of Artisans and Farmers belonging to SC/ST/OBC Category}}{\text{Monthly Average Wage of Artisans and Farmers belonging to General Category profiles with both employed}} \times 100$$



¹³ The investigation acknowledges that the vulnerability by age, caste and gender is not exclusive i.e., an SPV member could be a woman and also recognized herself as a scheduled caste or youth. To account for this, the percentages are calculated separately.

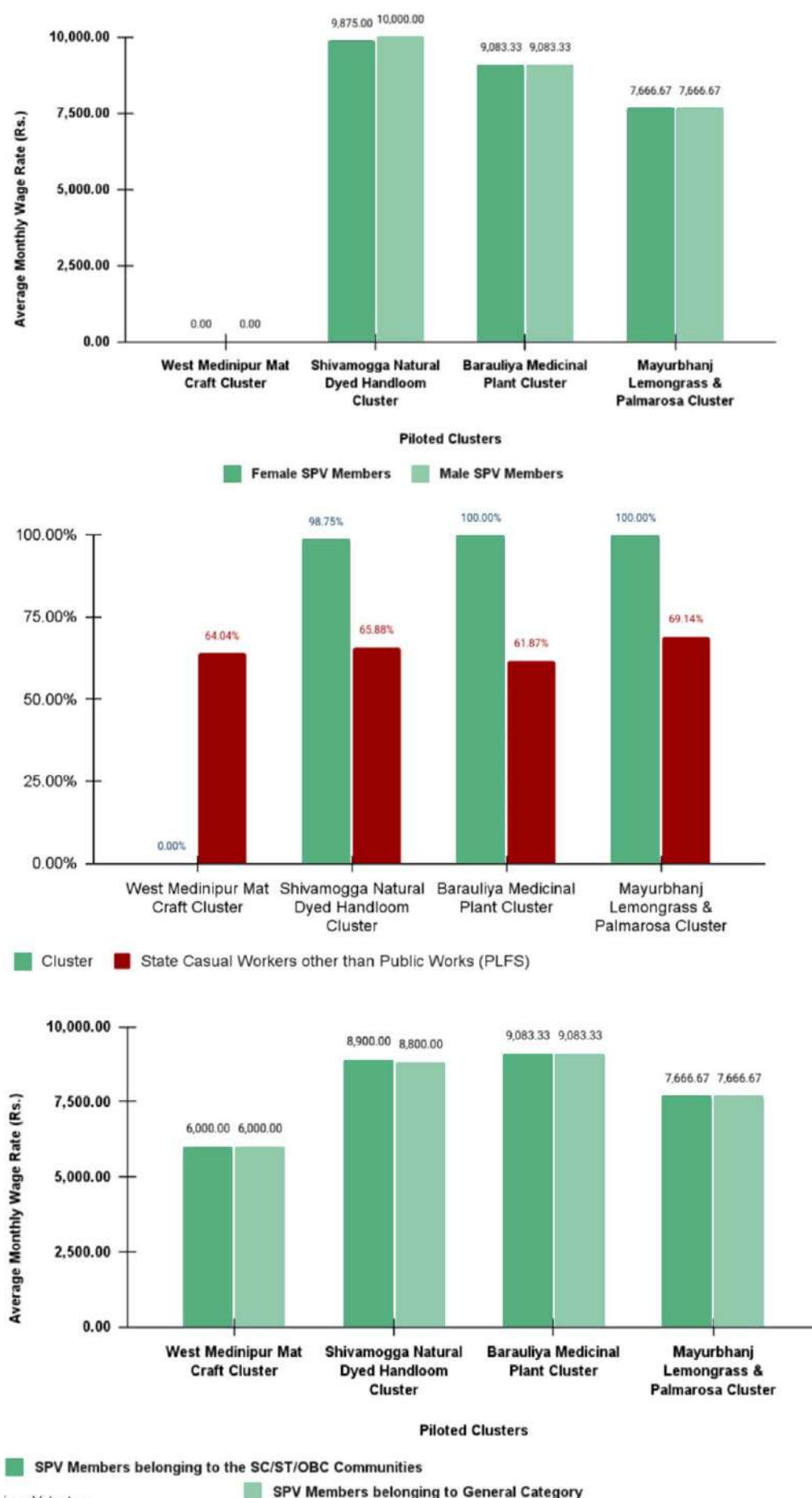
Table 23: Data Points and Sources for Indicator 3 under Social Equity & Inclusion

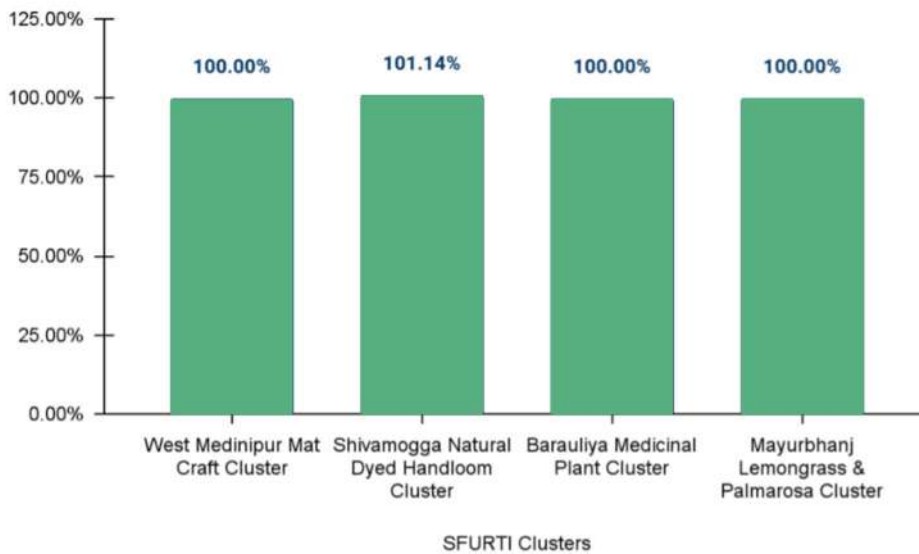
S.No	Data Points	Source
1	Total Number of Profiles with both men and women or ST/ST/OBCs and General category artisans and farmers employed	Voluntary Disclosure
2	Monthly Wage of Women per Profile where men are also engaged	Voluntary Disclosure
3	Monthly Wage of Men for Same Profiles	Voluntary Disclosure
4	Monthly Wage of SC/ST/OBCs per Profile where general category artisans and farmers are also engaged	Voluntary Disclosure
5	Monthly Wage of General Category Artisans and Farmers for Same Profiles	Voluntary Disclosure

B. Performance of the Clusters

	Women's Wages as % of Men for n Number of Profiles	SC/ST/OBCs Wages as % of General Category Artisans' or Farmers' for n Number of Profiles	Total Number of Profiles with both Men and Women Employed	Total Number of Profiles with both SC/ST/OBC and General Category Artisans and Farmers are Employed
Cluster 1				
West Medinipur Mat Craft Cluster	Non-Applicable	100%	0	7
Cluster 2				
Shivamogga Naturally Dyed Handloom Cluster	~99%	101%	4	5
Cluster 3				
Barauliya Medicinal Plant Cluster	100%	100%	6	6
Cluster 4				
Mayurbhanj Lemongrass & Palmarosa Cluster	100%	100%	3	3

