



Inter-Agency Task Force on
Social and Solidarity Economy

Assessing Social and Solidarity Economy in India's Tropical Tasar Silk

Insights from Mahila Kisan Sashaktikaran Pariyojana

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**Implementing the Sustainable Development Goals:
What Role for Social and Solidarity Economy?**

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Abstract

In the face of a volatile economic system, social and solidarity economies in the form of collective enterprises/practices of sustainable development have gained new importance. More so as its principles and goals align with those guiding the UN's 2030 Agenda with its 17 SDGs. SSE has played a significant role in building resilient and sustainable communities against risks brought on by the system of capitalist growth. A case in point is the MKSP programme in India related to the empowerment of women especially from tribal communities traditionally involved in tropical Tasar. These initiatives to streamline the activities along the Tasar value chain also have the potential to localize several SDGs such as eradication of poverty, empowerment of women, employment generation, prevention of migration and preserving the biodiversity of rural areas. In addition, the mobilisation of community social entrepreneurs and organizations and capacity building create enabling conditions for resilient businesses that converge with the goals of SSE. Therefore, among the various scalable livelihood models promoted by MKSP for empowering women to adopt sustainable climate change resilient agro-ecological practices and create a pool of skilled community professions, the Tasar livelihood activity has shown immense possibilities for long-term sustainability.

Keywords

Tropical Tasar silk, SDG, collectives, women enterprises, MKSP

Bio

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Introduction

The current policy priority in India's growth paradigm is to create sustainable inclusive development that above all, seeks to alleviate poverty. Towards this end, the Government of India has undertaken several programmes to provide a sustainable income for the rural poor through income generating assets and economic activities as highlighted in the SDG India Index 2018. From them, it is evident that there is a gradual recognition among many policy decision-making entities that there is a need for a plural economy in response to the social and economic consequences of a neoliberal model. As a consequence, alternative ways of participation in the economy emerged that incorporated beneficiaries into the design as actor-partners at the co-production stages and/or initiatives born from traditional livelihoods practices and the informal sector that materialized into self-managed and collective/community ownership and management. Progressively, these initiatives identified themselves as part of the Sustainable Development Goals that also shared similar principles with SSE. Both having a strong focus on the empowerment of marginalized groups and engaging in poverty alleviation and social inclusion initiatives where women have been the driving force. Among them, the strongest and oldest form of SSE has been the Cooperatives/collective movements. These collectives have created an institutional structure that reinforces credit, trust and reciprocity with members proactively and have consciously been making significant efforts to create, maintain and enter such group networks (Dash, 2012, 2014; Kumbamu, 2017). A few successful SSE stories have been cooperative organisations that have been resilient to capitalistic Desjardins in Canada, Mondragon in Spain, AMUL in India, forestry programmes in Nepal (Kunwar et al, 2013) and India, health service-delivery NGOs in Uruguay and solidaristic certified Fairtrade markets among others (Utting, 2015).

As such, given the multiplicity of public policies related to SSE, this study in India focuses on a component of one particular programme - Mahila Kisan Sashaktikaran Pariyojana (MKSP). Particularly, alternative networks created among tribal populations that have enabled them to reach certain objectives and satisfy certain needs by carving out a social and economic space of their own. In this context, the transactions related to Non-Timber Forest Products (NTFPs) have played a crucial role in sustaining tribal livelihoods and based on indigenous institutions/cultures. Most of these activities have now been institutionalised into SSE organisations such as cooperatives, user groups, self-help groups and social enterprises. Of the diverse NTFPs, Tropical Tasar (Vanya) Sericulture has been a livelihood activity traditionally sourced by tribes.

The polyphagous nature of the Tasar silkworm is advantages to tribal community rearers as their livelihood is linked with the collection and sale of nature grown wild Tasar cocoons. The Forest Conservation Act has also been amended to treat non-mulberry sericulture as forest-based activity enabling the farmers to undertake Vanya silkworm rearing in the natural host plantation in the forests by linking community conservation with equal focus on women. As such Tasar production in India is an NTFP based livelihood that plays a key role in linking community conservation and livelihood opportunities. It creates value from products associated with forest resources thereby aligning incentives between stakeholders to both take ownership of forest conservation as well as obtain economic value from the resource. Consequently, the interventions in producing Tasar have increased the maintenance and protection of Tasar host trees in fallow uplands and forest revenue lands. In the process, it has led to protection against illicit tree felling and rejuvenation of natural forests and afforestation of fallow lands.

Particularly in this study, we contextualise the significance of MKSP by examining the vital role women play as an important productive workforce that manages the household as well as pursues multiple livelihood strategies. Particularly, in the case of Tasar production where most of the activities are undertaken by women has helped gender empowerment and in the creation of sustainable livelihoods via social networking and community management.

With this background, the structure of the paper primarily highlights the potential SSE has to contribute to the 2030 SDG Agenda as their converged objectives form an essential part of the MKSP initiative. The first section of the paper provides a purview of the Tasar silk sector in India followed by a background of the MKSP and how it is linked to the objectives of SDGs, which are analogous to the objectives of SSEs. It also delves into the role MKSP has played in the

modernisation of the Tasar value chain. The third section is the analysis of the programme that quantitatively substantiates the vital role it holds in critical areas viz., Tasar production - seed supply, productivity levels, cocoon price, social innovations - collective enterprise and marketing, incremental income augmentation across selected tropical Tasar States in India as well as environmental objectives – rejuvenation of agro-forestry systems. The paper concludes with suggestions for long-term sustainability of this SSE initiative that aligns with the SDGs.

