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TASAR SERICULTURE: Women Make it Profitable

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Initiating the revival of the silk value chain, with women at the helm, has given these women the opportunity to demonstrate that they have the discipline required in silkworm rearing and *tasar* seed production, leading them to be sericulturists, environmentalists and traditional scientists

The forest covers of Jangal Mahal, where Maoists first began their activities and where the Maoist menace held sway until just a few years ago, have now become the breeding ground for silkworms. The farmers of Jangal Mahal are now in a well-to-do state through the cultivation of silkworms. Post the Maoist rampage, the wheels of prosperity have not stopped at spinning yards of silk only but have led to the construction of bridges in and around the villages, at the outskirts of the previously Maoist-infested forests. These bursts of development have given an impetus to the zeal of the peasants engaged in the cultivation of silkworms, encompassing more and more families into the silken net.

Besides the cultivation of silkworms in the forest covers, many households have been engaged in *tasar* seed preparation since 2014. With government aid, the villagers have used their own land to

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construct seed production units for the production of their own quality seed, thus generating employment in the villages. The 'tasar cocoons' thus prepared here are sent by truck to the silk mills of Bankura's Bishnupur, Purulia's Raghunathpur as well as the silk mills of Odisha. Silk threads produced in these mills are utilized in making sarees, kurtis and other clothes.

Over the last four years, this cultivation has been revitalized with a new zeal, with the villagers engrossed in rearing silkworms. On the other hand, with government help, tasar seed production has started. In the words of silk cultivators, Basanti Mahato and Shankuntala Mahato, "On whatever little land the villagers have, paddy is grown, but only a meager quantity. From July to January, everyone becomes engaged in silkworm cultivation." *Arjun* and *Asan* trees, essential in this cultivation, are found in large numbers in this area. Consequently, these trees are keeping the fires of the hearth burning. Earlier, the silk cultivators had to purchase tasar eggs from the government Sericulture Department; and as they now produce the tasar eggs themselves, the profit margins have increased.

The pace and amount of cultivation has been so prolific, that merchants bring tasar cocoons in truckloads from Belpahari. The silk yarn produced from these are sent to the saree mills of Bhagalpur, Murshidabad, Benaras as well as Sonamukhi, a relatively small region. In the words of the merchants, tasar cocoons can be purchased from Jangal Mahal for six months in a year only. For the other six months tasar cocoons have to be purchased mainly from Chaibasa and Madhya Pradesh. If they can have their requirement supplied from Jangal Mahal, the transportation costs get mitigated. Tasar cocoons sell at a profitable price and Jangal Mahal now finds itself engrossed in silk cultivation.

The Jangal Mahal Cluster

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The Jangal Mahal area comprises the erstwhile areas of Manbhum, Mallabhum and Jhargram on the borders of Purulia, Bankura and Jhargram districts of West Bengal that fall in the south-eastern part of the Chota Nagpur Plateau. The region is populated by Scheduled Tribes and Castes—Santhals, Kols, Oraons, Cheros, Kherwars, Bagdis, Bowris, Tewirs, Bhuiyas,

etc., which make up 45 per cent of the population of the region.

The percentage of population below the poverty line is 47 per cent; therefore, this is considered one of the poorest parts of West Bengal. The population of the Jangal Mahal comprises 1.85 per cent of the total population of the state; on the other side, this region has almost 10 per cent of the total tribal population of the state. The area also has 11 per cent of the total forest cover of West Bengal. The area, in the context of poverty indicators within the districts, also shows a contrasting deficit. Jangal Mahal has 39 per cent of the tribal population and 47 per cent of the total forest cover of the district. The region is characterized by a high concentration of tribal population, high forest cover, affected with Maoist violence, and is low in Human Development Indices (HDI).