Figure 31: Pay Parity between Men and Women (Graph 1 & 2) and Pay Parity between General and Reserved Categories (Graph 3 & 4)





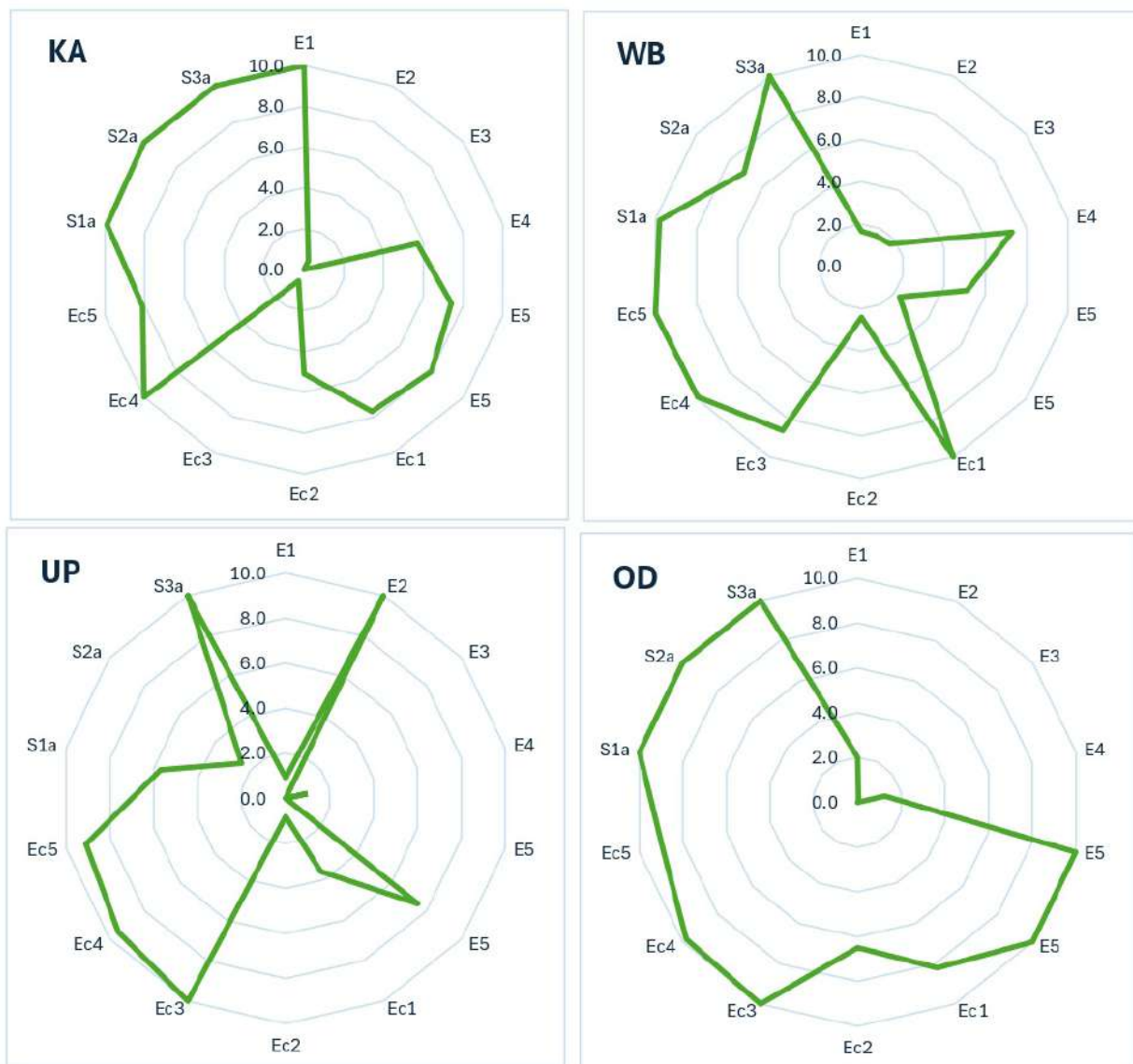
C. Interpretation & Findings

Women Representation: The Mat Craft Cluster at West Medinipur, West Bengal does not have any profile in which both men and women are employed, making the comparison non applicable. But on a broader level, all other clusters demonstrate pay parity among men and women. This is significantly higher than the pay parity prevailing in the average wages of men and women casual workers other than those engaged in public works for rural areas, calculated for 20 working days a month.

Representation by Caste: All four clusters characterize of equal pay to artisans and farmers belonging to SC/ST/OBC categories vis-à-vis general category for profiles with both employed. The Natural Dyed Handloom Cluster at Shivamogga, Karnataka goes beyond equal pay where for profiles like dyeing and block printing, SC/ST/OBCs are being paid marginally more. This seems unintentional since the trend reappears but for the general category artisans and farmers in case of weaving.

2.4 SUSTAINABILITY OF THE CLUSTERS

The overall sustainability of these clusters can be measured through the below given spider-webs, which score the four clusters across 14 indicators¹⁴, capturing their environmental, economic and social impact out of 10. This score is drawn from mechanism as explained under Annexure 6. The greater the area and the total average score of the enterprise cluster, more its sustainability.



14 Local retention of profit has not been plotted due to 3 out of 4 clusters not having started distribution of dividends.

Indicator	IND
Energy Intensity: Cost of Energy as a % of Cost of Production	E1
Water Intensity: Net Water Consumption per Kg of Output	E2
Renewable energy (solar) as a % of the total energy consumption	E3
Percentage of water recycled/reused viz total consumption	E4
Amount of waste utilized per ton of output	E5
Material efficiency per kg of input	E6
Increase in income of farmers and/or artisans (before & after SFURTI)	Ec1
Percentage Difference in Income of SPV Members viz Alternative Livelihood	Ec2
Local procurement of inputs (except machinery and wages)	Ec3
Wage Expenditure on Local SPV Members	Ec4
Total Jobs Facilitated Created per Crore of Investment	Ec5
Representation of vulnerable group among SPV members	S1a
Representation of vulnerable group among Board Members	S2a
Equitable pay for vulnerables (by sex and social category) for n profile	S3a

	Shivamogga, KA	West Medinipur, WB	Barauliya, UP	Mayurbhanj, OD
Total Avg. Score	66.43	62.5	50.43	69.14
Environment	52.67	32.83	32.33	39
Economic	63	81.8	66	87
Social	99.7	89.67	60.67	100

OVERALL GAPS AND RECOMMENDATIONS

In addition to the cluster wise analysis provided indicator wise earlier in this section, the following are suggested overall to improve the environmental sustainability, local economic contribution and social inclusion among these clusters.