Tasar Silk in India

Tropical Tasar silk is a major component of wild silks or "Vanya Silk" and is one of the most important NTFPs that is produced by caterpillars of a sericigenous insect, *Antheraea paphia* and *Antheraea mylitta Drury*. These caterpillars have several host plants but are reared mostly on Sal (*Shorea robusta* Roxb.) Arjun (*Terminalia arjuna* Bedd.) and Asan (*T. tomentosa* W. & A.) trees found in natural forests or plantations systematically developed in degraded forest areas. The Indian Forest Conservation Act was amended to treat Vanya sericulture as a forest-based livelihood activity that enabled the forest dwellers/tribals to undertake Tasar silkworm rearing in natural host plantation in the forests.

Today, Tasar has been commercially exploited for silk production and is a highly labour-intensive enterprise that employs approximately 11 persons for every kilogram of raw silk produced (Dewangan *et al*, 2013). The significant role silk plays in the economic, social, environmental and cultural context of the people's livelihoods is evident as India is the second largest producer of silk in the world after China. The sector also encompasses a combination of agriculture, animal husbandry and cottage industry apart from pure textile activities and provides employment to over 7.85 million people in 51,000 villages across the country (Central Silk Board, 2018). India produces a variety of silks, viz., Mulberry, Tasar, Eri and Muga. As of 2016-17, among the four varieties of silk produced, Mulberry accounted for 70.10%, Tasar (10.77%), Eri (18.57%) and Muga (0.56%) of the total raw silk production of 30,348 MT in 2016-17¹. Amongst, Vanya or non-mulberry silks, Tropical Tasar (*Antheraea mylitta*) which feeds mostly on *Terminalia tomentosa* and *Terminalia arjuna* in the forests of central and north-eastern parts of India viz., Jharkhand, Bihar, Chhattisgarh, Andhra Pradesh & Telangana, Maharashtra, Odisha and West Bengal states, provides sustainable livelihood to rural/tribal communities in remote Left-Wing Extremism affected clusters. State-wise Tasar silk production (Table 1) indicated that all the Tasar growing states except Andhra Pradesh, Madhya Pradesh and West Bengal showed a positive CAGR² with Jharkhand leading at a growth rate of 18.61%.

Table 1: Tasar Production in Major States of India (MT)

State	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	CAGR
Andhra Pradesh	4	1.33	0.64	0.46	0.26	NA	1	3.48	-1.92
Bihar	30	29.4	7.3	32	32.95	40.50	44	36	10.59
Chhattisgarh	168	293.8	384.9	384	225.39	254.17	353	523	8.80
Jharkhand	766	1025.2	1088.3	2,000	1,943.30	2,281.30	2630	2217	18.61
Madhya Pradesh	79.2	79.2	83	86	59	56	26	18	-18.80
Maharashtra	12.3	12.3	9.75	10	18.97	21.50	27	19	12.62
Odisha	89.7	89.7	95	45	88.30	107	116	106	4.23
Uttar Pradesh	10.8	10.8	12.3	14	18.04	20.23	22	22	13.02
West Bengal	43.9	43.9	43.8	42	43.05	33.50	37	35	-3.76
Total	1203.9	1585.7	1724.9	2613.46	2429	2814.2	3256	2979.48	14.45

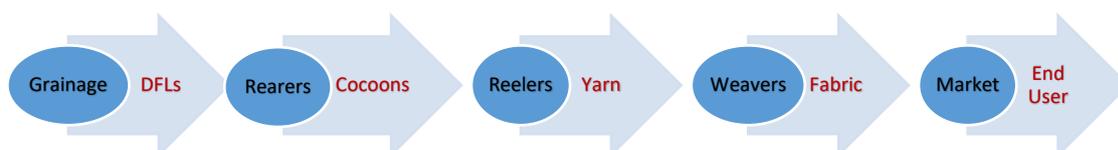
Source: Central Tasar Research & Training Institute (CTR&TI); NA: Not available

¹ Annual Report 2017-18, Ministry of Textiles, GOI.

² Compound Annual Growth Rate

Tasar value chains are labour-intensive and fragile and often susceptible to a combination of market shocks and degradation of forests and trees over pollarded for firewood that had become a marketable product. The process of Tasar production involves maintenance of silkworm host plants/trees, silkworm rearing, silk reeling, and other post-cocoon processes such as twisting, dyeing, weaving, printing and other value-added products. The social composition of households participating in Tasar production mainly includes members from marginalized households and scheduled caste and scheduled tribes. Typically, men are involved in pruning and pollarding of host plantation trees, weaving and marketing across all phases, while women are involved in rearing the worms, collection of cocoons. Elderly persons and children are found in the reeling stage and employed especially during the laying of warp. The activity is undertaken after the monsoon (July-September) when the opportunity cost of labour is low and the rearers can invest an average of 80-90 days every year. The entire family participates in various activities like collection of seed cocoons, preparation of laying, protection of silkworms, harvesting and sale of cocoons. The various actors in the Tasar chain have been graphically represented in a process chart (Fig.1), starting with Grainages³ who source their DFLs from Nucleus seed banks, followed by commercial rearers who produce quality cocoons that are supplied to reelers to produce yarn for weavers to weave Tasar silk fabric.

Fig 1: Tasar Value Chain



However, several issues plague the tropical Tasar sector in India. Those reported, include low yields due to new and high pest/predator attacks and diseases resulting in severe crop loss, diminishing quality of DFLs supplied, lack of proper maintenance of block plantations, crude processing technology, narrow product range, lack of fair marketing facilities and absence of effective revenue sharing models in Tasar value chain that was dominated by traders and money lenders. These issues had diminished the dynamism of the Tasar value chain and gradually led many rearers who were already socio-economically vulnerable to cease Tasar production.

