CHAPTER: 6

Problems & Performance of Artisanal Silk Industry in West Bengal

6.1 Introduction

Last chapter explained the impact of regional concentration of silk-farms on the growing internationalisation of silk industry in India. It is observed that presently, West Bengal has been ranked third according to its production status after Karnataka and Andhra Pradesh and moreover the state is deprived so far as its regional inequality index is concerned. In other words, West Bengal has been labeled as 'deprived state' due to its successively lower production of raw silk compared to the national average, which is supposed to be an outcome of discriminatory regional policies in artisanal silk sector. Several commentators opined that despite bearing a golden legacy, the rudimentary technology of silk manufacturing sector was actually responsible for its tardy progress and that kept its status at a barely low level compared to its potentials. This chapter would at length make an analysis of these issues highlighting its present performance and challenges faced by the several stakeholders in the value chain of the artisanal silk industry of West Bengal.

Sericulture in West Bengal failed to develop evenly across all the districts of the state since its historical origin. Malda, Murshidabad and Birbhum were the three districts where prosperity of this sector had been prominently visible as early as eighteenth century. In 2001-02, the shares of mulberry raw silk production of these three districts were 71.5%, 13.3% and 11.6% respectively (CSB, 2003). Flourishing of mulberry sericulture in these districts hinged upon the nature of soil, climatic conditions and presence of sericulture farmers and artisans in those regions. Malda had a long association with silk production since 19th century and production of raw silk was one of the major auxiliary activities of this region. Presently, Malda produces 75% of the state's production and 6% of the national production and thereby occupying a pivotal role in production of mulberry raw silk in West Bengal. Murshidabad is rather famous for silk weaving as it bears a 350 years old indigenous silk industry's inheritance (Chaudhuri, 1977). On the other hand, Birbhum was originally a manufacturer of silk piece goods. In the 17th and early 18th centuries, the silk-articles, produced in Birbhum, had a good market outside Bengal. They were patronized by the Moughal Court (Gupta, 1980). The exports of Bengal silk manufacturers to England increased rapidly after the assumption of Dewani in 1765 (Mukhopadhyay, 1995) and Kassimbazar became the principal hub of this silk trading (Mukherjee, 1994).

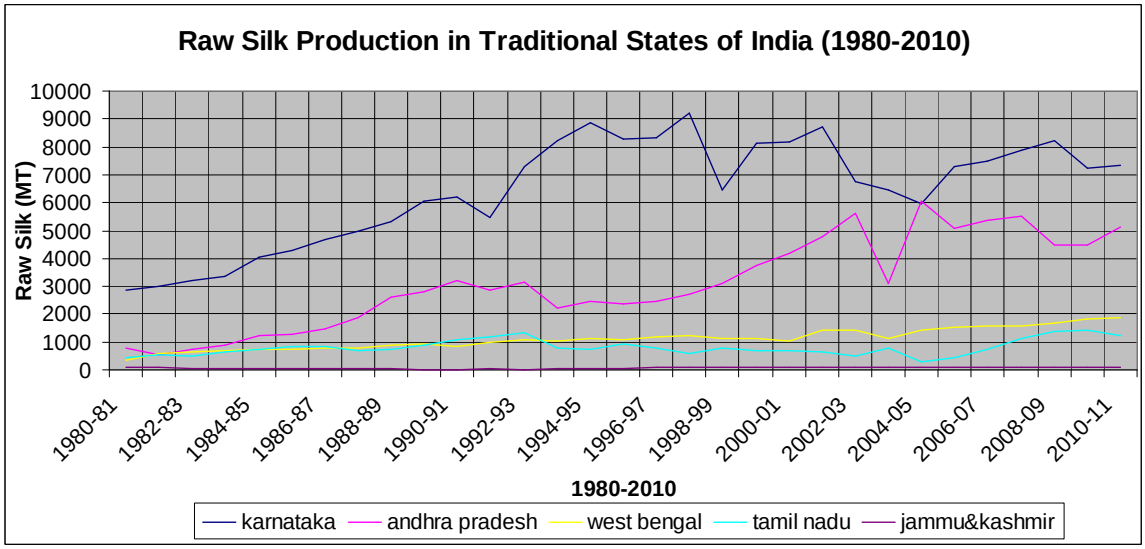
The major objective of this chapter is to delineate several issues faced by various stakeholders at different segments of the value chain in this vertically integrated industry of West Bengal at the backdrop of its growth trajectory. Our discussion will be initiated with a comparative analysis of the traditional states with respect to their productivity parameters. Section 6.3 will make an in depth analysis on artisanal silk sector of West Bengal covering certain pertinent issues, like income enhancement and employment generation during the plan period. The subsequent subsections will elaborate the supply chain of the industry and difficulties faced by silk-farmers, rearers and reelers at various stages of production, purchasing and selling in West Bengal. 6.4 will conclude the chapter stating the major findings and critical gaps in institutional measures taken so far.

6.2 Comparative Performance of Traditional Silk Producing States

As it has been indicated earlier that sericulture is traditionally being practiced in four major states of India, namely Karnataka, Andhra Pradesh, West Bengal and Tamil Nadu, excluding Jammu & Kashmir. Karnataka is the largest raw silk producing state in India, followed by Andhra Pradesh, West Bengal and Tamil Nadu. While West Bengal is the third largest silk

producing state in the country, Karnataka vests largest amount of land for sericulture followed by Andhra Pradesh, West Bengal and Tamil Nadu. Jammu & Kashmir is the bottom ranker and produces a minuscule part of mulberry compared to the rest. Fig 6.1 illustrates the growth trends of mulberry raw silk in all these five traditional states.

Fig 6.1 Raw Silk Production in Traditional Silk Producing States of India (1980-2010)



Source: CSB (1999, 2003, online)

Karnataka remains the largest silk producing state in India and the pre-globalisation decade witnessed its substantial growth compared to other traditional silk producing states which also have natural advantage in mulberry silk production. Andhra Pradesh remains the second largest producer of mulberry raw silk leaving Tamil Nadu and West Bengal lagging behind. However, the growth rate of West Bengal was higher in the pre-globalisation decade which helped to improve its rank than Tamil Nadu in the successive decades. Jammu & Kashmir despite having the climatic advantage of producing quality bivoltine mulberry silk, exhibited negative growth rate in the pre globalized era. The post globalization era marks opening up of gates for foreign silk producing countries, like China, Korea to take the advantage of market economy at much lower rate of entry barriers. This immediately lowered the price of raw silk and the domestic production was hampered as the rural farmer-artisans found it difficult to survive and started changing their vocation from sericulture to other income generating activities. During this decade of globalisation almost all traditional states experienced much lower rate of growth barring Jammu & Kashmir. In Tamil Nadu, the growth rate was negative which indicates that artisans have changed their livelihood which was reflected through decline in production of raw silk. The latest decade portrays a comparatively better picture which presumably is a reflection of imposition of anti-dumping barriers against Chinese imports in 2003. This helped to control the downswing of the mulberry raw-silk prices and provided some edge to artisans of several silk producing states. However, the growth rate experienced by the largest silk producing state remains lowest in this decade which may be due to reaching of saturation point of the state. In post globalisation phase, Karnataka was largely reorienting its production from multivoltine to bivoltine mulberry silk production. The negative growth rate is possibly the result due to that transitional phase. Tamil Nadu is presently the largest bivoltine silk producing state and it exhibits substantial growth rate in the initial decade of 21st century. West Bengal, which is only producing multivoltine silk, Nitsari, being the most popular variety, experienced largest rate of growth track in the last

decade. Thus post globalisation antidumping measure seems to have been most beneficial to the artisanal silk industry of West Bengal.