Landlessness is high in the area, in spite of the small size of households. The households in the Jangal Mahal region are very vulnerable because almost 80 per cent and more have land that is less than a hectare. The land in the western part is undulating, lateritic, and with low water-holding capacity. Agriculture in

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this part is mostly rain-fed; as a result, most of the lands are under mono-crop cultivation. The per capita income of the people living in this part is much lower than the average in the district. As a result, other indicators of human development such as the literacy rate and women's literacy rate are very poor, and the infant mortality rate (IMR) and maternal mortality rate (MMR) are high. The situation of women in households is more critical according to the National Family Health Survey-2 (2001); the mean Body Mass Index (BMI) of tribal women aged 15—49 in West Bengal is 18.2 and the nutritional condition is considered to be super critical. The situation is worse among tribal women as a socio-economic category, with 64.2 per cent of the women being below the mean BMI of 18.5.

The combination of an undulating and hilly terrain and high rainfall produces high micro-level variability in the region. One encounters diverse conditions, with regard to soil, slope, water availability, soil depth, et al., within the boundaries of even the smallest of villages. Although there are variations across the upper, the middle and the lower watersheds, the overall pattern repeats itself in micro-watershed after micro-watershed, village

after village—dry up-lands with shallow soils, dry mid-lands with deeper soils and wet low-lands with deep soils. This is combined with the absence of a strong agrarian tradition, poor connectivity, weak public services, poorly developed markets and lack of market orientation. The area has a sub-humid climate with an average annual rainfall of 1,300 mm. However, due to a high variability of monsoon rain, low moisture-holding capacity of the soil, the absence of developed aquifers due to the hard rock substrate, and high run-off due to the undulating terrain, agriculture is fraught with high risk.

Overall, the level of vulnerability of households is very high, with respect to income, health, education and food security. Multiple factors contribute to this, and these are compounded by infrastructural deficits and lack of sufficient cash-based income sources. Coping mechanisms are extremely limited, with respect to credit, the level and quality of access to the Public Distribution System (PDS) and entitlements, and lack of income to address vulnerabilities. Multiple interventions, focussing on these vulnerabilities, are necessary to bring in lasting change.

Tasar activity

Farmers have reared the *tasar* silkworm and processed silk cocoons into yarn and fabric in India since time immemorial. The insect species *Anthereae mylitta* are reared on host plants such as the *Terminalia spp.*, found abundantly in the tropical sub-humid forests covering the states of Jharkhand, Odisha, West Bengal, Chhattisgarh, Madhya Pradesh and Telengana. *Tasar* silkworm-rearing is a traditional practice of the forest-dwelling communities, to supplement their livelihoods. Most of the silkworm rearers belong to indigenous communities (categorized as Scheduled Tribes in the Indian Constitution). Cocoons, made of silk filaments that have commercial value in the market, are harvested at the end of the silkworm-rearing cycle. According to The Energy and Resources Institute (TERI), India's annual silk demand is about 25,000 MT, whereas production is 17,000 MT. The gap is bridged with imports from China.

In West Bengal, in the area covering the three adjoining districts of Jhargram (erstwhile West Midnapore), Bankura and Purulia, the forest is spread over an area of approximately

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1,450 sq km, with over 3,46,000 households (as per the Census 2011 data and in the 12 blocks that PRADAN operates) living in the forest and on the fringes of the forest. *Tasar* sericulture is widespread in the entire region and has long been an important traditional practice of a number of tribal communities that live there.

Income from the sale of *tasar* cocoons was initially lucrative. However, over the past three decades, there has been a steady decline in the production of *tasar* cocoons, affecting the livelihoods of a large majority of silkworm rearers. By 2010, more than 75 per cent of silkworm rearers in this region had dropped out of production. This was also witnessed as the general trend of the sector across the country. Acute poverty and lack of livelihood options pushed people to chop down trees in the forest. This time, the *tasar* host trees, previously zealously protected by the silkworm rearers in the interest of livelihood, were also not spared. This resulted in a drastic reduction of the carrying capacity of the forests.

A PRADAN investigation (through a baseline study) revealed that the lack of availability of quality seeds

(eggs of healthy *tasar* moths) was the main cause of such a rapid decline of the sector. Sericulture is a state subject and *tasar* seeds are traditionally supplied by the Department of Handloom and Sericulture of the Government of West Bengal, in collaboration with the Central Silk Board, a statutory body under the Ministry of Textiles, Government of India, and for the overall development of silk in the country. *Tasar* seeds are prepared through a scientific process in the state grainages (seed production centres) to produce what are called Disease-Free Layings (DFLs), gathered from healthy moths free of the deadly silkworm disease, Pebrine. Their DFL status is ascertained through rigorous microscopic examination.