However, with the realization of Tasar silks' potential to strengthen the livelihoods of the poor in tribal districts and the impetus to redress issues faced by the sector, Central Silk Board through the pioneering programme, Mahila Kisan Sasatikaran Pariyojana (MKSP) with financial support from the Ministry of Rural Development (MoRD), Government of India involving professional NGOs like PRADAN and BAIF demonstrated potential of Tasar culture through a multi-state initiative.

Mahila Kisan Sashaktikaran Pariyojana (MKSP)

This multi-state programme was specially designed to improve the status of marginalized rural women in agriculture and empower them by strengthening community institutions of poor women farmers/Mahila Kisans. This intended on leveraging their inherent strengths as agents of household welfare and social networks to promote sustainable agriculture practices based on local ecological systems and traditional livelihoods. The programme is a sub-component of the National Rural Livelihood Mission (NRLM), a wide-ranging Government of India initiative to transform and empower rural women and is unique as it is a departure from conventional extension programmes and espouses values of solidarity that are rooted in the local organisation of women's farming groups into producer groups. It supports them through the provision of training, credit, transfer of improved technologies, the establishment of linkages and marketing.

³ Grainage is an establishment where quality seeds or DFLs are prepared through scientific elimination of diseases from Tasar eggs. Individual/s operating a Grainage is referred to as Graineur

These attributes come together with the SDGs by contributing to inculcate and drive eco-entrepreneurship among tribal communities with the creation of social enterprises, cooperatives and community initiatives based on cooperation, solidarity, reciprocity and environmental stewardship that are also the essential tenets of SSE.

Among the various scalable livelihood models promoted by MKSP, CSB and MoRD initiated the MKSP – NTFP for the '*Promotion of Large scale Tasar sericulture-based livelihoods*' in short - Tasar Project, as a logical extension of successful Tasar initiatives under the special *Swaranajayanti Gram Swarozgar Yojana* projects in the states of Bihar and Jharkhand. It focused on technical and technological interventions across the Tasar value chain besides community led extension and support services. The multi-state initiative was launched in October 2013 in the states of Jharkhand, Odisha, West Bengal and Chhattisgarh implemented through NGOs - PRADAN and BAIF among others. MKSP Tasar projects aimed at creating over 36,000 sustainable livelihoods for the marginalized households, especially women belonging to Scheduled tribes in selected 23 districts of 7 states, which are mostly Left Wing Extremism (LWE) affected. It included rejuvenation/ regeneration of 9468 ha of natural flora to raise 3503 ha of block plantations to produce 0.675 million DFLs basic seed, 5.935 million commercial seed, 160 million reeling cocoons as well as nurture 478 Community Resource Persons (CPRs) (Central Silk Board, 2018). The technological interventions in furthering Tasar sericulture were introduced in seedling raising, wider spacing, *chawki* rearing under nylon nets, low cost tubular structure for Tasar silkworm seed production, egg washing with Depuratex, Egg Drying Chamber and eco-friendly practices such as Jeevan Sudha, secondary nutrient supplement-SM5, use of vermicompost produced from Tasar silkworm detritus.

In addition, the pre-programme Tasar value chain involved cocoon rearing and weaving which included reeling by the weaver's wives and the marketing of fabric. By identifying gaps in forward and backward linkages in the value chain, two new stakeholders have been added viz., Grainages to supply quality seed DFLs and reelers by women SHGs aided by improved machinery and technical know-how that was previously handled by weavers wives. As such, the partnership between PRADAN and CSB has helped modernised the value chain consisting of seed producers, cocoon producers, yarn producers, the Masuta Producer's Company (procures cocoons during the short season of 15 days and stores them for supply to reelers and spinners year around) and EcoTasar Pvt. Ltd, (managed by a social entrepreneur that produces and markets finished products).

The programme's expected outcomes have been positive in terms of strengthening the value chain, creation of a large network of technical and entrepreneurial capacity in the sub-sectors, ensuring availability of basic and commercial seeds at the local level and attracting the younger generation with higher earnings that guarantee employment during lean seasons. It has also led to the convergence of this programme with MGNREGA for host plantation augmentation that also seeks livelihood security and employment for the marginalized. In relation to its contribution to the implementation of the SDGs, it has particularly identified and addressed eradication of poverty (SDG 1), empowerment of women (SDG 5), employment generation (SDG 8), and preserving the biodiversity (SDG 15 & 13). These aspects have been elaborated on in the following sections of the paper.

On the whole, the programme altered a low return traditional Tasar sericulture practised by tribal communities into a stable livelihood enhancing profession based on a multi-faceted support system created by the MKSP.

Study Area and Methodology

Towards achieving certain SDGs and to show the translation of SSE principles into practice, this study covers six states where MKSP has been implemented. The selection of the beneficiaries was conducted by the Project Implementing Agencies (PIAs/NGOs) using Participatory Rural Appraisal techniques. This assessment included all the Mahila Kisans who participated in the programme excepting a few outliers that may have not been included due to extraneous reasons (Table 2). In addition, document analysis from data pertaining to the quantitative changes witnessed by the Tasar silk Mahila Kisans that have been periodically reported by the PIAs and

recorded in Annual Reports of Central Silk Board (CSB) and the Central Ministry of Textiles has been analysed. The analysis consolidated the data to describe the impact on Tasar production in terms of physical coverage, economic outcomes based on prices and income of Tasar silk farmers using basic percentages, trends and graphs. In addition, the programmes key role in social mobilisation, networking and entrepreneurial skill development of Mahila Kisans towards providing sustainable livelihoods have been empirically validated.