Table 6.1 Annual Growth Rates in Raw Silk Production by Traditional States in India

Year	Karnataka	Andhra Pradesh	West Bengal	Tamil Nadu	Jammu & Kashmir
1980-90	7.84	13.34	10.06	6.33	-10.89
1990-00	2.71	1.64	3.35	-4.56	16.79
2000-10	-1.07	2.04	6.03	5.66	1.16

Author's Calculation on the basis of the data available in CSB (1999, 2003, online)

The comprehensive data for interstate productivity comparisons is available up to 2002-03. Considering 2001-02 as the bench mark of the beginning of the initial decade of 21st century, a comparative study on land-based productivity across the traditional states, will be made here. In 2001, Karnataka vested 116,158 hectares of land for sericulture and produced 8728 metric tons of raw silk, while Andhra Pradesh, West Bengal and Tamil Nadu cultivated mulberry on 52,225hctares, 18,794hectares and 13,096 hectares area of land and produced 4775mt, 1407mt and 655mt of raw silk, respectively. Jammu & Kashmir produces only bivoltine silk and its production range is much lower compared to the rest of the traditional states and therefore it has been excluded from the comparative productivity analysis. Analyzing time series data, existence of a positive correlation between area of mulberry cultivation (major food for the silk worm) and volume of raw silk production has been found as a whole for India. However, the degrees of variation differ from state to state. For Karnataka, a significant correlation (at .05 level) is observed between area of cultivation and volume of silk production and Spearman's rank correlation coefficient is found to be 0.480. On the other hand, in case of Andhra Pradesh, the significant Pearson's correlation coefficient is 0.486 while Spearman's Rank correlation coefficient is 0.66. For the third largest silk producing state, viz. West Bengal, the degree of association between the area of cultivation and volume of raw silk production found is even higher than the previous two states: i.e., Pearson's correlation coefficient is 0.709, while Spearman's rank correlation coefficient is 0.799; While for Tamil Nadu the similar correlation is also significant, i.e., Pearson's correlation coefficient is 0.692, while the Spearman's rank correlation coefficient is 0.598. This implies area extension in mulberry activities is helping in production escalation. These findings worked as an eye opener about the superior position of the state of West Bengal on the basis of land productivity and therefore draw attention of this study. The rest of the section will make some analytical studies on this direction.

Table 6.2 State Level Association between Cultivation Area & Silk Production

States	Pearson's Correlation Coefficient (Area of Cultivation, Silk Production)	Spearman's Rank Correlation Coefficient (Area of Cultivation, Silk Production)
Karnataka	0.480*	Insignificant
Andhra Pradesh	0.486*	0.66*
West Bengal	**0.709***	**0.799***
Tamil Nadu	0.692*	0.598*

* significant at 0.05 level

6.2.1 Karnataka versus West Bengal

The state wise comparative analysis between area of mulberry cultivation and amount of silk production reveals that for a state like Karnataka, the area of production is not that much important for raising its volume of production like that of West Bengal (See table 6.2). This indirectly indicates that land area is not necessarily connected with silk production in Karnataka as that in West Bengal. Annual Report of 2010-11 has shown that silk production throughout the country followed a steady growth over the years despite drastic reduction in mulberry cultivation area due to various constraints, like droughts in Karnataka and Adhra Pradesh, labour scarcity, urbanization, steep fall in cocoon prices etc (GOI, 2010-11). This increase in silk production is therefore due to improvement in productivity leading to vertical growth of the industry, due to research and development intervention and implementation of various technology-absorbing development programs, like Catalytic Development Program and so on.

However, this section will make a comparative analysis of averages of raw silk production and land-based productivity (land productivity) between Karnataka and West Bengal on the basis of the available statistics during the period 1980-2002. Two random numbers have been chosen to identify these states, viz., Karnataka =1 and West Bengal = 4 and the available data help us to obtain the statistical results (see table 6.3) which show that the average land productivity of West Bengal remained much higher than that of Karnataka throughout the period. In Karnataka sericulture is being practiced in 19207 villages while 2339 villages of West Bengal are involved with this livelihood. Thus, spatial concentration of this livelihood is higher in West Bengal which helps to monitor and implement different types of programs. Average number of families attached with sericulture per village is also higher in West Bengal (48.9) than Karnataka (13.22). Moreover, sericulture has almost reached a point of saturation in Karnataka while expansion is still possible in West Bengal. These could be the reasons which may justify why West Bengal exhibits higher land productivity in silk production compared to the largest silk producing state Karnataka.

Production of raw silk and involvement of sericultural families with this particular livelihood also depend upon a large range of factors including alternative employment opportunities, relative returns from this activities, climatic factors and productivity of labour, productivity of land. By productivity of land here it is implied that the volume of raw silk produced by the artisans after feeding the mulberry leaves (to the silkworm) grown in one hectare of land. Silk is extracted from the cocoon of silk-worm which eats this mulberry leaf as its food. Karnataka is the largest silk producing state in India and, therefore, silk productivity (kg/ha) can be compared in order to compare the degree of potential employment generating capacities in these two states, though there exists a host of productivity parameters, like reeling cocoon productivity (kg/ha and kg/100dfls), renditta count etc., which play crucial role in output and employment generation.

Table-6.3, containing descriptive statistics for Karnataka and West Bengal, actually shows that the average land based silk productivity is higher in West Bengal (57.92kg/ha) than Karnataka (44.94kg/ha) and Karnataka's performance also witnesses greater variation than West Bengal. The second panel table of 6.3, on the other hand, gives the result of the comparative analysis of the land-based productivity in these two states. It shows the results of two tests: Levene's test for Equality of Variances and t-test for Equality of Means. A higher value of significance (0.06 > 0.05) associated with the Levene's Test tells us that two groups having equal variances and, therefore, null hypothesis of equal variances is true.

Hence, the statistic associated with the assumption of ‘equal variances’ needs be used for the t-test for Equality of Means.

