

# TASAR DEVELOPMENT FOUNDATION: Generating Sustainable Livelihood

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**T**ASAR DEVELOPMENT FOUNDATION (TDF) WAS registered on November 5, 2013, in the National Capital Territory of Delhi, under Section 25 of the Companies Act 1956 (No. 1 of 1956) without any capital; the company is a private limited entity. TDF is a sector support organization and brings in its unique experience and knowledge on *tasar* sericulture to support the implementation of the various *tasar* sericulture-based programmes. TDF is, at present, engaged in the implementation of *tasar* sericulture-related activities across five States: Bihar, Chhattisgarh, Jharkhand, Odisha and West Bengal.

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## GENESIS

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PRADAN has been involved in *tasar* sericulture for over two-and-a-half decades, with the objective of creating sustainable livelihoods for marginalized communities. The initiative began in Godda district of Jharkhand and subsequently expanded to other parts of the state, and the adjoining states of Bihar and Odisha.

Through this period, PRADAN has worked on all the components of the *tasar* silk value chain—the establishment of host tree plantations, the setting up of the entire seed vertical, the promotion of improved practices for silkworm rearing, the processing of cocoons into yarns, the weaving of fabric and the creation of alternative marketing channels for *tasar* commodities.

In 2013, the idea of a *Tasar* Development Foundation (TDF) germinated, to launch a scale-up plan for generating livelihoods in the sector, owing to the favourable macro-context high demand in the market, the assurance of large-scale public finance for the *tasar* sector and the demands for sustainable livelihoods among the rural

communities, among other things.

Therefore, in order to spearhead major initiatives in the sector and push the frontiers, PRADAN set up TDF, akin to a fully-owned subsidiary of PRADAN.

TDF is a public purpose sectoral organization with a focus on expanding the scope of livelihoods in *tasar* sericulture for the poorer communities. The rationale for setting up a sectoral organization is also to create mechanisms for an effective integration of the pre- and post-cocoon segments that operate in different geographies and to work towards maximizing the gains of the producers in the value chain thereby promoting overall growth in the sector.

## OBJECTIVES

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The main objectives of TDF are to:

1) Expand the scope of livelihoods for primary producers in the *tasar* sector through innovation, adaptation and creation of a value chain, to integrate production, processing and marketing functions

- 2) Build and retain competent human resources within the sector to instil new ideas, raise standards and open new frontiers of growth
- 3) Strengthen critical factors of production, such as the production and supply of high-quality seed, in order to raise cocoon productivity and ensure the availability of raw material for the sector
- 4) Build and strengthen institutions of producers to organize production systems, facilitate the attainment of the scale of economy in production clusters, attract capital and services of markets in remote rural areas
- 5) Broad-base and align stakeholders to foster an environment of growth in the sector

## INSTITUTIONAL FRAMEWORK

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TDF has been set up to unleash the potential of the *tasar* sector and create sustainable livelihoods for marginalized communities in a manner that builds their stake and gives them an effective say in the overall sector. TDF is working on all fronts to emerge as a strong

Our main focus has been to improve the quality of the seeds available to the producers. We were also able to enhance the price of basic and commercial-seed DFLs to almost double the CSB rate.

institution. The priorities of TDF are:

- Strengthening the governance functions in order to put in place a strong internal guidance mechanism to stay focussed on the purpose of the institution and nurture a culture of collegiality and openness for learning
- Setting systems for monitoring and evaluation through articulation of goals, pathways and tracking progress against salient milestones
- Developing a perspective plan to articulate a vision of success for the medium term, and define approaches and strategies for operations, including geography, scale, technology/processes and finance

- Raising resources for sustainability of the institution, including project financing as also building a corpus of support for carrying out institutional tasks
- Building linkages with key stakeholders relevant for the sector, in order to draw knowledge support, facilitate innovation, bring in investments to the sector, influence policies and norms and build a strong institutional identity for TDF

#### ACHIEVEMENTS OF TDF: 2014-16

TDF has promoted *tasar* sericulture-based livelihoods in Jharkhand, Bihar, Odisha, West Bengal and Chhattisgarh in nine production clusters. Our main

focus has been to improve the quality of the seeds available to the producers. We were also able to enhance the price of basic and commercial-seed DFLs to almost double the CSB rate. We also advocated for the enhancement of the price of DFLs in various forums and, with CSB principally, succeeded in having the price raised from Rs 6 to Rs 12. Table 1 shows some key achievements of TDF in the last two years.