Table 2: MKSP Area and Mahila Kisans (2017-18)

States	Villages (No.)	Mahila Kisans (No.)	
		Total	Tasar
Jharkhand	280	11438	8209
West Bengal	67	2632	1885
Bihar	78	3161	2298
Chhattisgarh	48	4505	3379
Odisha	50	2654	1907
Maharashtra	110	5790	4157
Total	633	30180	21835

Source: Central Silk Board (various progress reports)

Impact of MKSP on Mahila Kisans/Women Farmers

The breadth of the vision in the gender specific goal (SDG 5) and its nine targets recognizes the disadvantaged women have faced from embedded social norms across social, economic, political and environmental arenas. In this regard, the MKSP programme offers an entry point for directing policy decisions and resource flows that influence social norms positively towards addressing inequalities and poverty, goals enshrined in the SDGs.

Tasar production has moved from a traditional livelihood practice by tribes to the present environment of new technology and institutions supporting the modern value chain, the MKSP project has revived a dwindling livelihood profession that was almost abandoned due to disease and lack of a stable income. The project's success in mainstreaming the economic viability of the sector has had long-term social benefits. Furthermore, by encouraging low-input production systems like Tasar, the environmental dimension of sustainable development is taken into account. Its further potential lies in the attention it regards to women and their access to natural resources, which can significantly enhance their ability of livelihood security. On the whole, the programme's favourable results can be quantified with impact indicators as discussed in the subsequent sections below.

Physical Coverage

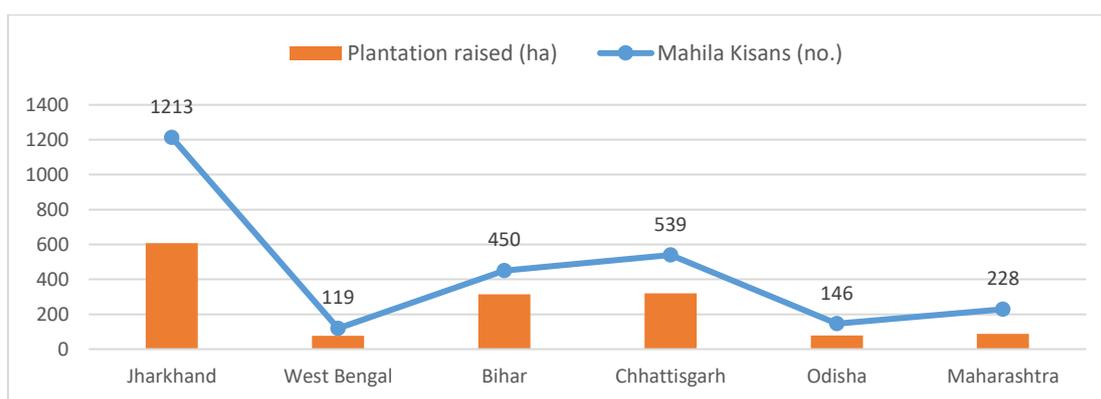
The SDG target 15.2 promotes the implementation of sustainable management of all types of forests and increase afforestation and reforestation. Toscani and Sekot (2017) particularly highlighted the fact that forest conservation and sustainable management are intrinsically linked to development of a sustainable rural community and reduce poverty (SDG 1). On similar lines, the MKSP programme promotes social forestry and afforestation via tasar host plantations as well as provides a gendered dimension of sustainable natural resource use.

In the selected six states, a total of 27232 Mahila Kisans were covered since the programme's inception with a majority from scheduled tribal communities. A total of 2361 Mahila Kisans raised 1284 ha and maintained 2336 ha of Tasar host plantations on private lands through seedlings supplied to them from Kisan nurseries. Among all the six States, Jharkhand had the

highest number of beneficiaries and the largest area under host plantations, while West Bengal host plantations were limited (Fig.2).

Prior to the programme, declining forest cover and host trees, diversion of forests for industrial and mining activities, sparsely located host trees from poor maintenance had afflicted the Tasar seed rearing. However, by initiating interventions, these Tasar host and food plantations help rejuvenate local flora and carbon sequestration, both these attributes contributing to SDG 13 and 15. Thus far, the programme has covered 453 nucleus seed rearers, 2052 nucleus seed rearers and 12815 commercial rearers totalling 15320 rearers, who require approximately 10000 ha of tasar host plants (at 0.7 ha per rearer to rear 200 dfls of tasar silkworm seed). This resulted in conservation of tasar host plants to an extent of over 10000 ha of forests besides raising around 1500 ha of tasar host plants in private and government waste lands under the projects. They also encourage social innovations based on indigenous agro-forestry models that yield sustainable climate change resilient agro-ecological practices.

Fig 2: Block Plantations of Tasar host plants in selected Tasar States (as on 31.12.2018)

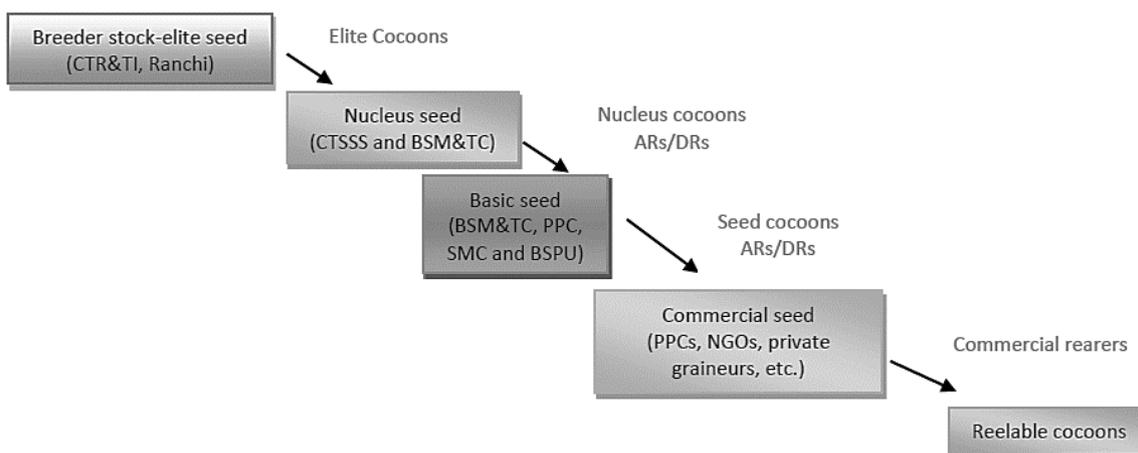


Source: Central Silk Board (various progress reports)