Table 6.3 Group Statistics and Independent Sample Test (Karnataka and West Bengal)

	State	N	Mean	Std. Deviation	Std. Error Mean
Productivity	1	22	44.94	16.39	3.49
	4	22	57.92	14.49	3.09

	Levene's test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	T	d.f	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	3.730	.060	– 2.782	42	.008	– 12.97	4.66
Equal variances not assumed			– 2.782	41	.008	– 12.97	4.66

The t-test result shows – 2.782 with 42 degrees of freedom. The corresponding two-tailed p-value is 0.008, which is less than 0.01. Therefore, we can reject the null hypothesis at 1% level of significance, which means that the average productivity of these two states significantly differs. However, we are interested in knowing whether lower land productivity in Karnataka than that of West Bengal is statistically significant. Then the null hypothesis would be as following and we need the p-value of one-tailed test.

The one-tailed significant value or p-value can be obtained by dividing the two-tailed value by 2.Thus the one-tailed p-value in this case would be 0.004 , which is less than 0.01. Therefore, we reject the null hypothesis even at 1% level of significance and conclude that average raw silk productivity (land-wise) in Karnataka is significantly lower than that of West Bengal during 1980-2002.

6.2.2 Andhra Pradesh versus West Bengal

Similar type of exercise will be done, here, with the second largest silk producing state, i.e., Andhra Pradesh vis-à-vis West Bengal. Here we label Andhra Pradesh as ‘2’ and West Bengal as ‘4’ for analytical convenience and the available statistics regarding the two states during the time period 1980-2002 helped us to compare the means of their land-based productivity in raw silk.

Table 6.4 shows that the average per hectare productivity of raw silk is marginally greater in West Bengal than in Andhra Pradesh, while the variations are lower in former than the latter. This is presumably because of the reason that Andhra Pradesh extends the opportunity to 115 thousand sericulture families living in 8082 villages to get involved with this livelihood while in West Bengal 114 thousand sericultural families are living in 2339 villages and practicing sericulture (CSB, 2003). Thus spatial concentration of artisanal silk sector is much lower in West Bengal than that in Andhra Pradesh, which raises its land productivity and lowers its variation. The Levene’s test tells us that two states have unequal variances as the level of

significance associated with F statistic is less than 0.01 and therefore the null hypothesis of equal variances is rejected. The t-test result (associated with equal variances not assumed) shows p-value 0.394 which is higher than 0.05, this means that the null hypothesis of equality of means is accepted. Therefore, so far as land wise productivity is concerned we cannot claim any substantial level of difference between the average productivities (land-wise) between Andhra Pradesh and West Bengal.

Table 6.4 Group Statistics and Independent Sample Test (Andhra Pradesh and West Bengal)

	State	N	Mean	Std. Deviation	Std. Error Mean
PRODVTY	2	22	52.60	24.97	5.32
	4	22	57.92	14.49	3.09

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	d.f	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
PRODVTY	Equal variances assumed	15.926	.000	– 0.863	42	0.393	– 5.31	6.16	– 17.74	7.11
	Equal variances not assumed			– 0.863	34	0.394	– 0.5.31	6.16	– 17.83	7.20

6.2.3 Tamil Nadu versus West Bengal

Tamil Nadu is another traditional state where sericulture is being practiced, though production-wise its rank is lower than West Bengal. We intend to make a comparative analysis and instead of repeating the same statistical exercise, a different level of comparison will be attempted between West Bengal and Tamil Nadu. Table 6.5 describes that there is a substantial level of productivity difference between West Bengal and Tamil Nadu on the basis of the time series data available for the period 1980-2002.

Table 6.5 Group Statistics between Tamil Nadu and West Bengal

	State	N	Mean	Std. Deviation	Std. Error Mean
PRODTVTY	3	22	41.01	19.13	4.08
	4	22	57.92	14.49	3.09

However, this comparative level of efficiency with respect to acreage productivity alone cannot portray the whole situation. If the annual productivity between the year 2002-2003 and 2012-2013 is taken into account, Tamil Nadu would show much deterioration in productivity level compared to India (see table 6.6). It is because 48.6 percent of Tamil Nadu's silk comprises of bivoltine variety while West Bengal produces very negligible proportion of bivoltine silk. Bivoltine silk is sold in premium price and possesses superior

quality and therefore acreage productivity comparison can not be a measure of yardstick between multivoltine silk and bivoltine silk. Tamil Nadu has the largest number of handloom units in the country. Presently 80,000 handlooms units are producing sarees and dhoties. Weaving centres are quite strong in Tamil Nadu and Kancheepuram, Arni, Kumbakonam, Tanjore, Salem, Madurai and Coimbatore produce international quality silk sarees and dhoties under private as well as co-operative initiatives. On the other hand despite having inbuilt potentials, silk weaving sector is not so organized and streamlined in West Bengal. In 2011-12, the state possesses only 7768 handlooms comprising all types of silk. Silkworm rearing and mulberry cultivation are carried on throughout the regions of Malda and Murshidabad, while prominent reeling centres in these districts are Mothabari, Madhurghat, Malda, Rampurhat, Berhampur and Chawk-Islampur. Most of the reelers in West Bengal depend upon the southern states of UP and Bihar, Benaras and Bhagalpur for the disposal of their processed silk yarn. Murshidabad, Bankura, Birbhum and Nadia have weaving sectors but the level of production is not parallel to that of Tamil Nadu.

Therefore, we can conclude that per hectare silk productivity of West Bengal is greater than Karnataka (the largest silk producing state) and almost equivalent to Andhra Pradesh, though similar level of comparison is not possible with the silk producing states like Tamil Nadu and Jammu & Kashmir. Jammu & Kashmir produces only bivoltine silk while Tamil Nadu produces a substantial volume which restricts the scope to make similar level productivity comparisons. But incidentally it can be said that low production rank in raw silk of West Bengal cannot be attributed to the low productivity of land. High acreage productivity of mulberry silk can be attributed to the technological innovations and transfer of technological know-how directly to the field and because of the spatial concentration of artisanal silk industry in West Bengal. However, this analysis is restricted to the comprehensive data availability during 1980-2001, due to non-availability of continuous updated time-series data for later years. On the otherhand, depending on the projected data as provided by CSB (2013) a modest attempt of comparison between two time-periods (ie., 2002-03 and 2012-13) will make this analysis worth illustrating. It will also give an idea of the impact of modernization and far reaching effect of globalisation at disaggregated level.