Table 2 gives the category-wise income generation of the families.

#### PROGRESS OF SEED VERTICAL

For the last three years, TDF has placed special focus on streamlining the seed vertical and setting the norms and disease

**Table 1: Key Achievements of TDF in 2014 and 2015**

No.	Particulars	Achievement	
		2014	2015
1	No. of families in livelihood activities	5,019	10,028
2	No. of basic seed produced	1,73,000	1,65,919
3	No. of nucleus seed produced	26,964	67,295
4	No. of commercial seed produced	4,83,036	10,99,000
5	No. of cocoons produced	1,33,00,000	5,97,24,650
6	Disease %age		
	Basic grainage	27% to 54%	5% to 19%
	Nucleus grainage	18% to 20%	2% to 6%

For the last three years, TDF has placed special focus on streamlining the seed vertical and setting the norms and disease surveillance protocol in seed production.

**Table 2: Income Generated by Families in Each Category**

No.	Category	No. of Families	Average Income/Family	Total Income
1	Basic seed crop rearing	1358	14,000	1,90,12,000
2	Commercial seed crop rearing	8,037	18,425	14,80,81,725
3	Tasar seed production	198	28,000	55,44,000
4	Nucleus crop rearing	355	29,400	1,04,37,000
5	Arjuna nursery activities	80	12,000	9,60,000
	<b>Total</b>	<b>10,028</b>		<b>18,40,34,725</b>

surveillance protocol in seed production. For ensuring quality standards of seed production, we have developed our quality system manual. Of the 11 existing basic seed preservation centres, six of them are ISO 9001:2008 certified till date; ISO certification of the remaining centres is on the anvil. There has been a continual improvement in the quality and quantity of seed production across the basic seed grainages in the last two years.

As many as 12.94 lakh nucleus cocoons have been grown in 10 basic seed preservation centres this year and all the seed cocoons were from the nucleus DFLs produced in the nucleus grainage. Disease surveillance protocol for the preservation of the seed cocoons has been followed, starting from seed DFL rearing to grainage operation.

This has resulted in the production of more than three lakhs basic seed DFLs, which helped rearers become self-reliant; they do not have to procure any basic seed DFLs from outside. The cocoon to DFL production ratio of this year (2016) is 3.45:1, better than last year's ratio of 3.63:1 in basic seed DFL production.

Around 500 ha of block plantation required for seed cocoon production are being maintained for basic seed production centres in Bihar and Jharkhand whereas in West Bengal, Odisha and Chhattisgarh, the plantations raised by the Department of Sericulture (DoS) are being used. In Jharkhand and Bihar, the new plantations that are being readied are only for nucleus rearing, supplying good quality DFLs so that these do not get contaminated and to have

two- to three-fold of plantations available for nucleus rearing than the actual requirement.

To meet the nucleus DFL requirement in all five states, 14,178 nucleus first-crop DFLs have been brushed in Godda, Dumka and Banka districts. Twenty lakh seed cocoons are being preserved in 11 Basic Seed Production Units (BSPUs) available at present. Along with that, three new BSPUs will be built by the end of March 2017. This will not only fulfill the DFL requirements of TDF's own operational area, but also the demand for DFLs from outside.

Customer satisfaction is being tracked and customer feedback taken, to further improve service delivery of BSPUs. Focus on improving the skills of the human resources has been increased in these BSPUs through regular

In recent years, the central government, particularly the Ministries of Textiles and of Rural Development, have been highly supportive of the intervention in *tasar* sericulture.

orientation on the process of grainage operation for better quality assurance. The quality control checking system of seed cocoons before preservation has also been improved across BSPUs.