Tasar silkworm seed production and rearing

In terms of Tasar silk production, the following tables present the stages from nucleus seed multiplication to commercial rearing that show the tangible outcomes achieved through the programme’s interventions that have a positive ripple effects on the social and economic well-being of Mahila Kisans predominantly from tribal communities. The basic structure is illustrated in the following diagram (Fig. 3) starting with elite seeds provided by the Central Tasar Research and Training Institute and multiplied into nucleus seeds by the Central Tasar Silk Seed Station and Basic Seed Multiplication and Training Centre on isolated plantations under strict quality controls. They are further multiplied into basic seeds by BSM&TC, pilot project centres, seed multiplication centres. The MKSP has also encouraged basic seeds to be multiplied by Basic Seed production units by rearer cooperatives. Across these five stages, a majority of outcomes surpassed the targets set up by MKSP.

Fig 3: Tasar Seed Production Structure



Source: mksptasar.in

a) Nucleus seed production

The initial pre-cocoon stage involves breeding on nucleus seeds for production and supply to Basic seed multiplication and training centres. Under this stage in Tasar seed production, a total of 453 nucleus seed rearers brushed 0.1528 million DFLs (Disease Free Layings) of nucleus seed to produce 8.534 million seed cocoons at 55.85 seed cocoons per DFL, against the standard 50 cocoons/DFL (Table 3).

Table 3: Nucleus seed production (as on 31.12.2018)

State	No. of Nucleus Seed Rearers		Nucleus seed supplied (million DFLs)		Cocoon produced (million)		Cocoons/DFL
	Target	Ach.	Tar.	Ach.	Tar.	Ach.	
Jharkhand	80	118	0.03	0.063	1.5	4.13	64.79
West Bengal	40	40	0.018	0.0335	0.9	1.83	54.81
Bihar	40	125	0.012	0.0219	0.6	1.31	59.86
Chhattisgarh	40	22	0.012	0.01	0.6	0.47	47.40
Odisha	40	40	0.018	0.0112	0.9	0.52	46.96
Maharashtra	40	108	0.0144	0.0125	0.72	0.26	20.80
Total	280	453	0.1044	0.1528	5.22	8.53	55.85

Source: Central Silk Board (various progress reports); Note: Tar.- Target; Ach. – Achievement

b) Basic seed production

In this stage, the number of basic seed rearers brought into the programme surpassed the target (133%). A total of 1531 basic seed rearers brushed 1.024 million DFLs of basic seed procured to produce 30.615 million seed cocoons at 29.90 seed cocoons per DFL against the norm of 32 (Table 4).

Table 4: Basic seed production (as on 31.12.2018)

State	No. of Basic Seed Rearers		Basic Seed Supplied (million DFLs)		Cocoons Produced (million)		Seed cocoons /DFL
	Tar.	Ach.	Tar.	Ach.	Tar.	Ach.	
Jharkhand	695	695	0.225	0.482	7.219	15.03	31.18
West Bengal	155	221	0.05	0.165	1.622	4.282	25.95

Bihar	100	104	0.015	0.039	0.48	1.572	40.31
Chhattisgarh	188	187	0.053	0.084	1.708	1.544	18.38
Odisha	153	210	0.05	0.096	1.608	3.366	35.06
Maharashtra	240	625	0.072	0.158	2.304	4.821	30.51
Total	1531	2042	0.465	1.024	14.941	30.615	29.90

Source: Central Silk Board (various progress reports); Note: Tar.- Target; Ach. – Achievement;

c) Commercial seed production

Tasar seeds were hitherto prepared by state grainages to produce disease-free quality DFLs. However, initiatives by MKSP have encouraged the creation of private grainages by local community members. Although the number of Private Graineurs did not reach the intended targets set by MKSP in three of the six states, the commercial DFLs produced were above the targets. A total of 382 private graineurs processed 20.19 million seed cocoons and produced 4.695 million commercial DFLs at 4.5 cocoons/DFL against the norm of 4 cocoons/DFL (Table 5).

Table 5: Commercial Seed Production (as on 31.12.2018)

State	Private Graineurs (No.)		Cocoon preserved (million DFLs)		Comm. DFLs produced (million)		Cocoon DFL ratio
	Tar.	Ach.	Tar.	Ach.	Tar.	Ach.	
Jharkhand	175	175	7.580	111.27	1.895	2.334	4.8
West Bengal	39	39	1.700	35.90	0.425	0.872	4.1
Bihar	24	12	0.960	7.82	0.240	0.218	3.6
Chhattisgarh	47	33	1.780	10.796	0.445	0.219	4.9
Odisha	38	103	1.660	26.08	0.415	0.609	4.3
Maharashtra	60	20	2.70	10.07	0.675	0.416	2.4
Total	383	382	16.38	201.933	4.095	4.668	4.5

Source: Central Silk Board (various progress reports); Note: Tar.- Target; Ach. – Achievement

State-wise cocoon productivity indicated consistent improvement in the number of Mahila Kisans producing seed cocoon and commercial since the programme's inception, with Jharkhand taking the lead. At the pre-cocoon/seed stage of the value chain, rearing absorbs 65 per cent of the value produced, while inputs account for 20% and collection and marketing absorbs 15% of the value with 86% of the margin accruing to commercial rearers, 9% to seed rearers and 5% to Grainages.

d) Commercial rearing

A total of 12815 commercial rearers brushed 4.7197 million DFLs procured from the private graineurs to produce 165.762 million reeling cocoons at 35.12 cocoons per DFL (Table 6). Only Odisha and West Bengal achieved targets in production of reeling cocoons, while the other four states recorded below target numbers.