Table 6.6 Comparative Growth of Silk Productivity in Traditional States during 2002-03 to 2012-13^{P}

Traditional States	Mulberry Area (ha)		Raw Silk(MT)		Productivity (Kg/ha)	
	2002-03	2012-13^{P}	2002-03	2012-13^{P}	2002-03	2012-13^{P}
Karnataka	88930	74730	6760	8219	76.04	109.98
Andhra Pradesh	54384	43165	5629	6550	103.5	151.74
Tamil Nadu	5394	16656	490	1185	90.84	71.15
West Bengal	**12569**	**13775**	**1450**	**2002**	**115.36**	**145.34**
J&K	5986	7557	100	141	16.71	18.66
India	194463	192126	14617	18755	75.15	97.62

Source : CSB (2003), CSB (updated o 30.5.2013); P = projected

Table 6.6 provides an opportunity to compare the growth pattern of artisanal silk industry and its land productivity for 2002-03 and 2012-13. It shows mulberry area cultivation in Karnataka and Andhra Pradesh have reduced drastically possibly due to drought in these areas (CSB-Annual Report, 2012-13), as explained by the market researchers. But since land productivity is raised, higher level of output generation becomes possible. However, incase of West Bengal, both output and productivity was raised which reflects the progress of the

artisanal silk industry in West Bengal. At national level, the average productivity of land has shown a rising trend from 75.15 kg/ha to 97.62kg/ha. Experts opined that the major reasons behind the increase in acreage productivity is adoption of high leaf yielding mulberry varieties, improved silkworm hybrids and better technologies in silkworm rearing and reeling (CSB, 2013).

The growth in acreage productivity during 2002-03 and projected 2012-13 reveals that almost all the traditional states enjoyed this productivity growth except Tamil Nadu. Land cultivated for silk production during these ten years have increased significantly in Tamil Nadu leaving no impressionable impact on raw silk production. Orienting silk towards bivoltine breeds could be one plausible justification behind this but Jammu & Kashmir which is solely producing bivoltine silk exhibits greater productivity than that. While the boon of technological innovation is helping to stimulate acreage productivity in almost all the states, Tamil Nadu cannot be a sole exception from the rest. Therefore dynamism of artisanal silk industry in Tamil Nadu should be reviewed with caution which is beyond the scope of this research study. In the upcoming section, the discussion will be centred on the focal issues, i.e., artisanal silk industry in West Bengal.

6.3 Artisanal Silk Industry in West Bengal

This section will make a modest attempt to elucidate the growth and development of artisanal silk industry in the West Bengal in post independence period. 6.3.1 will explain the progress of the industry in West Bengal during planning periods, while 6.3.2 will make a brief district level analysis. The next sub section 6.3.2 will illustrate the supply chain of the silk production in West Bengal and the subsequent section will illustrate the problems faced by different stakeholders in the value chain in the process of production of artisanal silk.

6.3.1 Progress of West Bengal's Artisanal Silk Industry during Plan Periods

In the post independence period, sericulture and silk industry in West Bengal set out its desired course of progressive development through various catalytic projects over the planning periods. It gradually became an important rural vocation in the state providing employment and livelihood to a large number of families pre-dominantly dwelling in rural and semi urban areas. However, sericulture didn't find a separate place in the First Five Year Plan (1951-52 to 1955-56). The central assistance was made available to the state under the broad scheme of "other village industries". Against Rs.7.21 lakh allocated, the utilization was only Rs. 2.37lakh and 4912 hectare of land was brought under mulberry cultivation which resulted into 382 MT of raw silk production and 114,000 employment generation. After the establishment of the Central Silk Board in 1948, regional development offices were established in silk producing states for supervising sericulture development across the regions. Calcutta (presently known as Kolkata) was considered as the gateway of the entire eastern and north-eastern India and therefore to cater to the demand of various sericulture establishments, this regional development office came into existence in the early 1950s.

From the second Five Year Plan (1956-57 to 1960-61) onwards, sericulture received a new emphasis in India as separate allocation of fund under Central and State sericulture department was approved by the Planning Commission. Since then several development programs were taken up. Against allocation of Rs 62 lakh for the state, only 37 percent was utilized in this plan period. Incidentally, West Bengal had been producing all four commercially exploited varieties of silk since the inception of the planning period. Out of the

four varieties mulberry, *eri*, *tasar* and *muga*, the first two silkworm breeds are domestically reared, while *tasar* and *muga* are wild and reared on trees. Each of these silkworm species feeds on leaves of specific food plants. Of these four varieties, mulberry silk yields maximum share and generates maximum level of employment. Mulberry sericulture is also practiced throughout the state of West Bengal excepting Howrah and East Medinipur district.

During The Third Plan (1961-66), Rs. 79 lakh was allocated for West Bengal and only 40 percent was utilized. Central Sericulture Research Institute at Berhampore was reorganized during this period. This is the oldest premier research institute in West Bengal established in 1943 mainly to restore the decaying trends of sericulture due to outbreak of silkworm diseases. Gradually, the Institute modified its objectives. However, developing technologies to improve mulberry leaf productivity in more eco-friendly and cost efficient way remained its major objectives. Central Silk Board always works in close tandem with this Research Institute along with National Silkworm Seed Organization to implement an array of developmental project encompassing sericulture. Another major objective of the Research Institute was to evolve region and season specific high yielding silkworm breeds. Updated technological knowledge is being disseminated by the institute's extension network program. It has been observed that the excessively diversified climate remained a serious bottleneck for sustainable development of sericulture in West Bengal.

The Fourth Five Year plan (1969-74) reflected a comparatively higher utilization of allocated funds, i.e., 81%. But the production of raw silk at the end of this planning period showed a declining trend. Mulberry cultivation also evidenced a declining trend. However, bivoltine rearing was introduced for the first time during this planning period. During the Fifth Five Year Plan (1974-79), the Planning Commission allocated Rs. 3375lakh for West Bengal and Rs. 481 lakh was spent during this phase. Area of mulberry cultivation was also raised significantly and the state was further strengthened through establishment of grainages by CSB. These grainages were expected to supply quality bivoltine and multivoltine silkworm seeds to the sericulture farmers. The immense potentiality of sericulture in reconstructing the rural economy of West Bengal was distinctly felt and that necessitated creation of a separate Directorate, i.e., Directorate of Textile (Sericulture) at West Bengal in 1975. The Directorate of Textile identified long legacy of silkworm rearing with impeccable skill and expertise of silk rearers as one of the major strengths of sericulture in West Bengal. Mulberry leaf productivity was also higher than the national average because of the fertile Gangetic alluvial soil.

During the Sixth Five Year Plan (1980-85) the Planning Commission approved 10.5% of the gross budget for West Bengal. Area of mulberry cultivation under this plan had shown a stupendous growth of 53% which translated into 59.3% growth in production of raw silk and employment growth rate in this sector was also 95%. The Regional office of Central Silk Board was bifurcated in 1982 with the creation of Regional Development office at Malda. The technical wing was shifted to Malda from CSB, Calcutta office. The Calcutta office became certificate issuing authority to the exporters of silk and silk goods.

