

UDYOGINI

Studies in Women's Enterprise Promotion



**Technology, Skill and Entrepreneurship for Women's
Empowerment: Scale and Impact of Udyogini's work in Lac
in Jharkhand**

By

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1. Women's Economic Empowerment in New Market Conditions¹

The dominant form for promoting women's economic empowerment in India has been, for the most part, through formation and development of women's collectives, particularly Self-Help Groups (SHGs), producer federations, and similar formations derived from the focus on promoting solidarity thus enabling, with greater ease, women's ownership, agency and voice. Collectives were derived mainly from the needs of sustainable provision of micro-credit and livelihood security at a time when market penetration was not as pronounced and changeable as it is today. Market-encircled development demands stronger weaves along vertical and horizontal market channels beyond the local (called value chains) for greater benefits for producers. And, given a variety of actors that work in these chains, the need to promote women's strategic positioning in markets should stimulate a more nuanced analysis of potential as well as fresh economic empowerment models. With market activity involving large numbers of the poor in rural and urban areas moving through complex value chains, women's capacity to become informed, negotiate and gain advantage has to be promoted in a variety of ways.

Continuous advancement of women's knowledge, attitude and skills in technical and managerial functions is an imperative for their empowerment in integrated markets. As value chains require organized operations at many levels, there will be differentiation among participating women in their motivation, skills and quality of work. Structures and actions should value the distinctions among women and reward those among them who have moved up. Women's capacity to occupy market spaces can be promoted through dynamic movement i.e., in and out of collectives, as service providers and as entrepreneurs. This dynamism will also enhance the scale and scope of enterprise - in terms of numbers reached and range of initiatives to help women to adapt to shifting market patterns and expectations.

Udyogini began its work in Jharkhand in 2008 to develop a replicable and scalable model for tribal women to sustainably earn through lac and grow through service provision and entrepreneurship. Udyogini's lac value chain model, described in this paper, has introduced the principles of enterprise and sustainability from its very design -- to help tribal women to manage the competition that the market engenders.

2. Market Demand and Significance of Lac for Enterprise in Tribal Areas

Tribal incomes in Jharkhand are dependent on forests and agriculture. Population-led pressures, unchecked mining and construction have led to depletion of forests and loss of bio-diversity. Tribes own land but small landholdings and low productivity provides income for barely 3-4 months in the year. Most households

¹ This section presents a perspective on women's economic empowerment and related actions that Udyogini believes is appropriate in new market conditions and has informed its work on women in value chains. This articulation is intended to stimulate new thinking and programming for women in this domain and is a work in progress.

eke out a living by maintaining a diversified pattern of occupations as no single activity provides sufficient resources to secure their livelihood. Sometimes they have to migrate for work in exploitative conditions in industries such as construction and mining.

Forty per cent of India's top 50 mineral-rich districts, many of them in Jharkhand, are insurgency-affected. On the one hand, the desperation for sustaining livelihoods has resulted in unsustainable harvesting of forest produce leading to destruction of entire species; and, on the other, there has been underutilization of forest resources that promote livelihoods and biodiversity. One natural resource that has strong potential to meet the goals of livelihoods and biodiversity promotion is lac. Lac is a high value natural secreted resin extracted from an insect (*Laccifer lacca*) which inhabits the twigs of specific host plants (Ber, Kusum, and Palash). Lac has many uses in paint, jewelry, pharmaceutical coating, food, electric industry and, earlier, in gramophone record manufacturing.

Lac has considerable value for livelihoods because of the gap between demand and supply, the numbers of producers involved and the number of states of India where host trees can be found in abundance. India is a major producer and exporter of lac and contributes about 60% of the world's needs for the resin but the supply gap has remained even while demand is rising. India too needs a large quantity of raw lac to feed its more than 150 processing and value addition units. The annual industrial turnover is estimated to be around a modest 150 crores but lac has the potential to scale and provide employment to large numbers of tribal producers if the gaps in the value chain are well understood and managed.