Environmental Sustainability

- The solar power remains underutilized at the rural enterprise clusters. Considering that these clusters also yield waste like grass or cloth cuttings in case of Mat Craft Cluster or dried lemongrass at Mayurbhanj Cluster, the unutilized solar power could be used to run machines for generating by-products from the waste – reducing waste disposal while yielding economic returns.
- None of the clusters assessed under this study had a ready record of water quality – which hindered analyzing whether the wastewater being disposed from these clusters was safe or toxic. A regular monitoring is proposed with maintenance of water registers to be able to analyze the water quality at these rural enterprise clusters.

Local Economic Distribution

- The income levels of artisans and farmers at the West Medinipur and Barauliya Clusters lag behind both the benchmark of average wage earnings (in Rs.) of casual workers in works other than public works, as defined for rural area (April to June 2022) for respective States, and National Rural Poverty Line¹⁵ of Rs. 4,428/- per worker per month. While these have improved overtime, the profit margins of all clusters except Shivamogga are low, due to which they are unable to pay dividends to the artisans and farmers. The clusters need to improve their profitability, of which waste-to-wealth (as suggested above) as well as market aggregation could prove useful.
- About 94% of the raw material of the Natural Dyed Handloom Cluster at Shivamogga, Karnataka comes from Bangalore with one or two products (dyes) sourced from Chennai. These raw materials are at present not locally available. **Depending upon the feasibility,** local farmers could be encouraged to grow plants within the ecological scope to retrieve dyes being currently sourced from outside. In this way, the local economy can be further strengthened.

Social Equity & Inclusion

Except for the Medicinal Plant Cluster at Barauliya, Uttar Pradesh, where the women representation needs to be corrected, other three clusters have a good representation of women in the SPV and Board. There is a need for engaging more youth into the cluster activities though, which currently lags behind. Through collaboration with local academic institutions, more youth can be exposed to the operations of the rural enterprise clusters and encouraged to participate in the local economy through them.

¹⁵ Calculated as per Rangarajan method of (per person monthly rate of Rs.1645.3*family of 4.5)/1.672 workers per family. This yields the income value of Rs. 4,428/- per month.



A woman artisan weaving mats from babui grass in the Mat Craft Cluster in West Medinipur, West Bengal



A woman artisan working on the loom in the Naturally Dyed Handloom Cluster in Shivamogga, Karnataka.

3. PATHWAYS TO AN ENABLING ECOSYSTEM

3. PATHWAYS

The desk research, individual consultations and detailed surveys with both the Implementation Agency and the SPV members (artisans and farmers) demonstrate reliable evidence of localized impact towards greener, socially inclusive and thriving micro rural economies. The clusters assessed under the study were all located in the outskirts of the townships, meaningfully employing local artisans and farmers most of whom were otherwise either unemployed or engaged under MGNREGA/were undertaking menial/seasonal jobs. Majority of these were also women and/or those belonging to Scheduled Caste, Scheduled Tribes and Other Backward Caste categories. On the environmental front, the rural enterprise clusters showed an increasing trend of adopting solar panels as a means of sourcing electricity. These clusters were also cognizant of the environmental and cost-saving potential of adopting circular practices, especially reusing the waste for creating by-products.

Amplifying impact of the rural enterprise cluster necessitates mainstreaming it, which further requires setting up of an enabling ecosystem for these clusters to thrive in. Policymakers, private investors, civic society network and academia – all have a critical role to play in it. A few ways in which this can be done are: -

PATHWAYS TO SETTING AN ENABLING ECOSYSTEM

1. Enabling Policies

In addition to SFURTI, setting up and upgradation of rural enterprise clusters in India are supported under schemes by the Ministry of Micro, Small and Medium Enterprises, Ministry of Agriculture and Farmers' Welfare, the Small Farmers' Agribusiness Consortium (SFAC), the National Bank of Agriculture and Rural Development at the Central level and non-farm cluster development initiatives by State Governments like that of Karnataka¹⁶. These schemes and programmes can be leveraged through: -

- a. **Convergence of scheme infrastructure and resources wherever applicable and setting up of a common platform to enable information exchange, licensing (including Udyam and GeM registration) and benefit transfer to rural enterprise clusters** can enable a coordinated effort on the front.

¹⁶ Non-Farm Cluster Development Programme, Government of Karnataka. Accessed at <https://ksrtps.karnataka.gov.in/new-page/Non-farm%20Livelihoods%20-%20-%20Cluster%20Development/en>

- b. There is also an opportunity of creating new rural enterprise clusters, potentially aligned to the regional specialization recognized under Government initiatives of One District One Product (ODOP)/**One District Two Products (ODTP)** among others. This can be supplemented with **geo-tagging of the products** and registrations with **government certifications** like India Brand Handloom.
- a. At the level of public finance, **fiscal and non-fiscal incentives** in the form of tax credits and subsidies, start-up incentives, fee redemptions etc can provide a much-needed support to these clusters to grow.

2. Fostering Financial Innovation

Public financing, though essential, needs to be supplemented with commitment by the private sector for not only creating more enterprise clusters but also providing refinancing support to existing ones for adopting greener production practices. In this regard, the social and impact investors could play a critical role by establishing a lending case for these enterprises through their investments in short and medium terms. This is expected to encourage investment in public and private financial institutions over a period. At the same time, innovation and integration in regard to the existing avenues available is critical to foster adequate and affordable financial flows towards these enterprise clusters. This can be achieved through: -

- a. Provisioning for the “mature” rural enterprise clusters to raise capital the constituted **Social Stock Exchange**.
- b. Enabling **Credit Guarantee Schemes for Micro and Small Enterprises** (CGTMSE) with differential interest rates for local and green rural enterprise clusters. The Scheme currently provides guarantee coverage of up to INR 5 crore for manufacturing or service enterprises.
- c. Developing Sustainability Assessment-based Credit Rating Model to support green financing into these enterprises.¹⁷ Geo-spatial data analytics can be plugged into the model for verification of the processes digitally, cutting down the transaction cost and improving the turnaround on the loan disbursement to these enterprises.
- d. Linking these clusters as projects with **Green Credit Programme (GCP), notified** in October 2023 as an innovative market-based mechanism designed to incentivize voluntary environmental action across industries and companies.¹⁸

3. Strengthening Business and Market Linkages

- a. Establishing **rigorous benchmarking, monitoring and quality regulation** mechanisms in place. This could be done through adopting or building upon the sustainability assessment framework developed under this investigation for this purpose.

¹⁷ The TransUnion CIBIL in collaboration with SatSure, launched a similar product called ‘CIBIL Credit and Farm Report’ to provide crop loans to farmers in 2022.

¹⁸ Ministry of Environment, Forest and Climate Change, “Notification issued for Green Credit Program (GCP) and Ecomark Scheme under LiFE Initiative to promote sustainable lifestyle and environmental conservation,” October 2023. Accessed at <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1967476#:~:text=These%20initiatives%2C%20the%20Green%20Credit,the%20ideas%20of%20LiFE%20concept>.