Again during the Seventh Five Year Plan (1985-1990), the growth in mulberry cultivation and raw silk exhibited a diminishing trend, while 71 per cent of the allocated fund was spent. During this plan period, the Central Silk Board implemented an Intensive Sericulture Development Project in West Bengal at a total outlay of Rs. 967 lakh. The project envisaged expansion of area under mulberry cultivation by 4000 acres besides developing infrastructure for encouraging the systematic seed production, and, supply and marketing cocoons. During

the terminal year of the Seventh Plan, National Sericulture Project was introduced in West Bengal by Central Silk Board with financial assistance of the World Bank and SDC. The project was launched over a period of seven years for the development of mulberry sericulture in the state with a credit line from IDA and SDC.

The Eighth Five Year Plan (1992-97) experienced growth in the area of mulberry acreage, raw silk production and employment generation at the rates of 32%, 25%, 32% respectively. 61% of the allocated funds were utilized in this plan – a fall of 20% in two decades. Again, ninth plan (1997-2002) witnessed a fall in the area of mulberry cultivation in the tune of -12.9% but rise in growth of mulberry production (i.e., 21.5%) and marginal rise in the level of employment (0.9%). Several schemes under Centrally Development Project were implemented under this plan to boost the performance of this sector. The project was launched to confer the amenities of using economic oven, drying chambers, construction of rearing houses, rearing appliances etc. 'Seri-2000' was initiated to induce the sericulture farmers and artisans to use the new technology. A cluster of initiatives undertaken during this period aimed at improving rearing houses for mulberry farmers. The major objectives of the project included replacing local variety of mulberry with HYV mulberry - the loss to the farmers in the process to be compensated, promotion of post cocoon sector (reeling & twisting) through technology upgradation, supply of machineries, implements and planting material and training of officials, farmers and artisans.

Table 6.7 Progress of Sericulture during planning period in West Bengal

End of Plan Period	**Allocation (Rs. in Lakh)**	**Expenditure (Rs in Lakh)**	**Mulberry Cultivation Area (ha)** (cumulative)	**Raw Silk Production**	**Employment Generation** (Lakh Person) (cumulative)
First Plan (1955-56)	7.21	2.37	4912	382	1.14
Second Plan (1960-61)	62.0	23.26	6070	543	1.43
Third Plan (1965-66)	79.0	31.86	6490	685	1.48
Fourth Plan (1973-74)	64.0	52.0	5733	563	1.40
Fifth Plan (1977-78)	375.0	481.1	8093	450	1.60
Sixth Plan (1984-85)	1433.25	710.0	12401	717	2.45
Seventh Plan(89-90)	1587.26	1127.08	16337	926	3.23
Eighth Plan (1996-97)	5195.0	3168.74	21575	1158	4.27
Ninth Plan (1998-99)	1284.06	1391.41	21817	1118	4.31
Tenth Plan (2001-02)	na	na	19013	1407	Na
Eleventh Plan (2010-11)	na	na	13138	1885	Na

Source: Market Research Wing, Textile Committee, Mumbai

During the first decade of the new millennium (2001-2010) sericulture sector in West Bengal experienced certain distinguished modification. The first year of the Tenth Plan (i.e., 2002-2003) witnessed increase in production of mulberry silk by 3.1% (1450MT) compared to its performance in the previous year 2001-2002 (1407MT). However, there was a sharp decline in the areas of mulberry cultivation during that period. In 2001-02 the area of mulberry cultivation was 18794ha. It was reduced to 12569ha in 2002-03 which in other way also indicated its rise in productivity. In 2002, approximately 1.1 lakh sericulture families were involved with production of raw silk. By the end of the Eleventh Five Year Plan (precisely in 2011) the involvement of sericulture families has shown certain degrees of contraction, i.e., 0.92 lakh. This no doubt indicates that sericulture fails to provide expected stable returns to the farmers compared to alternative cultivable food grains or other cash crops. However, raw silk production has shown a substantial degree of improvement from 1407 MT to 1885MT during this 2002-2011. Despite the fall in acreage and number of involvement of sericulture families, this augmentation actually reveals technological induction and its implementation in rural sericulture.

Table 6.8 Status of Sericulture in West Bengal

Parameters	As on 31.3.2002	As on 31.3.2011
Plantation (Acres)	46983	32467
No. of Farmers	110,000	92,200
Silk Production	1407	1885
A. Infrastructure provided by the Government		
Farms	62	62
Grainages	16	16
Cold Storage	4	4
Technical Service Centre	59	59
Cocoon Market	12	12
Filature	2	2
Twisting Plant	2	2
Reeling Training Centre	5	5
Sericulture Training Institute	2	2
B. Infrastructure at Private Level		
1. Reeling Unit a) Cottage Basin	4158	2987
b) Ghosh Basin	NA	4755
c) Charka	3193	322
2. Drying Chamber	100	110
3.Powerloom	138	128
4. Handloom	28621	19045
5. Weavers	122000	27260

Source : Govt of Textile (sericulture)

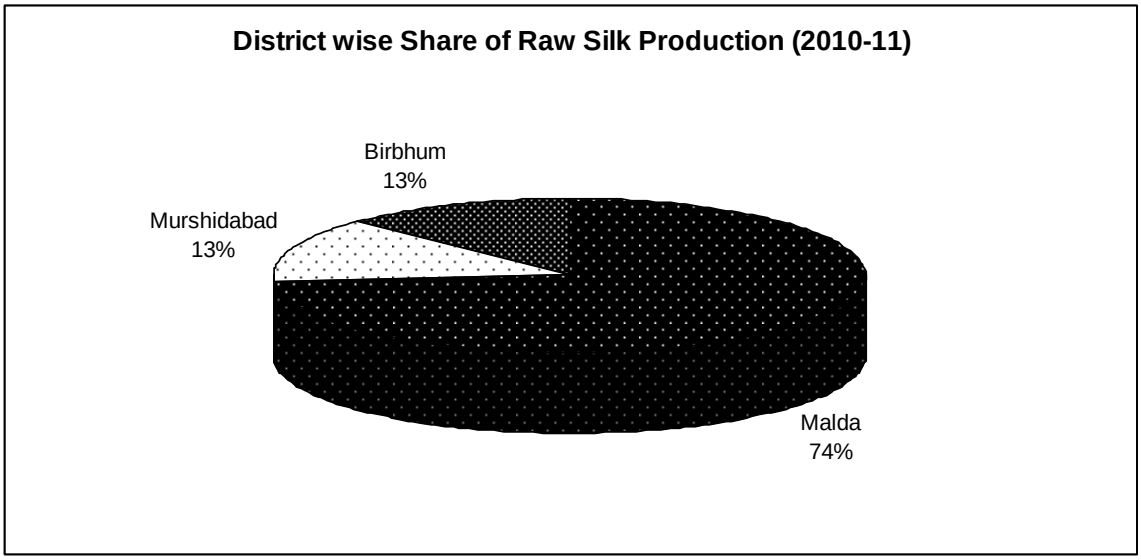
So far as infrastructural amenities are concerned, artisanal silk industry in West Bengal remained static during 2002-2011 (see table 6.8). At present, there are 62 basic seed farms, 16 egg production centers, (grainages), and 59 technical service centers throughout the state. Starting from the number of farms, grainages, cold storage, technical service centre, to filature, twisting plant, reeling training centre and sericulture training institute no dynamism has been observed in institutional infrastructure level during 2002-2011. At private