Table 6: Commercial Rearing (as on 31.12.2018)

State	No. of Comm. Rearers		Commercial DFLs supplied (million)		Cocoons produced (million)		Cocoons/DFL
	Tar.	Ach.	Tar.	Ach.	Tar.	Ach.	
Jharkhand	5367	5367	1.742	2.1550	87.105	83.396	38.70

West Bengal	1236	1500	0.401	0.9118	20.040	37.3765	40.99
Bihar	1439	364	0.216	0.1034	6.907	3.0460	29.46
Chhattisgarh	1529	1236	0.293	0.2424	14.645	4.0232	16.60
Odisha	1264	1264	0.276	0.5798	13.820	17.6510	30.44
Maharashtra	2786	3084	0.836	0.7273	41.790	20.2698	27.87
Total	13621	12815	3.764	4.7197	184.307	165.762	35.12

Source: Central Silk Board (various progress reports); Note: Tar.- Target; Ach. – Achievement

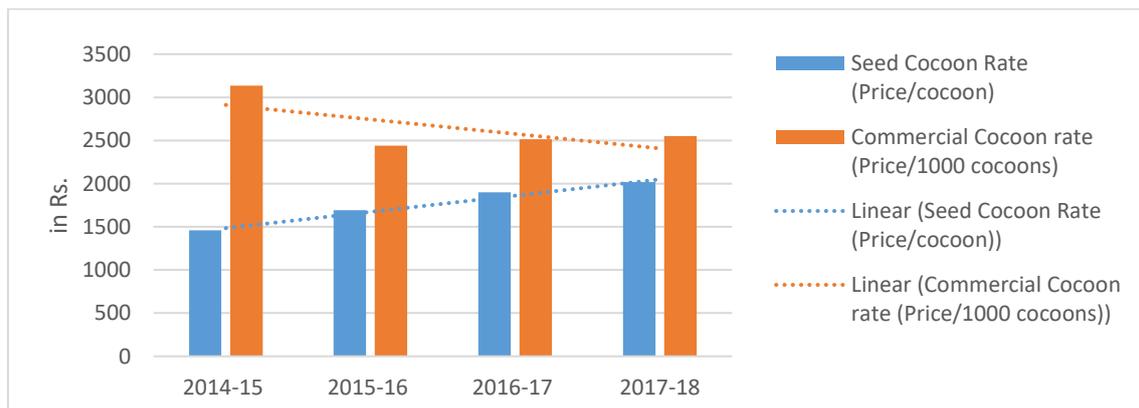
Economic Impact

Following a discussion of the physical progress achieved in tasar production along the tasar value chain, the ensuing section highlights the economic benefits gained by women from tribal communities. Along with the social and environmental facets that encompasses SSE, it converges with SDG 8, which promotes sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Specifically, decent work that respects the human rights of workers, which is an essential strategic component to eliminate multi-dimensional poverty. However, there has been criticism on its promotional nature unlike other goals that demand specific quantitative human development outcomes/benchmarks and its market oriented perspective by its linkage with economic growth that may not necessarily result in realisation of employment and decent work. Frey (2017) suggests framing full employment and decent work with in reference to policies that create an enabling environment for its achievement sans economic growth requirements. Towards this end, the MKSP provides such a localized roadmap with its many economic activities in the tasar value chain that lead up to employment generation, decent work and incremental income among tribal communities especially women in the States under study.

a) State-wise Price of Cocoons

Seed cocoon is critical for building of stock for commercial crop and the price of seed cocoon has been comparatively low over the years with high production risks. However, the rate of seed cocoon since the inception of MKSP has increased over the four-year project period with West Bengal recording the highest rate. While commercial cocoons are the raw material for the production of reeled and spun Tasar yarn and subsequently woven into fabric. In the case of its market rates, although spikes in prices were witnessed during the project's inception year, the rate stabilized across the project period in all the states (Fig. 4) which has been a major issue for Tasar rearers given the high volatility and uncertainty in prices. However, there is a decreasing trend in the average prices of commercial cocoons across the selected states. In the case of West Bengal, a minimum support price on quality linked commercial cocoons was proposed.

Fig.4: Seed and Commercial Cocoon Rates



Source: Central Silk Board (various progress reports)

At the post-cocoon stage in the value chain, input-related activities absorb 84% of the value produced, while 11% is taken up by processing and 7% used for assembling and marketing. While reelers earn 84% and Spinners receive 16% of the net margins.

b) Value addition

At the pre-cocoon/seed stage, five basic DFLs when reared would produce 198 Bio-Voltine - grade one seed cocoons. When this is processed at the grainage, they yield 33 commercial DFLs. Upon further rearing, these yield 1,470 cocoons. Of them, 85% are reelable cocoons, 244 unreelable cocoons, 174 pierced cocoons and 383 gm of peduncles⁴.