The state has been supplying DFLs to silkworm rearers for 40 years; for a majority of this period, *tasar* silkworm rearing was carried out by producers individually. There were no efforts in West Bengal to organize the rearers into collectives. In the first decade of the supply of DFL, the quality of seeds was good, boosting cocoon production in the area. However, starting 1980s, the quality of the DFLs became questionable, with low and unpredictable supply. The poor quality of DFLs led

to frequent disease outbreaks and crop setbacks. Silkworm rearing became unprofitable and risk-prone for producers, who were already socio-economically vulnerable. With the production cluster shrinking rapidly, the services of the market became unavailable.

DFL seeds were then taken on loan from local moneylenders, who procured DFLs from government-run grainages. The same moneylender would arrive as a trader to buy the harvest (cocoons) from the rearers. The market was tightly controlled upstream and downstream by traders. Open markets did not exist for the producers; they were exploited in a closed system, in which they were virtually captive labourers of the moneylender-petty trader nexus. To contend with the dire situation of the *tasar* silk sector in West Bengal, three institutions worked together to revitalize the sector, focussing on the empowerment of women.

Initiatives by PRADAN

PRADAN initiated work on *tasar* cultivation in West Bengal in 2014–15 through the Mahila Kisan Sashaktikaran Pariyojana – Non Timber Forest Produce

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(MKSP-NTFP) programme. In the very first year, PRADAN engaged with 480 families and, by 2017–18, 2,066 families were engaged in *tasar*-based activities in Binpur-2 and Ranibundh blocks of Jhargram and Bankura districts. The project was initiated, in collaboration with the existing SHGs, their *Upasanghas* and *Sanghas*, apex-tier collectives of SHGs at the *panchayat* and block levels, respectively. The idea of *tasar* as a livelihood initiative was mooted across these tiers, and interested members were brought under the umbrella of the Tasar Vikas Samiti (TVS), a livelihoods group for *tasar*-based activities. As many as 65 women's TVSs were formed, and the women were trained in scientific aspects of *tasar* culture. Some members were trained to examine and prepare disease-free *tasar* eggs. This was followed by the construction of 39 grainage buildings and one Basic Seed Production Unit (BSPU) for preparing *tasar* eggs, as per scientific parameters. Select *tasar* farmers were also trained to take up *tasar* seed crops. All the TVSs were further federated into a state-level entity called 'Jangal Mahal Mahila Tasar Chasir Dal Community Trust', registered under the State Trust Act. This Trust basically looks after the

backward and forward linkages of DFL indenting and cocoon marketing along with stakeholder management.

In order to give the required thrust to this sectoral initiative, PRADAN further set up a subsidiary organization called the Tasar Development Foundation (TDF). This is fully integrated in the management and governance structure of PRADAN and is registered under the Company Law under Section 8 of the Company Act 1956. TDF is led by professionals, who have cutting edge knowledge and expertise of the sector. The Foundation is dedicated to building and sustaining linkages between key stakeholders in the sector, and pushing the frontiers through extension, research and development, policy advocacy and by preparing skilled human resources for the sector.

The major focus of this initiative is to address the twin issues of lack of supply of quality eggs and the absence of fair markets for cocoons. PRADAN believes that these challenges are best addressed through Producer Organizations (POs) because they have a long-term stake in the activity and they can harness the power of the collectives,

to organize critical production services and deal with markets on fairer terms.

PRADAN recognized this as an untapped resource and emphasized the involvement of women to revive the *tasar* sericulture sector. Women were previously barred from taking part in silkworm rearing; traditionally only male members of tribal households (including children) reared silkworms in forests. However, women's entry into the sector has proved necessary to break a significant barrier towards equal participation of women in supporting livelihoods and to reinvigorate a sector in distress.

PRADAN and TDF have been working to expand the scope of livelihoods for primary producers through innovation, adaptation and creating supply chains, policy advocacy with the government, attracting investments and coordinating stakeholders in the sector.