Jharkhand and Chhattisgarh together account for more than 70% of lac production in the country. Madhya Pradesh is third at around 14.5%. Jharkhand alone contributes 42% of the nation's production. Lac is a traditional practice in tribal families dependent on forests and agriculture and due to its market importance, has potential for substantial incomes. It contributes to biodiversity conservation as lac insects are integral to preservation of host trees and unutilized lac host trees are cut for timber and fuelwood.² Practiced scientifically and continuously with appropriate innovation on hosts, it can offer significant income in two to four annual cycles of short duration. One cycle of lac cultivation is only 6-7 days of work and this can be done simultaneously with agriculture or other activities. The income from it is sustainable as host trees can be used for many years. Importantly, there is potential for women to be involved in various operations in lac cultivation, value addition and marketing.

The lac insect grows on certain host trees from which it consumes the plant sap as its food, and grows all the while secreting resinous covering for protection of itself and its young larvae. This resinous covering is known as lac and the twigs of the host tree carrying lac encrustation are called sticklac. Some part of twigs with live insects

² Sharma, Jaiswal and Kumar, *Role of Lac Culture in Biodiversity Conservation: Issues at stake and conservation strategy*, Current Science, Vol. 91, no. 7, 2006, p. 894

is saved as brood (raw material) for fresh inoculation. About 113 varieties of lac host plants are found though the bulk of lac crop is obtained from palas, kusum, ber and khair . There is, however, considerable underutilization of hosts even on private lands.³ The quality of lac depends on the type of host and strain of insects. Two strains of lac insects, Rangeeni and Kusumi, are commonly identified in India. Based on industrial parameters, kusumi lac fetches a higher price in the market.

In Jharkhand, about 400,000-600,000 families who live in or around forest regions, are engaged in lac cultivation resulting in the creation of 35-50 million person-days of employment per year.⁴ *Lac production has fluctuated widely due to factors such as unfavourable climatic conditions, unscientific practices of cultivation, and pest damage.* The industry is facing a shortage of brood which is currently being imported from Thailand and Indonesia. Ironically, while lac prices have been increasing every year due to inadequate supplies, the full potential of lac cultivation is yet to be tapped. Although producers own an average of 100-150 host trees per family (numbers that are considered to be resource rich), more than 50% of their trees remain unutilized.

3. Traditional Practices and its Challenges

a. Lac Cultivation:

Lac grew naturally with simple practices on the conventional host plants. It was directly tied on trees without pruning with part of the harvest from previous cycle left on the tree for self-inoculation in the following cycle. Climate conditions were not an issue; hence, no pest control measures were required. Harvesting of lac was done using sickles; no special tools were needed. The situation has changed with heavy rainfall, fog, and unusually hot summers that make the resin melt, killing the insects and reducing the yield. The change has especially endangered the *Rangeeni* strain of Lac which was cultivated on traditional hosts. Parasites harm the standing crop and as much as 60% of the crop can be lost. *Continued use of traditional techniques (such as harvesting of lac without intermediate crop operation/pest management) and lack of knowledge of new requirements (such as brood inoculation, rotation and careful handling of the stock) has resulted in brood shortage.* Producers cut the branches prematurely to scrape off a few grams of lac for money during emergencies. Pre-mature lac is also stolen (due to its high value) from those trees which are less accessible and not closely monitored.

b. Value-Addition:

Producers scrape lac from branches and twigs, dry it and sell it in local haats or to local traders. Many producers dry lac anywhere in the fields or do not dry the lac fully thus compromising its quality. Local traders dry the lac in more controlled

³ Production and collection of naturally occurring Lac is generally in small volumes from isolated trees that are scattered over a wide area of forest. Gathering of naturally occurring lac is time consuming, and unsustainable due to management challenges. The serious underutilization of accessible host trees, mostly on own land, has to be tackled first.

⁴ Source: Indian Institute of Natural Resins and Gums (IINRG)

environments with better results and aggregate it. Scraped lac (called scrap lac) is further processed for various industrial uses by factories.

c. Marketing:

Prices at each level in the value chain depend on the quantity and strain of lac as well as market knowledge and bargaining power. *However, asymmetries in pricing, stock, and measurements resulting from informality of the chain affect returns to producers and intermediaries.* Producers do not follow standard measurement practices. Crop is sold by the sack thus reducing the margins. Buyers delay payments to intermediaries, sometimes by more than a week, leading to delay in payments to producers.

d. Role of Women

Activities that are physically inhibiting for women and involves climbing trees to prune shoots, tying brood packets to branches for inoculation, and harvesting the crop, are majorly done by men. Traditional host trees, such as Kusum and Palash, are tall and hence women's participation in lac is lower for the activities that have to be carried out on these trees. Other activities, such as carrying brood packets and equipments (secateurs, spraying machine, ladder), can also be constraining. Women, however, are engaged in pre and post-harvest work that does not involve climbing; such as tree spraying, making bundles of brood, as well as scraping of lac (after branches have been cut) and sale of phunki (the seed of lac after the insects have exited).