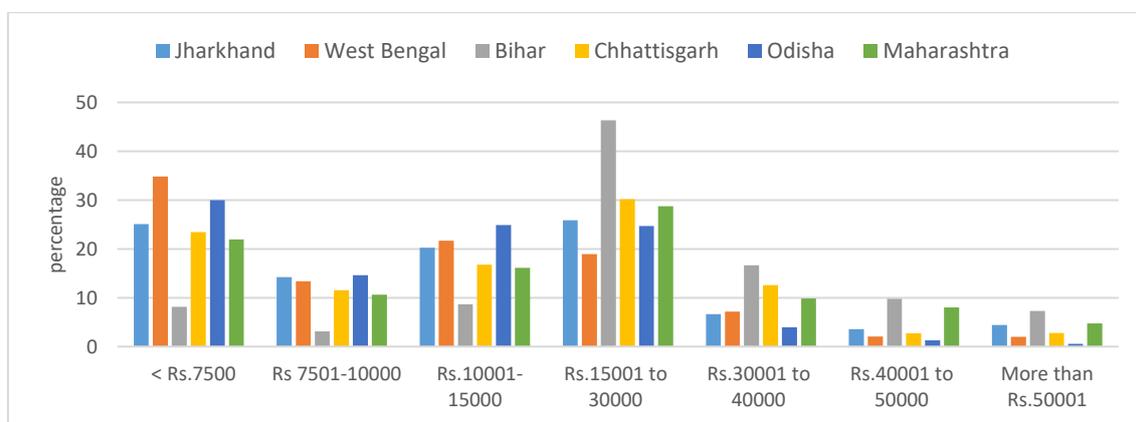
At the post-cocoon stage, 1,250 cocoons obtained are reeled into one kg of yarn, generating 310 gm of reel waste. The 418 unreelable cocoons are spun into 239 gm of Ghicha yarn⁵, and 60 gm of spun waste (*guddar*), along with 383 gm of peduncles.

c) Incremental income

A majority of Mahila Kisans earned an income in the range of Rs.15,000-30,000 per year with the highest number (2072) in Bihar (Fig.5). There has been an incremental income of over Rs.8000-10,000 from basic seed crop, Rs. 15,000-20,000/- from nucleus seed and commercial rearing, over Rs. 25,000/- from Tasar silkworm seed production besides Rs.2,000-4,000 as supplementary income from allied activities such as vegetable cultivation. Specifically, 100 kg of reeled yarn generates 8,433 person days of employment with 87% related to activities under cocoon production and 13% spent on yarn conversion. This process also generates 37 kg of silk waste and 39 kg of peduncles.

While in the initial year, the income generation was low due to various reasons including marketing, it has improved over the project period, with about 62% earning over the anticipated income levels and about 19% earning more than double the committed income levels for the entire project period.

Fig 5: Incremental income earned by Mahila Kisans (in %)

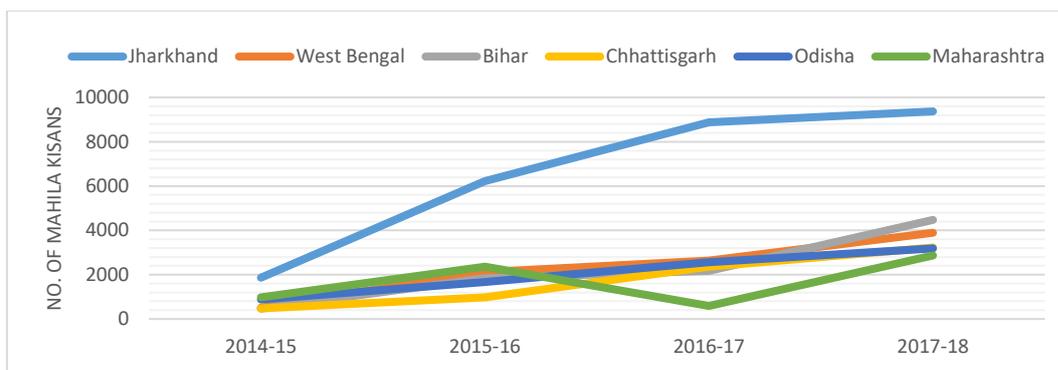


Source: Central Silk Board (various progress reports)

⁴ The tropical Tasar caterpillar first creates a form of stem/stalk before it starts spinning the cocoon. This stem is called peduncle. Mahila Kisans also create silk yarn from these peduncles and sell it by weight.

⁵ Silk yarn produced from ruptured cocoons

Fig 6: Number of Mahila Kisans earning incremental incomes



Source: Central Silk Board (various progress reports)

Across all the States, the upward trend in the number of Mahila Kisans earning an income from Tasar under MKSP increased (Fig.6) and therefore it makes Tasar a lucrative activity for the rural poor and reduces outmigration, advancing the SDGs 1 and 8. Tasar activities have created employment to the extent of approximately eleven-man days per kilogram of raw silk produced and as of March 2019, over 200 MT of raw silk has been produced. Under the broadening forms of SSE, in addition to traditional collectives, new forms of profit-making social enterprises, social entrepreneurs and NGOs have emerged. On those lines, one of the PIAs (PRADAN) that has partnered with CSB since MKSP inception, through the success of the programme has been able to shift from a dependence on donations and grants to sustain themselves via Tasar income-generating activities from the establishment of the Tasar Development Foundation.

Social Mobilisation and Capacity Building

Institutional innovations that bring inclusiveness through solidarity among the marginalized, forms a vital characteristic of SSE in response to persistent inequality. Although, UN Women, in the lead-up to 2015, called for a specific target on strengthening women’s collective action, the SDG target 5.5 comes close to emphasising women’s full and effective participation and equal opportunity for leadership. Towards this end, the Mahila Kisans in the programme were encouraged to form Self-Help Groups, Producer Groups (Tasar Vikas Samiti’s) and User Groups based on mutual trust by acting collectively and in solidarity (Table 7). These collectives help them improve their bargaining power and leverage resources by reasserting social control over the local Tasar economy via a system of democratic self-management (Utting, 2015).