- b. Developing **Product Certification and Standards** on the lines of data-based certifications and standards, including Fairtrade and EarthSeer, which provide social validation to the products and incentivize greener and socially inclusive practices through a demand-pull factor.
- c. Setting up **Enterprise Ranking and Award System**, similar to the ranking frameworks based on the ESG ratings. This ranking and award system for the rural enterprise clusters may be based on the sustainability assessment data captured quarterly/half-yearly and housed under the Ministry of Micro, Small and Medium Enterprises.

4. Facilitating Partnerships and Collaboration

- a. Fostering Public-Private-Partnership for dedicated **research and development** to augment technical and product innovation, including shared product testing and research.
- b. Setting up an industry-academia-civic society consortium for mentorship and dedicated consultations to address their business, technological, capacity building and market needs.

CONCLUSION

The SFURTI Scheme, together with MSE-CDP and other Central and State Government Schemes that support setting up or upgradation of rural enterprise clusters, represent the Government's commitment to bolstering local economic development through livelihood promotion. These enterprise clusters, however, deliver much more in terms of empowering youth, women and other vulnerable groups to tap into their aspirations and energies to engage themselves meaningfully into entrepreneurial ecosystems, from which they are often excluded. These clusters demonstrate sustainable consumption and production practices through adoption of renewable energy and conversion of waste into by-products, and links with the Chennai HLP on LiFE - lifestyle for sustainable development.

True measurement of the clusters' triple bottom line shows evidence of impact on the people and planet. The existing ESG and other sustainability frameworks, however, may not be attuned to the model of rural enterprise clusters or give due weightage to attributes of local economic contribution, representation of vulnerable groups in enterprise governance etc – pointing to a need to redesign frameworks and impact assessments based on a holistic approach. The Sustainability Assessment Framework designed under this study supported by the Indian Micro Enterprises Development Foundation is first step towards that direction. It assesses the clusters on attributes such as efficiency and circularity of production, contribution to local economy through local job creation and localized procurement of raw materials, as well as equal representation of vulnerable groups in employment and enterprise governance, with pay parity for profiles where both ends of the spectrum (vulnerable and non-vulnerable) are employed.

Replication of the assessment with other rural enterprise clusters, both SFURTI and non-SFURTI, will serve to defining benchmarks which would be critical for policymakers, private investors and other actors alike to understand sustainability performance of enterprises and thus in a long run, optimize policy processes, plug financing into these through traditional and innovative mechanisms and design other non-financial support systems for mainstreaming these clusters in India.



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Annexure 1

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Annexure 3

Sustainability Assessment Framework

P. = Parameter, A. = Attribute

P.	A.	Indicator	Calculation	Unit
Environmental Sustainability	Efficiency	Gross energy consumption per crore of revenue	Formula: Annual electricity consumption in kWh / Annual revenue in crores. Where, <ul style="list-style-type: none"> Annual electricity consumption = Annual electricity consumption from external sources (state grid) + Annual energy consumption from solar panels + Annual energy consumption from DG sets. Annual electricity consumption from solar panels = Actual Consumption from solar panels x Average hours of direct sunlight in a day x No of working days in a year. Annual electricity consumption from DG sets = Capacity of DG set x Operational hours per day x No of working days in a year. 	[kWh/crore rupees]
		Sub-Indicator Gross Energy Consumption per Crore Cost of Production	Formula:- Annual energy consumption in kWh / cost of production in crores Where, <ul style="list-style-type: none"> Annual energy consumption = Annual electricity consumption from external sources (state grid) + Annual energy consumption from solar panels + Annual energy consumption from DG sets. Annual energy consumption from solar panels = Capacity from solar panels x Average hours of direct sunlight in a day x No of working days in a year. Annual electricity consumption from DG sets = Capacity of DG set x Operational hours per day x No of working days in a year. 	[kWh/cost of production]
		Net water consumption per crore of revenue	Formula: Annual water consumption in kl / Annual revenue in crores Where, <ul style="list-style-type: none"> Annual water consumption = Total annual groundwater consumption + Total annual water consumption from other sources - Total water recycled Total annual groundwater consumption = Daily consumption of groundwater x number of working days of cluster. Total annual water consumption from other sources = Total annual water consumption from municipal line + Total annual surface water consumption (from ponds & other water bodies). 	[kl/crore rupees]

P.	A.	Indicator	Calculation	Unit
Environmental Sustainability	Efficiency	Sub-Indicator Net Water Consumption per ton of Output	Formula: Annual water consumption in kl / Total Annual Output in ton Where, Annual water consumption = Total annual groundwater consumption + Total annual water consumption from other sources - Total water recycled	[kl/ton of output]
		Net quantity of waste disposed per crore of revenue	Formula: Total annual waste disposed in kg / Total annual revenue in crores. Where, <ul style="list-style-type: none"> Net annual waste disposed = Total waste produced - Total waste utilized Total waste utilized = Waste recycled and reused + Waste composed 	[kg/crore rupees]
		Sub-Indicator Material efficiency	Formula: Total output of finished products in kg / Total input of raw materials in kg	Percentage
	Circularity	Renewable energy (solar) as a % of the total energy consumption	Formula: (Total annual energy consumption from solar panel in kWh / Total annual energy consumption by the cluster in kWh) x 100 Where, Annual energy consumption from solar panels = Actual Consumption from solar panels x Average hours of direct sunlight in a day x No of working days in a year.	Percentage
		Percentage of water recycled/reused viz total consumption	Formula: (Total quantity of water recycled or reused in a year (kl) / Total annual water consumption in kl) x 100	Percentage
		Amount of waste utilized per ton of output	Formula: (Total annual waste utilized in kg / Total waste generated annually in kg) x 100. Where, Total annual waste utilized = Total waste composted + Total waste reused	[kg/ thousand units]

P.	A.	Indicator	Calculation	Unit
Economic distribution	Income enhancement	Increase in income of SPV Members before & after SFURTI	Formula: $[(\text{Current Monthly Average Income under SFURTI} - \text{Monthly Average Income Before SFURTI}) / \text{Monthly Average Income Before SFURTI}] \times 100$ <p>Where,</p> <ul style="list-style-type: none"> Current Monthly Average Income = Monthly wages and dividends currently earned at the SFURTI cluster averaged over 12 months for sampled artisans/farmers. Monthly Average Income before SFURTI = Monthly wages and dividends (if any) the artisan and/or farmer used to earn before joining the SFURTI cluster averaged over 12 months for the same artisans/farmers. 	Percentage
		% Difference in monthly income of SPV members under SFURTI viz alternative livelihoods	Formula: $[(\text{Current Monthly Average Income under SFURTI} - \text{Monthly Average Income from Alternative Livelihoods}) / \text{Monthly Average Income from Alternative Livelihoods}] \times 100$ <p>Where,</p> <ul style="list-style-type: none"> Current Monthly Average Income = Wages and dividends currently earned at the SFURTI cluster averaged over a year for sampled artisans/farmers. Monthly Average Income from Alternative Livelihoods = Wages from other job profiles, such as MGNREGA and minimum wages set at the state/national level for the concerned industry. 	Percentage
	Localization	Local procurement of inputs (except machinery ²⁰ and wages)	Formula: $[\text{Monthly expenditure (Rs.) on procurement from local vendors} / \text{Total monthly expenditure on procurement of raw materials (Rs.)}] \times 100$ <p>Where,</p> <ul style="list-style-type: none"> "local" is defined as an area within 100 kilometers from the cluster. Monthly Expenditure on Procurement from Local Vendors = (Total quantity of item 1 x Per unit price of item 1) + (Total quantity of item 2 x Per unit price of item 2) + _ _ _ _ _ + (Total quantity of item n x Per unit price of item n) averaged monthly for items procured within 100 sq kms Total Monthly Expenditure on Procurement of Raw Material = (Total quantity of item 1 x Per unit price of item 1) + (Total quantity of item 2 x Per unit price of item 2) + _ _ _ _ _ + (Total quantity of item n x Per unit price of item n) averaged monthly for all item 	Percentage