TDF builds the capacity of silkworm rearers, grainage workers and cocoon aggregators, with the ultimate goal of involving women in production systems and of building their confidence in self-management.

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TDF also helped producers set up 'Jangal Mahal Mahila Tasar Chashir Dal Community Trust', and trains members in governance and management of POs. Building and strengthening POs to organize production and marketing systems involves capacity building to manage the entire seed vertical (nucleus seed, basic seed and commercial seed) for the supply of high-quality eggs, aggregating produce and creating linkages with fairer markets. Finally, PRADAN/TDF has been promoting new ideas and technologies and conducting skill enhancement through its training material, Information and Communication Technology (ICT)-based training programmes and moderate use of audio visual presentations.

Jangal Mahal Mahila Tasar Chashir Dal Community Trust

The PO Jangal Mahal Mahila Tasar Chashir Dal Community Trust is an endogenously-formed PO, covering areas in Jhargram, Bankura and Purulia in West Bengal. This PO was formally established and registered in the category of a Trust in 2014, and undertakes commercial activities. It is a 'women-only' organization

serving the interests of its 2,066 members. To be members, women must be active in *tasar* rearing or seed producing. The majority of PO members belong to tribal communities, which tend to lag behind in all major parameters of human development and face significant socio-economic barriers.

The PO has a simple two-tier structure at the village and state levels. At the village level, women from similar socio-economic situations are organized in Self Help Groups (SHGs). These SHGs also provide a way for women to save money and access credit. The women meet informally at the village level and interact on a regular basis, planning, implementing and building their knowledge. The membership of the Jangal Mahal Mahila Tasar Chashir Dal Community Trust is large; therefore, it is not feasible for all 2,066 members to interact effectively. The village-level groups choose a representative, who participates in the monthly meeting of the PO at a central place, to discuss local and broader issues of development. All the members of the PO have the opportunity to participate and meet once a year in the Annual General Body Meeting.

The role of the PO in Improving *Tasar* sericulture

The role of the PO is to supply seed and inputs. Seed Production Centres produce an average of 400,000 DFL units that are sold at commercially viable rates, to cater to the 2,066 silkworm rearers on a first-come, first-served basis. Through this model, the Jangal Mahal Mahila Tasar Chashir Dal Community Trust has played an important role in increasing the production of quality seeds and marketing the harvest.

Access to quality seed is the most critical input for silkworm rearing. Prior to the establishment of the Jangal Mahal Mahila Tasar Chashir Dal Community Trust in 2014, *tasar* seeds were neither available locally nor did the farmers have access to it. As many as 39 new Seed Production Centres were set up that are fully owned and operated by the PO. As a result, rearers have greater access to eggs, with quality seed available at present in the villages, produced by the village-based women testers. The PO has established a comprehensive quality regime for eggs and rigorously monitors the

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production process. The operation engages over 400 skilled and semi-skilled workers. With silk producing families purchasing the eggs locally, the availability of the seed is assured and rearers can access other related services from the PO, including input supply for host tree maintenance, prophylaxis, and disease and pest control.

The Trust also plays an important role in the aggregation, distribution, management of surplus and deficits of eggs in the region. The Jangal Mahal Mahila Tasar Chashir Dal Community Trust also facilitates marketing of the harvest through a number of mechanisms such as open auctions, administering the Minimal Support Price, MSP, (a market intervention by the Government of India to insure agricultural producers against any sharp fall in farm prices). Some states also declare the MSP (because sericulture is a state subject) through the Central Silk Board of the Ministry of Textiles, aggregation of produce and negotiating prices with multiple traders. On an average, the Trust supports the marketing of 1.5 crore pieces of cocoons annually. The annual average sales volume (including cocoons and DFLs) is approximately Rs five crores.

The services provided by the Trust have enhanced self-reliance amongst producers. The scientific practices adopted have brought down the silkworm mortality rate drastically. Silkworm mortality usually happens from different pathogenic infestation such as virus, bacteria, protozoa and fungi, and also from attack of various pests and predators. Silkworm survivability and production have increased significantly, resulting in lower production costs. The key input is DFLs, and its consumption has declined, as per the baseline of MKSP, from 311 units of DFLs to 165 DFLs units per rearer.