Table 7: Community Mobilisation (2017-18)

State	Members in SHGs	Producer Groups created	User Groups federated
Jharkhand	11180	204	4
West Bengal	2359	65	1
Bihar	1768	46	1
Chhattisgarh	2781	59	12
Odisha	2089	40	1
Maharashtra	2313	125	3

Source: Central Silk Board (various progress reports)

Among the various bottom-up entities created by MKSP, the local Community Resource Persons (CRPs) plays a significant role. They help the Tasar rearing community members procure inputs

such as fertilizers and seedlings for host plantations, Disease Free Layings (DFLs), establish village-level nurseries for the production of seedlings as well as provide assistance in storage and marketing of cocoons. The CRPs are hosted at the primary level organisations - Tasar Vikas Samiti or Yarn Producers' group that are Self Help Groups that comprise of plantation farmers, rearers, graineurs, reelers and spinners. These cooperative groups establish linkages with reeler's groups and marketing agencies and also with financial institutions for credit facilities. Thereby ensuring collective ownership and accountability of final product by all primary producers in the Tasar value chain, distribution of benefits from value addition and protection of Mahila Kisans from market risks (Pastakia et al, 2015).

Table 8: Capacity building of Mahila Kisans (No.)

Activity	Jharkhand	West Bengal	Bihar	Chhattisgarh	Odisha	Maharashtra
Nursery farmers	162	91	54	114	46	60
Plantation farmers	845	87	448	155	146	116
Nucleus seed rearers	198	61	57	20	61	48
BSPU members	135	45	15	15	30	0
Basic seed rearers	1427	457	57	587	517	552
Private Graineurs	587	227	16	133	111	38
Commercial rearers	6095	2695	350	2373	1894	1597
Reelers	0	0	0	452	0	20
Spinners	0	0	0	0	0	38
Agriculture & other livelihood activities	7252	2669	1400	4167	2745	2235

Source: Central Silk Board (various progress reports)

Additionally, to further the goal of long-term sustainability of the programme initiatives by nurturing community social entrepreneurship that creates and sustain resilient businesses, various capacity building and need-based focused training programmes and exposure visits were organized. Specific technical programmes for each Tasar activity (Table 8) as well as training on sectoral activities viz. sustainable agriculture and vegetable cultivation. Training to tribal youth on new technological developments ensured production of disease-free layings (DFLs)⁶, and in due course, these skilled youth have been referred to as 'grainage entrepreneurs'. Over time, CSB has also trained grainage entrepreneurs to produce 'basic seed and nucleus seed', that hitherto was produced only CSB. As of 2018, 29904 technical training, 38165 training on sectoral activities, 1290 training for CRPs and 79446 on-field CRP training sessions were conducted in the six states. In addition, capacity building on household food and nutrition security were also taken up on a life cycle approach including awareness creation on issues relating to health and sanitation.

Concerns in the Implementation of MKSP

Although the programme was a success, there were certain impediments observed on-field, specifically low yields and high pest/predator attacks among new areas and rearers, decline in brushings per family mainly due to deforestation, higher fecundity and hatching percentage in terms of the physical operations. While, at the macro level, lack of conducive policy such as , sustaining community institutions of seed production and supply systems and marketing facilities such as solely trader dependent, low operational scale of raw material bank of Central Silk Board in cocoon procurement in certain states hindered the operations of the programme. In the state of

⁶ DFL refers to disease free eggs laid by one female moth whose cocoons are used to make silk

Chhattisgarh, unavailability host flora and privately-owned wasteland in Balrampur, Kanker and Raigarh districts staggered the growth of host plantations and consequently fewer rearers were involved in the programme. Some of the host plantations were scattered with a mix of other tree species resulting in low productivity. A similar situation was witnessed in the State of Bihar, however it was remedied with the use of unutilised plantations raised under other schemes in consultation with the Sericulture Department.

To overcome these concerns faced by the implementation agencies, suggestions provided by personnel from the respective state agencies included - building seed zones to reduce secondary contamination, develop alternate disease monitoring methods by the disease monitoring team during grainage operation of basic and commercial seed production and developing or procuring economically viable producer machines for post cocoon activities. There was also consensus for integration of the programme implementing agencies especially Tasar Development Foundation, Central Silk Board and Department of Sericulture beyond the period of the programme to sustain its positive impact across the tasar value chain.

Conclusion

An integral part towards achieving the SDGs is to foster a balance through economic dynamism, environmental protection as well as socio-political empowerment rather than focus on market-centred growth strategies and “add-on” minimalistic social extension programmes that ostensibly tackled the structural underpinning of development policy in India. Such a balanced integrated and holistic approach can be found in the tenets of SSE that incorporates many areas essential to the realisation of the SDGs.

With its local real-world practices, the MKSP programme in India has provided insights on how social and solidarity economy organisations such as producer groups/enterprises and skilled community resource persons can be instrumental in empowering the marginalized households’ especially rural women by building their knowledge, skills and capacities in stabilising their Tasar related livelihoods. It has created incremental/supplementary sources of income, helped enhance participation, facilitated increased involvement in decision-making and instilled accountability along the Tasar value chain. The programme’s environmental component on the rejuvenation of indigenous agroforestry models through Tasar host plantations also compliments Forest Department reforestation efforts and can result in carbon sequestration. On the whole, MKSPs technology transfer, capacity building and resource mobilisation efforts have initiated a reclamation of control over the local agro-ecological systems and instrumental in the localized realisation of the SDGs.

The study has revealed that although positive strides have been made in the Tasar sector, the strategies of MKSP need to be continued as grassroots cadres including the CRPs needs further support and nurturing as empowerment is a process that requires sustained strategic intervention and involvement. In addition, such SSE collectives are also susceptible to the vagaries of a neo-liberalising world. Therefore, withdrawal of MKSP at this stage may hinder further innovations both (social and technology) and leave these women apprentices without solutions to their existing practical and strategic livelihood needs. Alternatively, a phased inclusion of SSE in public policy design can reorient the State’s role in balancing economic, social and environmental dimensions of sustainable development.

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