P.	A.	Indicator	Calculation	Unit
Economic distribution	Localization	Wage Expenditure on Local Artisans and Farmers	Formula: $\frac{[(\text{Monthly Wage Expenditure (Rs.) on local artisans and farmers}) / \text{Total monthly wage expenditure (Rs.)}] \times 100}{}$ <p>Where,</p> <ul style="list-style-type: none"> Total monthly wage expenditure of a cluster = Total number of artisans and farmers x Average monthly wage rate Monthly wage on local artisans and farmers = (Total number of artisans and farmers – Total number of migrants) x Average monthly wage rate 	Percentage
		Local retention of profits	Formula: $(\text{Total annual dividends} / \text{Total annual profit}) \times 100$ <p>Where,</p> <ul style="list-style-type: none"> Annual profits (Rs.) = Financial surplus earned over a course of one year, after deducting for costs and wages Annual dividends (Rs.) = Share of profits distributed among the members/shareholders of the SPV 	
Social equity & inclusion	Job Creation by Investment	Total Jobs Facilitated and Net Additional Jobs Created per Crore of Investment under SFURTI	Formula: $\frac{\text{Total Number of Jobs Facilitated in the 3 Years} / \text{Total Investment under SFURTI Scheme}}{\text{Net Additional Jobs Created} / \text{Total Investment under SFURTI Scheme}}$ <p>Where,</p> <ul style="list-style-type: none"> Net Additional Jobs Created = (Number of Artisans and Farmers Facilitated in Year 1 apart from those mentioned in DPR – Number of Dropouts in Year 1) + (Number of Artisans and Farmers Employed in Year 2 – Number of Dropouts in Year 2) + (Number of Artisans and Farmers Employed in Year 3 – Number of Dropouts in Year 3) 	Percentage
	Inclusive Employment	Representation of vulnerable group by gender, caste and age among artisans and/or farmers	Formula for SPV members belonging to vulnerable groups $\frac{[(\text{Number of SPV Members that recognized as either women, youth or Scheduled Caste/Scheduled Tribe/Other Backward Classes}) / \text{Total Number of SPV Members}] \times 100}{}$ <p>Where,</p> <ul style="list-style-type: none"> Number of SPV Members that recognized as either women, youth or Scheduled Caste/Scheduled Tribe/Other Backward Classes is not exclusive of one another i.e., an SPV member could be a woman and recognize herself as a scheduled caste or youth. 	Percentage

P.	A.	Indicator	Calculation	Unit
Social equity & inclusion	Equitable Pay	Equitable pay for women and SC/ST/OBCs for n profile	<p>Formula for Women's Wage as % of Men's: (Monthly Average Wage of Women / Monthly Average Wage of Men for n number of profiles with both employed) x 100</p> <p>Formula for SC/ST/OBCs Wage as % of General Category's: (Monthly Average Wage of Artisans and Farmers belonging to SC/ST/OBC Category / Monthly Average Wage of Artisans and Farmers belonging to General Category profiles with both employed) x 100</p> <p>Where,</p> <ul style="list-style-type: none"> Monthly Average Wage of Women for n number of profiles = [(Monthly Average Wage of Women for Profile 1) + (Monthly Average Wage of Women for Profile 2) + _ _ _ + (Monthly Average Wage of Women for Profile n)] / n Monthly Average SC/ST/OBCs Wage for n number of profiles = [(Monthly Average Wage of SC/ST/OBCs for Profile 1) + (Monthly Average Wage of SC/ST/OBCs for Profile 2) + _ _ _ + (Monthly Average Wage of SC/ST/OBCs for Profile n)] / n 'n' being the number of profiles with both ends of the spectrum employed. 	Percentage
	Inclusive decision-making	Representation of vulnerable groups by gender, caste & age among board members	<p>Formula for Percentage of Vulnerable Groups among Board Members: [(Number of Board Members that recognized as either women, youth or Scheduled Caste/Scheduled Tribe/Other Backward Classes) / Total Number of Board Members] x 100</p> <p>Where,</p> <ul style="list-style-type: none"> Number of SPV Members that recognized as either women, youth or Scheduled Caste/Scheduled Tribe/Other Backward Classes is not exclusive of one another i.e., an SPV member could be a woman and also recognized herself as a scheduled caste or youth. 	Percentage

Annexure 4

Questionnaire for Implementation Agency

PITCH

Development Alternatives is conducting a triple bottom line (economic-social-ecological) impact assessment of rural enterprise clusters under a research initiative. In consultation with the Indian Micro Enterprise Development Foundation (IMEDF), we have shortlisted your cluster as one of the four to be assessed and would like to ask you a few questions in that regards.

Answering these questions is voluntary. The information collated as a part of this interaction will only be used for the purpose as explained above. We will not use the responses for any other purpose.

Shall we begin? Yes/No

	Date of the Survey	Month, Day, Year	
SECTION 1: CLUSTER PROFILE			
1	Name of the Cluster	Single Selection	
		Natural Dye Handloom Cluster	Mat Craft Cluster
		Lemongrass and Palmarosa Cluster	Medicinal Plant Cluster
2	Location of the Cluster	Single Selection	
		Shivamogga, Karnataka	West Medinipur, West Bengal
		Mayurbhanj, Odisha	Barauliya, Uttar Pradesh
3	Sector of the Cluster	Single Selection	
		Agro based	Handicraft / Handloom
4	Name of the Implementation Agency (IA)	Text Box	
5	Name of Technical Agency	Text Box	
6	In which year was the IA established?	Month, Day, Year	
7	In which year did the cluster started operating?	Month, Day, Year	
8	Since when is the cluster operating under SFURTI Scheme?	Month, Day, Year	
9	How much grant was received under the SFURTI Scheme, excluding the margin money component?	Text Box	
Description: Format in Crore Rs. The margin money component is 10% of the project cost that the IA had put in as investment.			