Women's participation in pre and post-harvest work is more than 50% as per Udyogini estimates in its field areas; even so, their contribution is undervalued as they are only peripherally involved in those functions that more directly affect the quality of lac that they cultivate (such as pruning and inoculation). The training on new technologies and practices in lac at the Indian Institute of Natural Resins and Gums (IINRG) in Ranchi is accessible to only men for the most part because it takes place on campus. Where women have received lac-related training, it is primarily in manufacturing of lac craft and jewellery, for which, overall, production and markets are dispersed in pockets around the country. Additionally, such manufacturing does not have a significant market share in domestic or export markets compared to the industrial uses of lac. *Hence, the scale and strategic value for women's participation, skills, and incomes is more at the back end of the value chain, i.e., to improve the quantity and quality of lac available for industrial uses.*

In relation to marketing, the knowledge, mobility and transportation problems restrict women from accessing downstream market players directly, which would have given them a margin advantage. In addition, lack of awareness of market imperfections and negotiations has hampered fair returns even when such access has been possible.

4. Meeting the Challenges of Product, Practice and Women's Roles

a. Introduction and Consistent use of Appropriate Technologies

The focus in the first phase was to revive lac in an area where producers had given it up (Bundu in Ranchi district) by precisely identifying what had gone wrong and how to address the problem. More than 90% of the lac produce traded in the local bazaar goes to the major market at Bundu which is one of the biggest trading markets for lac in the eastern region. This area has a substantial reserve of host plants and was once considered the richest belt for lac in Asia. Each family in the cluster has an average of 150 host plants. However, due to inconsistent technological applications in lac cultivation, more than 500 of the 3500 producers in the cluster Udyogini entered had given it up.

Udyogini's supported 100 of these producers⁵ with the application of scientific technologies developed by IINRG. These technologies required timeliness, precision of applications as well as consistent monitoring. Selected number of tribal women were trained and monitored in the technologies that included; pruning, spraying trees for pest management, alternating between different hosts to 'rest' certain trees for a certain time, saving of some part of the quality crop as brood for inoculation for fresh quantity of brood, and a gradual shift to alternate foreign hosts such as *Flemingia Semialata* (hereafter semialata) to promote the more resilient Kusumi strain of lac. Adding 750 more producers in the following cycle, a total of 850 producers had increased both their income and their participation in upgraded and skilled lac production *within the first year*.

Semialata showed encouraging results in controlled as well as field situations by IINRG working together with Udyogini. Two acres of land planted with semialata gave almost 4 times the return while also proving to be more resilient to climate change than the traditional Palash trees. Semialata is also a fast growing shrub in semi-fertile soil which takes just a year to get ready for harvesting. Udyogini expanded its work in other clusters in 2010 and 2011.

Most importantly, semialata was helpful in involving women in all activities for improving productivity as the plant climbs to a maximum height of six feet and can be planted in kitchen gardens as well. *Careful and consistent application of scientific practices together with a promising host plant increased incomes by 120% in only six months from a baseline of Rs. 3200 per year*. Udyogini was able to motivate and assist more than 3500 women to revive (or start), lac production within three years of start-up.

b. Value Addition

Producers lost money in unfair transactions in the local market for scrap lac because of small volumes and non-graded produce (market used differential pricing on the basis of resin content). Udyogini organized women into self-help groups (SHGs) to

⁵ Under the Rural Business Hubs program of the Ministry of Panchayati Raj, Government of India.

enable them to have access to finance to increase their holding capacity and created facilities for aggregation and value addition at the village level called Village Level Service Centers (VLSCs) *VLSCs grade, sort and price the lac according to grade quality and lac producers get better returns through this facility.* Local traders buy from VLSCs as does one of Jharkhand's largest shellac producing companies with whom Udyogini has a purchase agreement.