infrastructure level, the result is even more depressing. Numbers of reeling units have declined both in cottage basin and country charka units. Powerlooms have been reduced from 138 unit to 128 unit and so did the number of handlooms during 2002-2011. Despite this worsening level of infrastructure, number of weavers connected with silk production has been raised from 1.2 lakh to 2.7 lakh during this phase (Department of Sericulture, Government of West Bengal, 2002, 2011). Directorate of Textile (sericulture) in their online information indicated that during 2011 to 2013, the mulberry area increased from 32467 acres to 35227 acres and the corresponding raw-silk production was also stimulated from 1885 to 2018 Metric Tones. The employment generation during this phase increased from 259,736 to 281816. According to BAE&S (online), Raw Silk production was raised from 1790MT to 2689MT during 2010-2011, while employment generation was raised from 247480 to 264942 persons. Despite some data discrepancies due to different sources of origin, both the statistics actually reveal a growing trend of artisanal silk industry in West Bengal over the recent past.

6.3.2 District Level Analysis in West Bengal

As we have noted earlier, Malda, Murshidabad and Birbhum are the only three traditional silk producing districts where raw silk production takes place in substantial way compared to other districts of West Bengal (See fig 6.2). Malda produced 1389.56MT of raw silk (73.7% of state production) in 2010-11. From 2001-02 to 2010-11, this production showed a compound annual growth rate of 0.03 percent. Area of mulberry cultivation has increased from 335.27 acre to 366.68 acres, showing a growth rate of a meager 0.01 percent. However the additional employment generation capacity was reduced from 4065 persons to 3093 persons over this period of nine years.

Fig 6.2 Raw Silk Production (District wise share) in West Bengal, 2010-11



Murshidabad is the second highest raw silk producing district in West Bengal producing around 15percent of the state production. Murshidabad is rather famous for silk woven sarees (namely Murshidabad silk). So far as the three parameters, i.e., mulberry area coverage, production of raw silk and employment generation are concerned, the performance of the district is not similar to Malda. From 2001-02 to 2009-10, the mulberry area had declined from 280.62 acre to 270.69 acre, while production of mulberry raw silk has shown a matching declining trend from 190 MT to 95MT. Even in the case of additional employment generation it shows a diminishing trend from 3513 persons to 2166 persons during this phase.

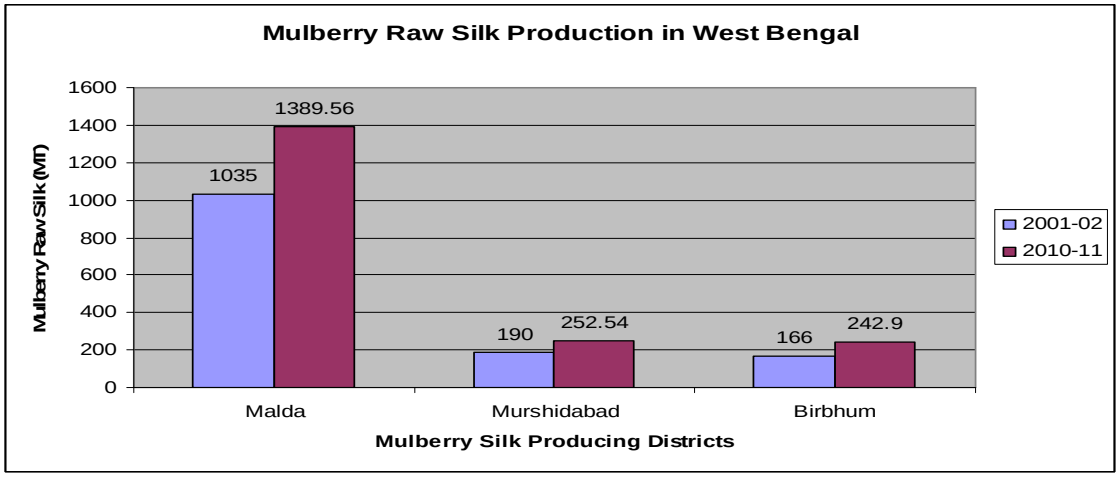
Birbhum is the third major silk producing district producing 93MT of raw silk in 2010-11. Though plantation area during the last decade (i.e., 2001-2010) has shown a remarkable increment from 121.88 acres to 263.47acres, the raw silk production reflects a deteriorating trend. This reflects deterioration in productivity and casts doubt regarding the dissemination of technological know-how among artisans and farmers. From 166 MT of raw silk it was reduced to 93 MT of raw silk, showing a negative annual growth rate of -0.06%. But the astounding fact is that even after these diminishing parametric trends, the additional employment generation capacity has portrayed a favorable scenario. In 2001-02 the number of people additionally employed in the district was 1345 while in 2010-11 the same has been raised to 2108 persons.

Table 6.9 District wise Status of Mulberry Silk in West Bengal (as on 31/3/2011)

Districts of West Bengal	Plantation Area (Acres)	Production of Mulberry Raw Silk (MT)	Production of Silk Waste (MT)	Additional Employment Generation (no.)
Malda	366.68	1389.36	449.18	3093
Murshidabad	270.69	252.54	95.90	2166
Birbhum	263.47	242.90	93.0	2108
Bankura	26.00	0.01	0	128

Source : DoS, West Bengal (2011)

Fig 6.3 District wise Growth in Raw Silk Production in West Bengal (2001, 2010)



Source : DoS, West Bengal (2011)

The pertinent issue at this juncture is the impact of globalization in the artisanal silk industry of West Bengal. It has been observed that the globalization did not leave its grip from this tradition bound artisanal industry in West Bengal, where the knowledge trickles down to the generations and support in livelihood generation across the genders of the household farms. The cheap silk yarn from China, Korea and Japan started flooding into this regional market since 2001 which resulted in a sharp decline in the prices of reeling cocoon. Malda cocoon market witnessed a steep decline in the rate of cocoon from Rs.100/ kg to Rs. 40/kg within two years[1] (Saeed, 2003). The huge inflow of exotic high grade silk yarn from China at a very low price (which was buffeted by hidden subsidy) had in turn uprooted a large portion of mulberry cultivation and 30-40% of mulberry field were replaced by mango trees (Deputy Director Reeling Malda, 2005).