10	Have you availed financing for the cluster from any other source, apart from the grant amount?	Multiple Selection								
		<table border="1"> <tr> <td>Self-Funding</td> <td>Funding from Corporate / Impact Investors (CSR Grants)</td> </tr> <tr> <td>Financing under Central / State Government Scheme other than SFURTI</td> <td>Private Formal Financing (from bank or authorized lender)</td> </tr> <tr> <td>Private informal financing from family / moneylender</td> <td>Not Applicable</td> </tr> <tr> <td colspan="2">Others, please specify _____</td> </tr> </table>	Self-Funding	Funding from Corporate / Impact Investors (CSR Grants)	Financing under Central / State Government Scheme other than SFURTI	Private Formal Financing (from bank or authorized lender)	Private informal financing from family / moneylender	Not Applicable	Others, please specify _____	
Self-Funding	Funding from Corporate / Impact Investors (CSR Grants)									
Financing under Central / State Government Scheme other than SFURTI	Private Formal Financing (from bank or authorized lender)									
Private informal financing from family / moneylender	Not Applicable									
Others, please specify _____										
11	Elaborate the funding received by each selected source.	Text Box								
	<p>Description: Format in Crore Rs. Write <Amount> <Source>; <Amount 2> <Source 2> For example, in case of OD of Rs.25000 and self-funding of Rs.500000, write Rs. 25000 (Private Formal Financing); Rs. 500000 (Self-Funding)</p> <p>In case of values in lakh and crore, write full numeric value (500000 instead of 5lakh)</p>									
	SECTION 2: ENVIRONMENTAL SUSTAINABILITY									
1	For how many days in a year does the cluster operate?	Text Box								
2	How much electricity is consumed from external sources annually?	Text Box								
	<p>Description: Format in kWh Please upload the electricity bills of the past 12 months at the end of this form.</p>									
3	What is the total Actual Consumption from solar panels?	Text Box								
	<p>Description: Format in kW If the Cluster uses Solar Energy, else mention NA In case of multiple solar panels, mention the total capacity of all of them. Please upload the Purchase Order/Bills of currently installed Solar Panels at the end of this form.</p>									
4	What is the total Actual Consumption from solar panels?	Text Box								
	<p>Description: Format in kW If the Cluster uses a Diesel Generator, else mention NA In case of multiple DG Set, mention the total capacity of all of them. Please upload the Purchase Order/Bills of currently installed DG Sets at the end of this form.</p>									
5	For how many hours does the DG sets run in a day?	Text Box								
	<p>Description: If the Cluster uses a Diesel Generator, else mention NA In case of seasonal variation, please write <Average Daily Operational Hours> <Season> Please upload the Diesel Log Sheet for the year 2022 at the end of this form.</p>									

6	From where does the cluster source water for SFURTI operations?	Multiple Selection	
		Ground Water (Tubewell)	Municipal Line
		Surface Water (Lake/Pond/River etc)	Private Water Tank
		Others, please specify _____	
7	How much total water does the cluster consume for SFURTI operations in a day?	Text Box	
		Description: Please mention in kiloliters (kl), with split up by the source Please upload the Water Balance Chart of the Process water at the end of this form.	
8	Do you have a permit for either groundwater or surface water extraction?	Single Selection	
		Yes	No
		Not Applicable	
9	What is the capacity of the water storage tank?	Text Box	
		Description: Please mention in kiloliters (kl), with split up by the source. In case of multiple water storage tanks, please mention the cumulative/total capacity.	
10	How many times in a week do you refill the water storage tank?	Text Box	
11	What is the capacity of the pump used for water storage tank(s)?	Text Box	
		Description: Please mention in Horsepower (hp)	
12	What is the capacity of the water recycling/treatment system?	Text Box	
		Description: Please mention in kilolitres (kl) per day In case you don't recycle/treat water in the cluster, mention NA or Not Applicable.	
13	Have you ever tested the quality of the disposed water?	Single Selection	
		Yes, we got the water tested by an NABL accredited lab	Yes, we tested the disposed water qualitatively using a water testing kit
		Never	
14	In case of water test by an NABL accredited lab, please attach the test reports or results.	Provision to Upload Pdf	
15	In case of qualitative water testing using a water testing kit, what were the results?	Text Box	
16	How much waste (in kg) is disposed of by the cluster on a weekly basis?	Text Box	

	Description: This is excluding the waste that is recycled or composted. Please upload Waste Audit/Assessment Report/Waste Generation Register if any, at the end of this survey form.			
17	How much waste (in kg) is recycled/reused in the SFURTI operations by the cluster on a weekly basis?	Text Box		
	Description: Write 'Not Applicable' if waste is not recycled. This is excluding the composted or disposed off waste.			
18	How much waste (in kg) is composted by the cluster on a weekly basis?	Text Box		
	Description: Write 'Not Applicable' if waste is not composted. This is excluding the recycled or disposed off waste.			
SECTION 3: GOVERNANCE & SOCIAL EQUITY				
1	What is the number of board members in your cluster?	Text Box		
2	How many of them are male?	Text Box		
3	How many of them are female?	Text Box		
4	How many board members are from the SC/ST/OBC social category?	Text Box		
	Description: Mention separately for SC, ST and OBC in this way:- 3 SCs, 10 STs and 0 OBC			
5	How many board members are 18 to 29 years old?	Text Box		
6	How many employees work at the CFC?	Text Box		
	Description: Employees are the people engaged in cluster/CFC operations such as Administration/Finance or Machine Operator.			
	Write 0 in case of no employees.			
7	How many of these employees are artisans/farmers associated with the cluster?	Text Box		
SECTION 4: LOCAL ECONOMIC DISTRIBUTION				
1	Do the members of the Special Purpose Vehicle (SPV) receive dividends?	Single Selection <table border="1"> <tr> <td>Yes</td> <td>No</td> </tr> </table> Only to some members	Yes	No
Yes	No			
2	How much dividends do the members of the SPV receive per financial year?	Text Box		

3	How many artisans/farmers joined the cluster in the first year of SFURTI operations?	Text Box
Description: This is over and above those mentioned in the DPR.		
4	Of the total artisans/farmers engaged (mentioned in DPR and addition engagements), how many left the cluster in the first year of the SFURTI operations?	Text Box
5	How many artisans/farmers joined the cluster in the second year of SFURTI operations?	Text Box
Description: This is over and above the artisans/farmers engaged in Year 1		
6	How many artisans/farmers left the cluster in the second year of the SFURTI operations?	Text Box
7	How many artisans/farmers joined the cluster in the third year of SFURTI operations?	Text Box
Description: This is over and above the artisans/farmers engaged in Year 1 and Year 2.		
8	How many artisans/farmers left the cluster in the third year of the SFURTI operations?	Text Box
SECTION 5: PROCESS MATRIX		
1	Provision to upload the completed pdf of the Process Matrix	
SECTION 6: ADDITIONAL DOCUMENTS TO BE UPLOADED		
Kindly gather the aforementioned documents (all that applies) and consolidate them into a compressed zip file, subsequently proceeding to upload said file in this section		
1	Electricity Bills for all 12 months of the year 2022	
2	Purchase Order/Bills of currently installed Solar Panels	
3	Purchase Order/Bills of currently installed DG Sets	
4	Water Extraction Permit for Ground Water/ Surface Water/Other if any	
5	Water Balance Chart of the Process water	
6	Waste Audit/Assessment Report/Waste Generation Register if any	
7	Production Report for Year 2022	
8	Diesel Log Sheet for the year 2022	

Annexure 5

Questionnaire for SPV Members

PITCH

Hi, I am _____ from the Development Alternatives. We are conducting a sustainability analysis for the clusters supported by Indian Micro Enterprises Development Foundation (IMEDF), as a part of which, we are here to pilot your cluster. The information captured from this survey will solely be used for the purpose of the study, and not be shared elsewhere.