The transition

The institutional arrangement between the Jangal Mahal Mahila Tasar Chashir Dal Community Trust, PRADAN and the government has yielded the emergence of a robust silkworm value chain from a fragile, forest-based income activity. In the past four years, the number of silkworm rearers has increased from 480 to 2,066. There have been significant increases in productivity (more than 300 per cent from the baseline), which has enhanced livelihoods. The revitalized silk value chain features improved



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technology, better service delivery and enhanced price realization. Further, the means of transformation with a focus on the POs has included the poor in the entire value chain, with economic and social effects at silkworm value chain, household, and community levels.

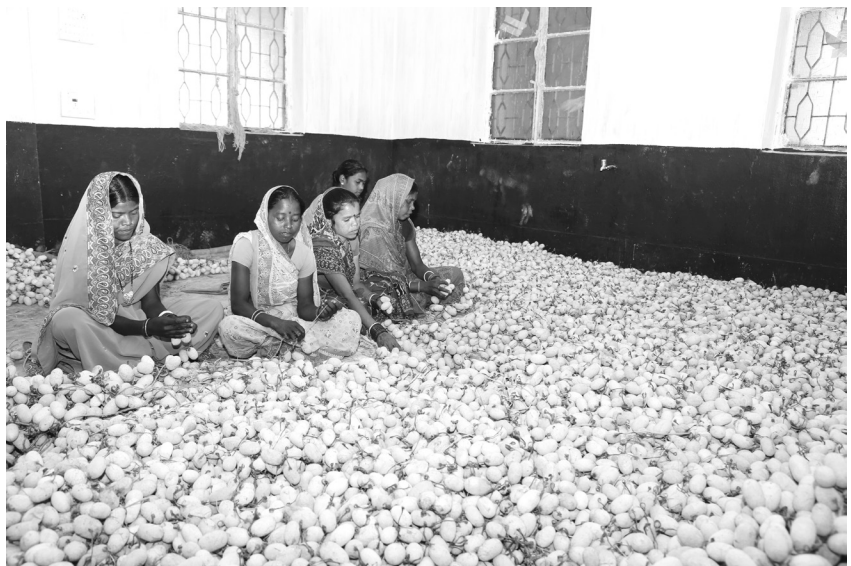
The transformation was predominantly led by the women in the POs, who are conspicuous at every critical node of the production system. The initiative to revive the silk value chain with women at the helm has created an opportunity for women to demonstrate that they have the discipline and punctuality required in silkworm rearing and *tasar* seed production, in addition to the capacity to maintain the required hygienic conditions in the rearing field and seed production, essential for quality production of eggs and enhancement of productivity. The women have also gained valuable financial management experience through the POs. Moreover, through their four-year-long endeavour, they have capitalized and demonstrated an earning of nearly Rs 68,000 per family from *tasar* sericulture over the period.

At the household level, changes have taken place in gender roles. *Tasar* rearing has promoted

women's empowerment. The transformation of the sector is now predominantly led by women, who had been barred from participating in silkworm rearing in traditional systems. Before POs were established, women were not allowed to visit the *tasar* fields; their role was limited to taking food for men. Now, the women participate equally in *tasar* rearing. The women have been investing their earnings from *tasar* rearing in the education of their children, the healthcare of their family members, food and seasonal vegetables, releasing land from money-lenders, renting land to grow paddy, and creating savings in the bank. Some women also invest in other income-generating

activities, such as setting up a grocery shop or improving their housing conditions.

The economic effects at the community level have been significant. The value chain promotes employment: the number of silkworm rearers has increased from 480 in 2014 to 2,066 in 2017, an increase of 430 per cent. This suggests a proven competitive advantage in utilising slack labour and idle assets of poor households. The commercial cycle of silkworm rearing is between September and November. In the *tasar*-producing regions, there is only one crop, that is, paddy; after paddy transplantation in August, communities do not have any



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work till the paddy harvest in December. During this idle period, *tasar* silkworm rearing begins and the entire family engages in related activities. The incremental productivity has increased 366 per cent from nine cocoons per unit DFL to 42 cocoons per unit DFL, with a 250 per cent increase in income from Rs 24 per unit DFL to Rs 113 per unit DFL. The overall increase in income has resulted in reduced poverty, reduced migration and increased investment in productive resources. These productive resources include the purchase of agricultural implements and tools and technologies, bulls for ploughing, land, and motorcycles and mobile phones, construction and repair of houses, and enrolling children in private schools.