5. Drivers of Proliferation and Scale:

a. Lac Business Development Service Providers (Lac BDSPs)

IINRG trains lac farmers in advanced technologies at their demonstration farms on campus. However, to improve access of such training to women, Udyogini brought IINRG scientists to its field locations for training women as business development service providers (BDSPs) to scale the use of appropriate scientific practices by lac producers in Ranchi and Khunti districts. *By 2011, more than 300 trained Lac-BDSPs had reached 3500 women producers with knowledge and skills in scientific practices in lac.* BDSPs receive in-kind contribution from the community in the form of transportation, lodging (when required to connect to buyers), telephone expenses, and a service fee which adds up to around Rs. 1000 for 7-8 days of work. One BDSP facilitates quality lac production for 60-100 producers for three to four cycles in a year. Since she is herself a lac producer, she has a stake in continuously building up her quality in applying new technologies.

b. Technical Protocol

A Standard Operating Practices (SOP) manual has been developed by Udyogini to train BDSPs in sustainable brood production. It contains detailed instructions (written and visual) for appropriate processes of lac cultivation, the range of possible challenges for sustainability and its subsequent mitigation strategies. The manual is followed in all its intervention areas. The BDSPs are closely monitored by Udyogini field assistants during their training sessions as also while they are delivering services to the producers.

c. Cluster Collaboration for Brood Availability

As mentioned before, brood has been the critical gap in the lac value chain affecting shellac production.⁶ While use of scientific techniques increase production in the short term, sustained production for the long term requires planting more host trees as well since an average host tree takes 3-5 years to become ready for inoculation. To alleviate the problem of brood scarcity, Udyogini promoted the establishment of brood farms to meet brood sufficiency in the production process and for host tree

⁶ The owner of a company, Tajna Shellac, in Jharkhand says he has not seen such shortage in his forty years in the business and though his factory was set up for processing and exporting Shellac. The shortage of brood has prompted him to start his own brood farm in his factory premises. For the last two years, Tajna Shellac has been importing brood from Thailand.

development. Brood farms are demonstration farms that have at least 30 host plants clustered in a single patch that promotes ease of inoculation for proliferation. Additionally, producers are encouraged to become brood entrepreneurs, i.e., to reinvest (for proliferation) a greater part of their incomes from lac thus increasing the amount of brood available for sale in every cycle.⁷

Two hundred producers initiated brood farms which supplied brood to 500 additional producers within a cluster to meet their brood requirement. This brought down their cost of transportation to get brood⁸ in addition to sustaining livelihoods that would otherwise have been lost due to lack of brood. *Brood development is the value proposition for the incomes and sustainability of lac producers that has been neglected by agencies and producers alike.*

c. Village Level Service Centers (VLSCs) for Aggregation and Marketing

VLSCs are business hubs with women as owner/entrepreneur for aggregation and marketing of value added brood and scrap lac. *These have scaled to become successful chain anchors for lac aggregation and value addition for producers. Thirty-five VLSCs now grade, sort, price and sell brood and scrap lac, each VLSC catering to around 70-100 lac producers.* The aggregation, sorting and grading that VLSCs made possible resulted in between 20-50% increase in incomes for producers compared to returns from the earlier practice of selling by sack to local traders. VLSCs pay around 20-30% upfront to producers (from funds borrowed from the SHGs of which the entrepreneur is a member) and the rest is paid after they sell (within two weeks) the aggregated scrap lac to traders and industries and brood lac to producers (to facilitate proliferation of lac production among SHG members). Since producers receive a fair deal, they are willing to wait to receive the money. The entrepreneurs earn around Rs. 2-5 per kg for aggregation depending on the quality of lac. VLSCs also market the services of lac BDSPs in their village.