Shall we proceed?

<Important to take consent> (Yes/No) <Proceed if the answer is 'Yes'>

	Date of the Pilot	Month, Day, Year	
	Interviewer	Single Selection	
		Subham Singh	Deena Hari Krishna P
		Saundharaya Khanna	Mohak Gupta
		Sudhir Shah	
1	What is your name?	Text Box	
2	What is your age?	Text Box	
3	What is your sex?	Text Box	
4	What social category do you belong to?	Single Selection	
		General	Marginalized/SC
		Marginalized/ST	Marginalized/OBC
		Others, please specify _____	
5	What is the name of the cluster?	Single Selection	
		Natural Dye Handloom Cluster	Mat Craft Cluster
		Medicinal Plant Cluster	Palmarosa and Lemongrass Cluster
6	In what cluster process are you currently engaged in?	Text Box	
7	Which type do you belong to?	Single Selection	
		I come at the CFC every day to work	I take the work back to my home
		Others, please specify _____	
	Description: Only applicable to Handloom/Handicraft-based Clusters		
8	What is your daily wage rate from the SFURTI cluster?	Text Box	
9	What is your current earning from SFURTI per month?	Text Box	

10	Since when have you been engaged with the cluster? (Year)	Text Box	
11	What was your past occupation before SFURTI?	Single Selection	
		Cluster/Farmer	Cluster/Artisan
		Others, please specify _____	
12	How much were you earning before SFURTI per month?	Text Box	
13	Are you a migrant?	Text Box	
14	Which state have you migrated from?	Text Box	
	Description: Format: District, State		

Annexure 6

Scoring Mechanism for Clusters' Sustainability

Indicator	IND	Scoring Mechanism	Calculation	KA	WB	UP	OD
Energy Intensity: Cost of Energy as a % of Cost of Production	E1	Benchmark/Assessed Value Where, Assessed Value is Total Cost of Annual Energy Consumption*/Total Cost of Production * Total Cost of Annual Energy Consumption = (Annual Electricity Consumption x Price of Electricity Per Unit) + (Annual Solar Energy Consumption x Per Unit Price) + (Annual Energy Consumption from DG Set x Per Unit Price)	Step 1: Find the Total Cost of Annual Energy Consumption)* *Solar Price Per Unit = 7.04 ** DG Set Electricity Price Per Unit = 28	161400	349831.4	199800	138758.4
			Step 2: Find the Total Cost of Production	25455661	5577944	1867475	2835000
			Step 3: Find the Assessed Value	1%	6%	11%	5%
			Step 4: Find the Benchmark	The best case value is retained as the benchmark. Since the indicator has an inverse relationship with sustainability, the lowest assessed value of 1% becomes the benchmark.			
				1%	1%	1%	1%
			Step 5: Find the Score	10.00	1.67	0.91	2.00
Water Intensity: Net Water Consumption per Kg of Output	E2	Benchmark/Assessed Value Where, Assessed Value is Net Water Consumption (in litres) per Kgs of Output	Step 1: Find the Total Annual Water Consumption (converted to l/kg) (1kl = 1000 l/kg)	3000000	520000	28000	1825000
			Step 2: Find the Total Output (in kgs)	51300	30000	10000	7079.63
			Step 3: Find the Assessed Value	58.48	17.33	2.80	257.78
			Step 4: Find the Benchmark	The best case value is retained as the benchmark. Since the indicator has an inverse relationship with sustainability, the lowest assessed value of 2.80 becomes the benchmark.			
				2.8	2.8	2.8	2.8
			Step 5: Find the Score	0.48	1.62	10.00	0.11

Indicator	IND	Scoring Mechanism	Calculation	KA	WB	UP	OD
Renewable energy (solar) as a % of the total energy consumption	E3	Direct Plotting of %, normalized to a score of 10	Step 1: Find the Assessed Value	74%	51%	0%	100%
			Step 2: Find the Score	7.4	5.1	0	10
Percentage of water recycled/ reused viz total consumption	E4	Direct Plotting of %, normalized to a score of 10	Step 1: Find the Assessed Value	0%	17%	0%	0%
			Step 2: Find the Score	0	1.7	0	0
Amount of waste utilized per ton of output	E5	Direct Plotting of %, normalized to a score of 10	Step 1: Find the Assessed Value	80%	23%	75%	100%
			Step 2: Find the Score	8	2.3	7.5	10
Material efficiency per kg of input	E6	For Value Addition Clusters (KA & WB): Direct Plotting of %, normalized to a score of 10	Step 1: Find the Material Efficiency	57%	73%	64%	1%
		For Extractive Clusters (UP & OD): Assessed Value/Benchmark Value	Step 2: Find the Benchmark	0	0	64.30%	0.80%
		Where, Assessed Value is the Material Efficiency factor	Step 3: Find the Score	5.70	7.30	1.00	1.25
Increase in income of farmers and/or artisans (before & after SFURTI)	Ec1	Direct Plotting of %, normalized to a score of 10*	Step 1: Find the Assessed Value	77%	386%	36%	82%
		*Best case scenario is that the income has doubled or more, in which case a score of 10 shall be allocated.	Step 2: Find the Score	7.70	10.00	3.60	8.20
Percentage Difference in Income of SPV Members viz Alternative Livelihood	Ec2	Plotting of %, normalized to a score of 10 through a range of 50-150% income change (income under SFURTI could be lesser than the benchmark but must be at least half of it)	Step 1: Find the Assessed Value	101%	74%	58%	115%
		50-60% (0-1), 60-70% (1-2), 70-80% (2-3) so on till 140-150% (9-10)	Step 2: Find the Score	5.1	2.4	0.8	6.5