Enabling conditions: Key factors for success

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The Trust is in charge of supply and of marketing the produce. The PO was founded on the

principles of solidarity, reinforced through a strong focus on economic benefits, members' effective control in organizational governance, and their financial contributions. The PO is a single-purpose organization; its specific mission is the development of silkworm-rearing activities. This sole mission is clearly articulated in its vision: sustainable income, assured productivity, dignified vocation for women.

The system of rotational leadership ensures that no special interest groups are in charge of the PO. All Board positions are for a fixed period of two years, which ensures that the positions do not become power centres and leading to broad-based leadership. A culture of democracy and consensus-building is actively nurtured. In addition, the management structure in the PO is separate from its governance structure. The PO engages a professional manager to maintain efficient functioning, and the staff have the requisite knowledge, expertise and value systems to work with high standards of performance and accountability.

POs are partially financially autonomous, generating resources through membership fees of Rs 100 per rearer, the

production and sale of DFLs and the service charges collected from facilitating the sale of cocoons. This income is used to pay for different services provided in the production of DFLs, rearing of *tasar* silkworms and the support given to the seed producers and rearers.

The cost of capacity building, human resources and asset creation is not part of the business model and must be leveraged from sources such as MKSP whereas the operational cost is partially borne by the community. The farmers pay for the cost of seed, but services (advisory services and training) and equipment, based on new scientific initiatives and technology, is given by MKSP, which charges for the services and equipment only if they prove to be profitable or when the farmers have developed the skills to use them.

PRADAN, the development partner, has been working with a participative bottom-up approach, social mobilization and farm-based livelihoods for nearly two decades. For the *tasar* sericulture initiative, PRADAN/TDF provide regular training on technical know-how, institution building, financial management and scientific

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practices, which help rural women build confidence and knowledge, and engage in a vocation that was previously believed not to be their domain. PRADAN's engagement brought a package of comprehensive support to the initiative, including critical input-output linkages, organization development of the PO, training of producers, policy advocacy and funding.

Another success factor for *tasar* sericulture value chain relates to the support of the Government of West Bengal, which has made public investments available through its flagship programme (MKSP) to meet the costs of asset and capacity building for producers. The Central Silk Board has also played a key role in simplifying technology for grainages, and formulating policies to favour the expansion of grainages in the private sector. It has developed schemes to offer central support to individual and community-owned grainage enterprises to expand the PO business in the *tasar* seed sector, and has conducted training courses for the staff of the PO, to build their knowledge and expertise in the sector. Finally,

the Central Silk Board has developed a legal framework (Seed Act) that defines and administers quality norms for DFLs, to create a level playing field by fixing the price of DFLs.

The initiative was further helped by the keenness of the Ministry of Rural Development, Government of India, to invest in the *tasar* sector, and the policies of the central government to push silk exports, thereby increasing the demand for *tasar* silk in both the domestic and international markets. The availability of skills among producers and their access to forests (in forest revenue lands that may not be used for industrial or residential purposes) meant that the conditions were ripe for the revitalization of the *tasar* silk sector.

The key factor, however, is women's participation, which not only broke the traditional taboos but also systematically helped them regain control of their lives so that they could meet their obligations and contribute to the economy amidst the conflicts of work and life. The participation of women as labour force has

increased substantially albeit with emerging challenges; it has, indeed, proved that women are significant actors in natural resources management and they are major contributors to environment rehabilitation and conservation.

Their direct contact with the environment and technology has increased the depth of their knowledge. Women now serve as sericulturists, environmentalists and traditional scientists. Women have not only shown that they are knowledgeable about the environment, they are also protective and caring (Shettima, 1996). Being primarily responsible for domestic and household management, women interact more intensively with both the natural and the built environment than men. Therefore, there is need to appreciate the various ways women have actively participated in *tasar* cultivation and management, integrating these into an environmental management programme.

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