## RESEARCH AND DEVELOPMENT

Pebrine is one of the deadliest diseases in *tasar* culture. Every year, a large number of *tasar* rearers are forced to give up the activity due to pebrine. A pebrine spore is usually identified by a trained microscopist, who uses a microscope with 600x magnification; yet problems may arise in the manual system.

Keeping this issue in mind,

Centre for Development of Advanced Computing (C-DAC) has developed an instrument called the 'Pebrine-o-Scope' after three years of research. The Pebrine-o-Scope is a microscope-mounted instrument with supported software, which analyses the photo-micrographic image of the smear of a tissue sample from the female silk moth and detects the presence of the pebrine spore, with a high degree of accuracy. It has two functions; first it collects the data through the microscopic image of the slides prepared and then the supported software compiles the data in a computer in a prescribed format for further analysis. To get a better view, a reagent, developed by the renowned

institution People's Education Society Institute of Technology, Bangalore (PESIT) is applied in the smear to dissolve the bacteria, virus and fats; it exposes the deadly virus to facilitate a clear picture of the pebrine spores.

The technology was formally transferred to TDF on July 27, 2016, at a function organized by the C-DAC Kolkata, in the presence of the Secretary, Department of Information Technology, Government of India. C-DAC has given TDF the rights to manufacture and sell the Pebrine-o-Scope.

## POLICY ISSUES AND OUR INTERVENTION

In recent years, the central government, particularly the Ministries of Textiles and of Rural Development, has been highly supportive of the intervention in *tasar* sericulture. However, there are some issues that need to be tackled pro-actively so as to smoothen engagement in this direction. These are:

- Easy access to forests for sericulture: About 90 per cent of silk-worm rearing is carried out in the natural forests, access to which is not easy in most states. The Forest

**Table 3: Capacity of the Available Infrastructure**

Infrastructure Available	No.	Installed Capacity
BSPCs	11	3 lakh DFL
Small grainage	381	19.05 lakh DFL
Plantation (Ha.) (nucleus rearing)	350	70,000 DFL

**Table 4: Progress of the Seed Sector in 2015-16**

Particulars	No. of DFLs	No. of Families
No. of nucleus seed produced	67,295	355
No. of basic seed DFLs produced	2,45,919	1,358
No. of commercial seed produced	14,99,235	8,037
Total	18,12,449	9,750

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Creating seed zones is one of the primary policies of CSB, which is derived from the experience of Special Swarnajayanti Gramin Swarojgar Yojana (SGSY) projects. Conducting rearing in isolated patches, away from the commercial field has drastically reduced the disease percentage in the grainage during special SGSY.

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Departments in most states are reluctant to allow access to forests.

We have made several attempts and have also involved the State Rural Livelihood Missions (SRLMs) and CSB to negotiate with the Forest Department to resolve the issue. We have discussed the issue at length with the Principal Chief Conservator of Forests in Bihar and the Chief Conservator of Forests of West Bengal. In both the States, the Forest Department has agreed to provide all possible support and has advised us to involve the Forest Protection Committee for the promotion of sericulture to resolve forest-related issues.

All the states included the *tasar* host species in their regular plantation programme and also promoted the raising of *tasar* host flora under MGNREGA.

We have also commissioned one study to document the State Forest Policy in relation to sericulture and to understand the environmental impact of sericulture. This will help us further negotiate with the Forest Department on a pro-sericulture policy.

- Need for creating seed zones: The absence of well-defined

and well-managed 'seed zones' creates a difficulty in limiting the disease load in successive grainage cycles.

Creating seed zones is one of the primary policies of CSB, which is derived from the experience of Special Swarnajayanti Gramin Swarojgar Yojana (SGSY) projects. Conducting rearing in isolated patches, away from the commercial field has drastically reduced the disease percentage in the grainage during special SGSY. The issue was regularly raised by us in several meetings with CSB and DoS. We are hoping that the demarcated seed zones can be witnessed very soon.