In addition to lac, VLSCs also help to aggregate other commodities and now also retail goods and services. An institutionalized training facility co-branded by Intel called the Intel-Udyogini School of Entrepreneurship (I-USE) in Bundu trains VLSC owners in a three stage business curriculum and provides business counseling.

d. Childcare

While building women's knowledge and skills can make a substantial difference to the quality of activities, the returns to producers and their growth prospects, Udyogini recognizes that family well-being, especially those of children, are

⁷ Udyogini has researched the brood development aspect in some detail and adopted three principal strategies to help combat brood deficiency: a) determined the proper ratio that needs to be maintained between Kusum, Ber, Palash and *Flemingia Semialata* host plants so that brood can be rotated and has promoted plantation clusters where these trees can be found in the combination required; b) promoted one [woman] brood entrepreneur (a producer producing atleast more than 50Kg lac per cycle) for fifteen lac producers; c) encouraged women to begin lac cultivation process with *Flemingia Semialata* in their lands and also grow it on the waste land.

⁸ Brood is perishable material as insects die within 3 days of harvesting.

necessary aspects of the work ecosystem to sustain productivity. Lac producers carry their infants on their back while they go about their lac-related tasks. Recognizing that family responsibilities are a priority for women and can affect their capacities to nurture their enterprises if these responsibilities become a burden, Udyogini facilitated establishment of crèches for children of lac producers. The crèches for children upto 6 years of age are operated by Ujas, the registered producers' Society established by Udyogini. The crèches have been set up in villages without effective anganwadis. Lac BDSPs are able to attend the training and travel to villages for providing services and sustain their earnings more easily because of the crèche facility.

6. Impact

a. Revival of Lac and Sustainability in Incomes for Primary Producers

Of the more than 5500 lac producers Udyogini has reached so far, nearly 70% were already cultivating lac but had abandoned the activity. Income increases overall have been substantial (between 50-300% depending on the amount of brood used for inoculation). 80% of producers have reaped a return that is at least three times their investment *in every cycle* with the lowest investment being Rs. 6000. Given an average of only 7 days work per cycle, the returns are clearly very substantial. The early income gains helped to rapidly increase demand from producers for support to undertaking lac for which they were willing to invest time and money. Starting with 150 producers in the first season of 2008, Udyogini has added 600 producers in every subsequent season and all producers who were supported have stayed with the program.

For Maheshwari, on an original investment of Rs. 5075, her return was Rs. 53,000, more than ten times, in a six month cycle! The high returns have motivated one woman to even move out of a government job to become an entrepreneur! Katrina Munda of Angara cluster left her job as an Anganwadi worker and is full time in lac production. She earns 3-5 lakhs per year from lac and has started building a pukka house for herself. She plans to give up her BPL card! The highest earning lac producer is, however, Sugan Devi, who earns 7-8 lakhs per year.

b. Meeting Tribal Needs and Aspirations⁹

The income gains increased the ability of households to fulfill a greater number of their requirements. Other than undertaking small saving in SHGs, producers have opened saving accounts and fixed deposits (mostly in cooperative banks). They have also saved money for brood procurement. Around a quarter of lac producers assisted by Udyogini have also purchased life insurance for the family. Almost all producers stated that they not taken loans from moneylenders in the past year.

⁹ Figures shown in this section are derived from an impact study conducted by Udyogini through focus group discussions with 100 lac producers in 9 randomly selected villages of two blocks and with control groups in the same villages (non- Udyogini lac producers).

Since women are either illiterate or educated only upto 5th or 8th Std, they aspire to give their children a better education. Villages have a primary school, but their quality is variable. Three years after Udyogini's intervention, producer families with primary school going children (and who could afford it), reported that they used some of their income from lac production to move their children from government to private (generally missionary) schools so that they could learn English. Parents are also able to afford the Rs. 200-300 per month school fees plus additional expenses such as books, uniforms, pick up and drop facility provided by school.

Nearly 60% women reported that the sustained increases in income from lac production helped them make decisions to seek quality health care in case of any illness. Some had even hired a vehicle for consulting doctors in towns nearby. Several women were able to use a private hospital for their children that saved them from at least one life threatening situation in the past 2 years.

In terms of consumption and discretionary spending, nearly 70% producers reported that they are able to buy silver jewelry, mobile phones, television and better clothes. They also built toilets in their homes. Four producer families bought motorbikes.