However, anti-dumping regulation in 2003 was able to control large portions of mulberry uprooting in Malda and Murshidabad and controlled dwindling of this heritage industry. Fig 6.3 enables us to understand how the artisanal silk districts of West Bengal handled the fierce competition emerging from globalisation during 2001-02 to 2010-11, with the effective institutional support, like, anti-dumping regulations. Since West Bengal produces bivoltine silk in very meager proportions, that seems to restrict the foreign exchange earning capacity of the state to a great extent. Bivoltine silk has a quality edge over multivoltine silk with superior denier[2] quality. However, despite these shortcomings, around 30 percent of its mulberry silk was exported during the early 1990s (Banerjee, 1995) and in 2011-12 West Bengal exported 179.96 lakh square meters of silk to foreign countries and earned as high as Rs. 61 crores of rupees. The Regional Office of Kolkata issued a host of certificates to accredit the quality efficiency of the exported silk. These certificates are Generalized System of Preference Certificate, Handloom Certificate, Handicraft Certificate, Certificate of Origin, Special Certificate of Origin of Australia, Switzerland etc.

Table 6.10 Production & Value of Sericulture Product of West Bengal

Mulberry Reeling Cocoon	Production (MT)			Average Price/Kg			Value (Rs in Lakh)		
	’09-10	‘10-11	’11-12	’09-10	‘10-11	’11-12	‘09-10	‘10-11	’11-12
Multivoltine	1329	147	60.9	100	123	125	1329	181	76
Cross-Breed	15939	17352	17782	150	165	170	23908	28631	30229
Bivoltine	3.4	25.8	31.8	160	180	180	25242	28858	30364

Source: Directorate of Sericulture, Government of West Bengal (http://www.seriwbgov.org/ accessed on 13/2/2014)

In West Bengal, three varieties of reeling cocoons are bred, which includes multivoltine, crossvoltine and bivoltine. Table 6.10 helps in analysing the value generation from reeling cocoon during 2009-2012. The income generation from bivoltine reeling cocoon produced in West Bengal was Rs. 25242 lakh in 2009-2010, which rose to Rs. 28858 lakh in 2010-11 and Rs. 30364 lakh in 2011-12. The share of crossbreed mulberry cocoons occupies dominant position in the production of reeling cocoon. Malda and Murshidabad were the two dominant districts where the share of Cross-Breed reeling cocoons production remained at 98.84% and 98.58% in 2010-11 (DoS Govt of WB, 2010-11). Bivoltine breeds are also cultivated but in restricted amount only in these two districts and these are the reasons which impede the states potential to excel in foreign markets.

Table 6.11 Status of Mulberry Raw-Silk in West Bengal

	As on 31/3/2011	**As on 31/3/2012**	**As on 31/3/2013**
Mulberry Area (ha)	13116.7	13685.1	14231.7
Raw Silk Production (MT)	1885	1923.78	2018
Land Productivity (Kg/ha)	143.7	140.6	141.8
Employment Generation	259736	270992	281816
Labour Productivity (Kg/ labour)	7.26	7.09	7.16

Source: Directorate of Textile (Sericulture), Govt of WB (http://www.seriwbgov.org/vision.aspx# accessed on 13/12/2014

Table 6.11 portrays the recent growth trajectory faced by the artisanal silk industry in West Bengal. Mulberry area of the state has extended from 32467 acres to 35227 acres while raw silk production has increased fro 1885 MT to 2018 MT during this period. The employment

generation has also shown an upward trend during this phase. The land productivity has shown a marginal fall in acreage productivity hovering within the range of 141 and 144 kg/ha. The labour productivity also reflects a similar trend and hovers around 7.1 to 7.3 kg per labour.

6.3.3. Supply Chains in Artisanal Silk Industry of West Bengal

Silk is produced in the rural regions of West Bengal, where predominance of backward people are observed whose socio-economic structure direly needs an assured return with lower capital investment capabilities. The activities of artisanal sericulture are performed through an extensive supply chain. The supply chain for artisanal silk industry starts from the basic production of silkworms by farmers through feeding mulberry leaves by rearers. At its initial stage, the supply chain includes those who are engaged in mulberry cultivation and then those who produce and sell silkworm eggs and to the silk-rearers. Silk rearers are those who raise the silkworms and sell the cocoon to the reelers and spinners who purchase silkworm cocoons either directly from cocoon markets or through agents. Silk thus produced and processed are called raw silk. This raw silk is again processed to convert it into twisted yarn. Most of the work of processing the yarn includes degumming, bleaching, colouring and winding. Thus through trading merchants ultimately the processed raw silk comes to the hands of weavers. The weavers produce the silk fabrics and sell it to traders who bring the final good either to the domestic or to the foreign customers.

6.12 Caste Based Classification of Mulberry Sericulture Farmers cum Rearers in West Bengal during 2011-12

Districts	SC	ST	Others	Total
Malda	542	0	58502	59044
Murshidabad	3318	0	11275	14593
Birbhum	7740	12	2673	10425
West Bengal	15999	968	79523	96490

Source: Annual Report-2011-12, Directorate of Sericulture, Government of West Bengal

Almost all these activities are largely based on family labour. The districts in which the rearing and reeling activities are predominantly located have a high percentage of wage labour in the aggregate rural workforce (Banerjee, 1995). Malda has the largest percentage of mulberry silk rearers (61%) and reelers (50%) in the state (DoS-Govt of WB, 2011-12) while 15% of state silk rearers and 40 % of state silk reelers reside in Murshidabad (See figure 6.13). Rearing and reeling are largely dominated by backward class people and Muslim minorities, as Malda and Murshidabad districts are dominated by people belonging to the communities of religious minority. The recent available statistics on West Bengal reveals that in 2011-12 the mulberry silk production involved 96490 sericultural families of which 16.6 per cent belonged to SC categories and 1% belonged to ST categories (See table 6.12). The tribal involvement is as large as 69 % in tasar silk and 67% in eri silk during 2011-12. Tasar silk is largely cultivated in Bankura and Purulia, while eri silk is popular in Jalapaiguri and muga silk is famous in Cooch Behar. Mulberry silk is the largest producing silk in the world as well as in the country; West Bengal is also not an exception. Malda, Murshidabad and Birbhum are the states where mulberry silk producing activities at all levels are quite vibrant. Bankura is the only state where mulberry silk weaving has a strong base and it has a heritage of producing *baluchari* sari.