Indicator	IND	Scoring Mechanism	Calculation	KA	WB	UP	OD
Local procurement of inputs (except machinery and wages)	Ec3	Direct Plotting of %, normalized to a score of 10	Step 1: Find the Assessed Value	6%	86.24%	100%	100%
			Step 2: Find the Score	0.6	8.6	10	10
Wage Expenditure on Local SPV Members	Ec4	Direct Plotting of %, normalized to a score of 11	Step 1: Find the Assessed Value	100%	99%	95%	98%
			Step 2: Find the Score	10	9.9	9.5	9.8
Total Jobs Facilitated Created per Crore of Investment	Ec5	Assessed Value / Benchmark Value	Step 1: Find the Assessed Value	295.00	364.00	331.00	326.00
			Step 2: Find the Benchmark	The best case value is retained as the benchmark. Since the indicator has a positive relationship with sustainability, the highest assessed value of 364 becomes the benchmark.			
				364.0	364.0	364.0	364.0
			Step 3: Find the Score	8.1	10.0	9.1	9.0
Representation of vulnerable group among SPV members	S1a	Plotting of Assessed Value (%) from surveys, normalized to a score of 10	Step 1: Find the Assessed Value	99%	98%	57%	100%
			Step 2: Find the Score	9.9	9.8	5.7	10
Representation of vulnerable group among Board Members	S2a	Plotting of Assessed Value (%) from surveys, normalized to a score of 10	Step 1: Find the Assessed Value	100%	71%	25%	100%
			Step 2: Find the Score	10	7.1	2.5	10
Equitable pay for vulnerables (by sex and social category) for n profile	S3a	Plotting of Assessed Value (%) from surveys, normalized to a score of 10	Step 1: Find the Assessed Value	100%	100%	100%	100%
			Step 2: Find the Score	10	10	10	10

GENERAL ASSUMPTIONS

Formula for indicators with inverse relationship i.e., where a lower value is ideal is (Benchmark Value/Assessed Value)

Formula for indicators with positive relationship i.e. where a higher value is ideal is (Assessed Value/Benchmark Value)

For % higher than 100%, a maximum of 10 score is taken.

Costing for energy and water are based on price for commercial purposes.



About TARA

The Society for Technology & Action for Rural Advancement (TARA) is a social enterprise of the Development Alternatives Group, set up in year 1985 at New Delhi, India. TARA's vision is to create sustainable livelihoods on a large scale, in pursuit of which, it develops and promotes "scalable solutions for people and the planet". As an 'incubation engine', TARA's organisational objectives have been defined around impact in the areas of Employability, Entrepreneurship, Clean Technology, Basic Needs, Natural Resource Management and Institutional Strengthening. A mix of projects and revenue based activities deliver a range of replicable enterprise based business models, community development packages and capacity building solutions in five sectors - Renewable Energy, Water Sanitation and Hygiene, Affordable Housing, Livelihood Support and Recycling.

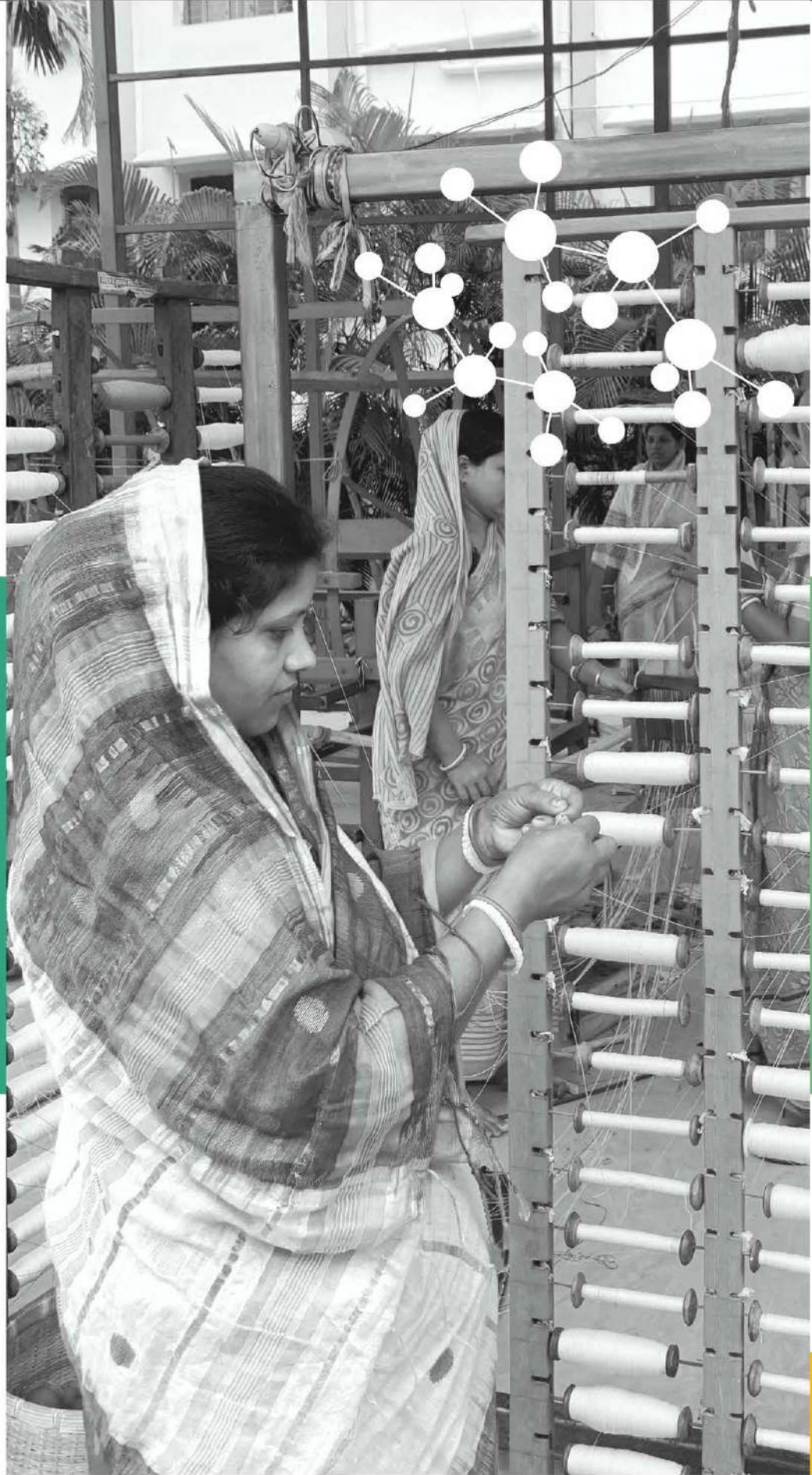
TARA has been incubating scalable business models in the Bundelkhand region of Central India. TARA has its presence in other parts of central and northern India through projects, products and services. It provides consultancy and project management services across the country.



About IMEDF

Indian Micro Enterprises Development Foundation (IMEDF) is the social enterprise development vehicle of the Development Alternatives Group and registered as a Nodal Agency by the Ministry of MSME, Govt. Of India. It is set up with an aim to boost an ecosystem for green and inclusive entrepreneurship that promotes and supports enterprise models through:

- Transfer and adaptation of innovative technology based business models
- Provision of credit and finance linkages for entrepreneurs
- Capacity building through technical skill building for business planning and operations
- Integration and mainstreaming of product and services into local and high value markets
- Collaborate with institutions to create an ecosystem promoting cluster development



Technology and Action for Rural Advancement (TARA)
B-32, Tara Crescent, Qutub Institutional Area
New Delhi - 110 016, India
Tel: +91 11 2654 4100, 2654 4200
Email: tara@devalt.org, Website: www.tara.in