Producers view lac production as a commercial opportunity. They feel that the next generation may be persuaded to take it up given the high returns.

c. Sustainable and Cost-effective Service Provision

The technically qualified cadre of BDSPs has resulted in sustainable and cost effective service provision to handle expanding producer numbers. Being tribals themselves, their proximity and affinity to the community enables them to be accessible to producers, even in emergencies. As an evaluation of Udyogini's program in Jharkhand states:-

*"The capacity enhancement of the BDSPs has played a critical role in the creation of better market access, superior technical inputs and coordination in the actions of the community. The BDSPs also seemed to have forged links with the downstream buyers and traders; there was enough indication that through repeated interactions their capacity to transact on behalf of the community had increased."*¹⁰

BDSPs have helped reduce the costs of service delivery as they are replacing the salaried field assistants of Udyogini. The combination of service fees and in kind support by the producers, has helped BDSPs to build a stake in sustaining their quality as community service providers.

d. Local Entrepreneurship for Building the Value Chain

Entrepreneurship has been discernible in the form of start-up investments by producers; generation of surplus; and reinvestment of surplus to grow and diversify the enterprises to include brood as a product, in addition to scrap lac. Producers

¹⁰ Roy, Rajeev and Arakal, Jeevan, *Evaluation of Udyogini's BDS Intervention in Odisha and Jharkhand*, Xavier Institute of Management, Bhubaneswar, May 2012

have invested their earnings in brood production thus augmenting the working capital that Udyogini facilitates for them. Nearly 80% of them now reinvest half their surplus in every cycle for growing their enterprise. At the next level of the value chain, the VLSCs have become the strategic anchors not just for lac but also for retailing daily needs goods for the rural producers. Their owners (all tribal women) not only paid for the I-USE training but took loans to finance their start-ups.

VLSCs are now a two-way chain with the retail services helping to reduce transportation costs and wage losses of women customers (who earlier travelled between 5-7 kms from their villages to the nearest shop to obtain their daily needs). It also enables women to buy items in the quantities they can afford. VLSC owners earn between Rs. 1000-2500 per month. One successful award-winning entrepreneur, Saraswati Devi (also a lac producer and aggregator) now earns around Rs. 6000 a month from just her retail services. She added a library for women to her service offering, and caters to customers from 2 villages other than her own. Another award winner, Kokila Devi, has added a second business of a “dhaba” (café) nearby, after learning, at I-USE, about how to increase footfalls at her VLSC.¹¹

e. Social Capital for Sustainability

Community involvement in all aspects of the value chain has had an impact in building natural resource sustainability and entrepreneurship. The culture of sharing and protecting each other’s trees and resources has become rooted, even generationally, perhaps.¹² Six registered cooperatives covering more than 1000 lac producers, has strengthened social capital and will be built on for a range of other empowerment activities.

f. Government Recognition, Linkages, and Replication

An MOU has been signed between Udyogini and Indian Institute of Natural Resins and Gums (IINRG) for Udyogini to become their technical assistance partner for promoting lac for transfer of technology for brood development to NGOs and other states. IINRG has already involved an Udyogini staff member to deliver lac training to a producer group in Madhya Pradesh that requested such assistance. Additionally, in 2012, the National Rural Livelihoods Mission (NRLM) recognized Udyogini’s work for a partnership with NRLM for support and scale up for lac in Jharkhand. NRLM has also formed a team for appraisal of proposals from lac-promoting organizations in which Udyogini’s lac expert is a member. The Jharkhand State Co-operative Lac Marketing & Procurement Federation Ltd (JHASCOLAMPF) is providing direct support (subsidized brood, equipment as well as training and buyback for lac jewellery products) to the cooperatives.

¹¹ Kokila Devi’s entrepreneurial achievements are particularly significant as she is a widow and from the GOI-classified Primitive Tribal Group (PTG).

¹² Roy and Arakal say “evidence of this social capital was conspicuous by its absence in villages where Udyogini had not commenced operations”

7. Way forward

The lac value chain model has demonstrated results and potential for innovation because it integrates local entrepreneurship and service provision as key design features along with SHGs. For tribal women in backward states and districts, these features promote and challenge them to become role models for evolution of self and enterprise in ways they could not imagine earlier. Impact on incomes has potential in reducing the likely support for insurgency that wrecked tribal ecosystems give rise to. Using the same [adaptable] model, Udyogini is working in other commodities in other states. It has also begun support to lac producers in Mandla in MP where lac has not been aggressively promoted though many districts have the potential and MP can, with investment in brood production, improve its position among lac producing states of the country and substantially impact tribal families.