- Incentivizing private seed entrepreneurs: The private entrepreneurs, promoted under the special SGSY projects, sell DFLs without subsidy. However, in the same geography, DoS supplies DFLs with 75 per cent subsidy, which undercuts the efforts of private seed entrepreneurs.

The issue was raised in every possible forum starting from the Joint Coordination Committee to the State-level Sericulture Coordination Committee to make the cost equal and to have a fair playing ground to encourage entrepreneurs. At present, the

DoS of WB and Jharkhand are processing it for consideration.

- Policy for pricing of seed cocoons: Seed cocoons are very critical for building the stock for the commercial crop. However, the price of seed cocoons is comparatively very low. Moreover, production risk is relatively high due to the weather conditions, and pest and predator attacks between June and August. Most of the states declare the price of seed cocoons as per the state policy whereas the price of DFLs (product of the seed cocoons) is decided by a Joint Coordination Committee (JCC).

To make the price uniform across states, we raised the issue in the JCC, of which all state sericulture heads are members. The JCC agreed and revised the prices of both seed cocoons and DFLs. The current price fixed by JCC is Rs 2 per cocoon, whereas the price of DFLs is Rs 12 per DFL. The prices are fixed keeping in mind the private entrepreneurs involved in the basic and commercial seed production, and to enhance the income of seed cocoon producers. This price is applicable for all states.



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## OTHERS

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A. For the first time, PRADAN's *tasar* initiative spread to new geographies, spearheaded by TDF, and has entered remote (and Left Wing Extremism LWE-affected) areas such as Bastar, Balrampur and Kanker (in Chhattisgarh), Banspal, Harichandanpur (in Kendujhar District of Odisha) and Jangal Mahal (forest areas in the tri-junction of Medinipore, Bankura and Purulia districts of West Bengal). A total of 1,750 marginalized households in these districts were supported in earning their livelihood from *tasar* silk-worm rearing. TDF offered a comprehensive package of support to individual producers, resulting in phenomenal increase in cocoon production and, subsequently, income gain. This initiative drew the attention of the state sericulture organizations and CSB, which are now keen to see the up-scaling of TDF's initiatives in the states.

B. In the past three years, TDF has focussed on drawing university educated youth into the *tasar* sector and grooming

them as sector professionals. TDF has designed a detailed training curriculum to impart the required techno-managerial skills among these youth. In the past three years (2014-16), 17 people have undergone training, and all of them are currently on board and are placed in project locations. They are now able to handle the major task of *tasar* expansion independently.

C. During the same period, TDF built partnership with eight NGOs—new entrants to this sector. The partners have undertaken significant initiatives to expand *tasar* to non-traditional areas. TDF's support included joint exploration of the sector in the project areas of the partners, training of their staff, supporting the planning, implementation and setting up systems for ongoing monitoring. The partners together reached out to over 1,300 families in Jharkhand, Odisha and Chhattisgarh. A much bigger outreach is being planned by the partners for the coming years. This will open new frontiers of growth.

D. TDF, in collaboration with CSB, has developed a comprehensive

training module to cover all groups of producers in the *tasar* sericulture sector, including seed producers, plantation farmers, silkworm rearers and yarn producers. This has been a unique initiative to standardize training protocol for the sector, covering technical, management and institutional aspects.

## FUTURE PLANS, APPROACHES/ STRATEGIES

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Since its inception, TDF attained a measure of success in furthering sectoral tasks. It is now time for TDF to envisage a bigger role to assume significance in the sector. TDF foresees covering 13,500 families in 10 districts of five states this year (2017) in select traditional *tasar* production clusters in India. In these clusters, the producers will be organized into collectives to set up systems of seed supply, access improved technologies for silkworm rearing and achieve capacities to deal with markets on mutual terms. Each collective will comprise 1,000 to 1,200 families in a cluster. All the producers (13,500 in number) will be organized in 12 collectives. TDF hopes to achieve the following milestones in the coming years.

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In order to create an alternate marketing system, Production Clusters will have Sorting, Grading and Aggregation Centres for tasar cocoons, operated by Producers' Collectives. These will encourage members to bring their harvest to a common place.

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### **Setting up viable tasar production clusters**

A production cluster is conceived as a self-contained unit with provisions for all key inputs and services built around Producers' Collectives to support individual silkworm rearers to carry out silkworm rearing efficiently, with the assurance of fair prices from the markets. As discussed, TDF will set up viable tasar production clusters by organizing Producers' Collectives, and production and marketing services.

Traditionally, tasar is reared in host plants available in forest revenue areas. Rearers possess certain usufructuary rights to use the host plants for tasar silkworm rearing. Host flora and human resources are available abundantly in traditional rearing clusters. The key constraints at the level of the producers are:

- i. Acute shortage of quality seeds (called DFLs/eggs of silk moth),
- ii. Absence of production support services (technology, disease-prevention, input supply, etc.)
- iii. Non-availability of fair markets

*Support for strengthening production systems:* Each production cluster will have

complete seed vertical from the Centralized Production Foundation seed grainages to decentralized small-scale grainages for commercial crop to cater to the seed requirement of the rearers in the production cluster.

*Support for cocoon marketing:* Open markets do not exist for primary producers of cocoons. Traditionally, much of the cocoons were sold through a closed system of credit lending and forward purchase by a nexus of moneylenders/petty traders. Cocoons reach the terminal markets (in the weaving clusters) through a series of middlemen. The producers receive just about 50 per cent of the terminal market rates.

In order to create an alternate marketing system, Production Clusters will have Sorting, Grading and Aggregation Centres for tasar cocoons, operated by Producers' Collectives. These will encourage members to bring their harvest to a common place. A large volume of the produce will attract big traders from the market, who will then directly negotiate with the Collectives to buy the lot. This ensures a much higher price realization for cocoons.

Capacity building of producers and CSPs: In order to facilitate the smooth adoption of technology among different groups of producers, there is focus on creating the required technical skills thereby building self-reliance in the community to manage technologies and management systems in the long run. TDF will also support and impart entrepreneurial skills in order to help the beneficiaries embark on new ventures, wherever necessary. TDF will actively take part in imparting knowledge and skills among producers. Silkworm rearers will receive hands-on technical training to achieve high quality and productivity standards. Grainage entrepreneurs, in addition to technical trainings for DFL production, will attend entrepreneurship development training. This will help them understand finance and inventory management, optimize production, and understand the market and the need for improved client servicing.

Under TDF, a substantial number of Community Resource Persons (CRPs) will be trained to provide on-field, hand-holding support to producers for a minimum of two years, to ensure proper adoption of technology.



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TDF is also planning to collaborate with several State Rural Livelihood Missions and DoS, to supply nucleus and basic seeds to them. TDF, thus, will try to develop as the largest *tasar* quality seed provider in the country.

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### Strengthen Seed Verticals

This is the most critical upstream activity in the value chain. There are three tiers of seed produced in the sector—nucleus seed, foundation seed and commercial seed. The first two categories of seed are most critical to build and maintain the seed stock, which is subsequently multiplied in the commercial grainage cycle.

- *Nucleus and basic seed production:* The operations entail technology sophistication and strict adherence to bio-security protocol and scale in order to commercially break even. The infrastructure includes a large *pukka* building (a two-storey building on a plinth area of 1800 sq. ft.) to accommodate 1.50 lakh seed cocoons and adequate operating space. Additionally, a set of instruments and accessories and power back-up is required to ensure quality seed production. The cost of establishing a grainage of this scale requires approximately Rs 40 lakhs. PRADAN has, so far, set up 11 such grainages in Bihar, Odisha, Jharkhand and West Bengal. The entire fund for setting up the grainages is sourced from specific government programmes such

as SSGSY and Mahila Kisan Sashaktikaran Pariyojana (MKSP). Whereas the current collective model is successful in producing high quality of foundation seeds, there is, as yet, no revenue model at this level to attract private players. Thus, for some foreseeable future, these are to be run by TDF, in terms of providing expert technical support, oversight and capital management. TDF is also planning to collaborate with several State Rural Livelihood Missions and DoS, to supply nucleus and basic seeds to them. TDF, thus, will try to develop as the largest *tasar* quality seed provider in the country.

- Isolated patches of plantations (size: 75 acres per grainage) are to be maintained for each unit of grainage in order to create ideal (sanitized) conditions for seed crop multiplication. TDF has already demarcated seed zones and sanitized the patches to prepare the plantation for hosting seed crops. The plantations are promoted with support from special SGSY, MKSP and Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). Already, 500 acres of plantations are available for

seed-crop rearing. In the next couple of years, an additional 200 acres of plantations will mature for seed rearing.

- A special group of expert rearers are to be trained to undertake seed-crop multiplication in plantation patches by rigorously following scientific practices. The best lot of harvest is selected for DFL production. TDF will select and train seed rearers to build their expertise for seed-crop rearing. A pool of 950 seed rearers is already involved in seed-stock multiplication. This pool will be further expanded to include 200 rearers by 2018.
- *Production of commercial seed DFLs:* The production of commercial seed is fully decentralized. Rural youth are selected from among the rearers' community to operate commercial grainages. The scale here is small (processing of 25 to 30 thousand seed cocoons) and the duration of grainage cycle is just about a month. There are 300 such grainages already established and operational in project areas. By 2018, an additional 125 such grainages will be established with support from MKSP and CSB. TDF will select and train grainage entrepreneurs, support infrastructure creation

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and provide linkages for the working capital. The plan here is to support the production of 20-25 lakh units of DFLs annually, to fully cater to 13,500 silkworm rearers in commercial crops. This will result in a harvest of 1,000 lakh pieces of cocoons; this at today's prices will amount to over Rs 2,500 lakhs. About 85 per cent of the amount will directly reach primary producers.

### **Build a Cadre of Competent Professionals**

There is complete absence of trained professionals in the *tasar* sector. This poses a serious constraint in any initiative taken for up-scaling. A significant task of TDF will be to train and support young professionals gain domain expertise—expert knowledge and skills to manage the tiers of seed verticals, promote scientific practices for silk-worm rearing, build producers' collectives, manage yarn production and establish linkages with market. Further, good domain knowledge will facilitate process/product innovations, opening up new frontiers of growth. TDF will

induct young professionals, who will be trained to become experts. The core group of PRADAN professionals in TDF will be sparing significant time to train and guide young professionals. Simultaneously, efforts will be made to set standards of professional performance for the sector, in terms of family coverage, productivity and cost-effectiveness. By 2019, in addition to the existing 17 professionals, TDF will next recruit and induct 8-10 professionals, to meet the requirements of two-fold increase in the scale of coverage.

*System setting and institution building of TDF:* TDF will strive to become an institution of significance in the *tasar* sector. TDF has been set up to unleash the potential of the *tasar* sector thereby creating sustainable livelihoods for marginalized communities in a manner that builds their stake and gives them an effective say in the overall sector. At this initial stage, TDF will require to work on all fronts to emerge as a strong institution. The priorities of TDF need to be:

- Strengthening governance functions in order to put

in place a strong internal guidance mechanism to stay focussed on the purpose of the institution and nurture a culture of collegiality and openness for learning

- Setting systems for monitoring and evaluation through articulation of goals, pathways and tracking progress against salient milestones
- Developing perspective plan to articulate a vision of success for the medium term, and define approaches and strategies for operation, including geography, scale, technology/processes and finance
- Raising resources for sustainability of the institution, including project financing as also building a corpus to support the carrying out of institutional tasks

Building linkages with key stakeholders relevant for the sector in order to draw knowledge support, facilitate innovation, bring in investments to the sector, influence policies and norms, and build a strong institutional identity for TDF.

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*Ashis Chakraborty is based in Jamshedpur, Jharkhand*

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