According to Banerjee (1990), the mulberry cultivators in West Bengal can be classified into three major groups – (1) the small cultivators who put all or major portions of their lands under mulberry cultivation and the rest under paddy cultivation; (2) middle cultivators who have sizeable lands under mulberry cultivation while greater share is kept for alternative crops production; (3) big cultivators whose area of mulberry cultivation seems to be insignificant than their total possession of lands. In West Bengal, there is no market for mulberry leaf and cocoon rearers are actually cultivating mulberry most of the time. The market for sericulture output is dominated by trading classes who are not usually engaged in sphere of production but dominate the markets of silk cocoons and silk yarn by providing working capital. There are three principal agents who procure cocoons from poor rearers for reeling. They are (a) local intermediaries, (b) agents of government filature units, (c) private small reelers. Again there are two principal agents who procure silk yarn for delivery into the weavers' hub, i.e., (i) the local intermediaries and (ii) weavers' cooperative societies.

Table 6.13 District-wise Numbers of Artisans in Mulberry Silk Industry of West Bengal during 2011-12

Districts	Farmers & Rearers	Reelers	Weavers
Darjeeling	1435	0	0
Jalpaiguri	1830	0	0
Cooch Behar	1050	0	0
Uttar Dinajpur	1851	0	0
Dakshin Dinajpur	720	0	0
Malda	**59044**	**8231**	**6180**
Murshidabad	**14593**	**6586**	**15160**
Birbhum	**10425**	**1650**	**2550**
Nadia	3203	0	10
24 Parganas (N+S)	370	0	0
Bankura	564	0	**3140**
Purulia	353	0	0
Burdwan	38	0	0
Medinipur (Purba + Paschim)	1014	0	0
WEST BENGAL	**96490**	**16467**	**27040**

Source: Annual Report-2011-12, Directorate of Sericulture, Government of West Bengal

The silk weaving materials can be categorized into three categories – HG (high grade silk material), MG (middle grade silk material) and LG (lower grade silk material). The high grade silk materials are usually produced in highly efficient Jacquard looms (throw shuttle type) while MG and LG materials are produced on the ordinary traditional wooden looms. The traditional ordinary loom is capable of producing only coarse design while jacquard looms are accomplished for its sophisticated design. The labour time requirement to operate the jacquard loom is much less than that of traditional looms. The weavers can continually work in a jacquard loom while traditional looms require certain time gap for functioning properly. However, these machines are expensive which restricts its use among weavers in West Bengal (Banerjee, 1995). Besides, the costs of design making, transferring the designs on to the cards by the system of punching, the costs on loom setting with a huge volume of yarn make it prohibitive to common weavers. The common weavers of Bengal, whether residing in Murshidabad or Bankura thus prefer ordinary looms.

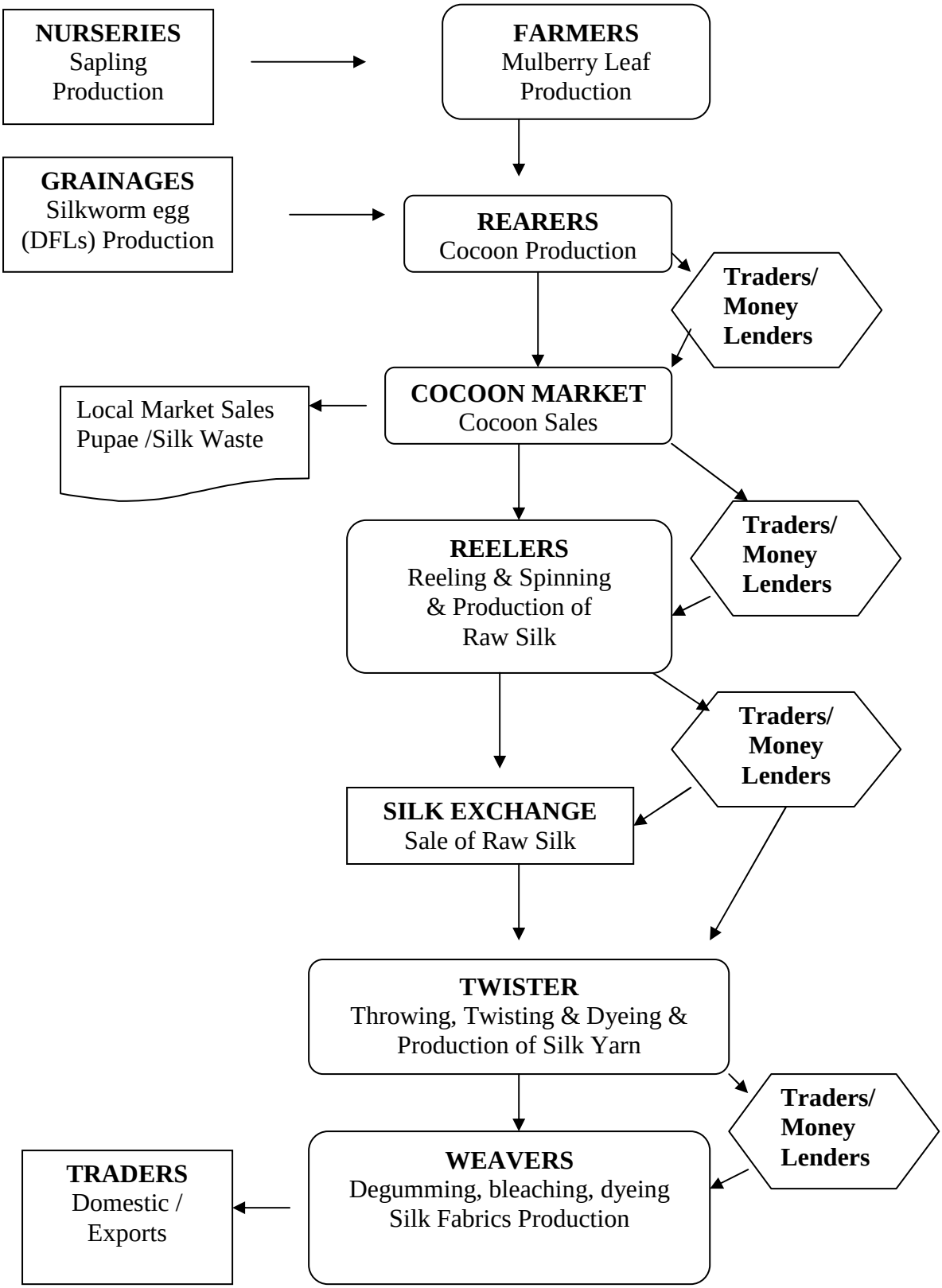
In silk weaving of West Bengal, there exist broadly two types of entrepreneurs - (i) those who under take weaving only, (ii) those who own reeling/spinning units and also assign subcontract work to domestic weavers. Thus the latter constitute vertical integration in

artisanal silk industry. They form societies, while the former constitute either local private silk merchants or societies. Again societies can be of two types- (a) Cooperatives where the members are equity holders and net profit is distributed among the members according to their equity share; (b) the charitable societies which are formed by seven or more individuals. Banerjee (1995) found that most of these latter type of societies engaged in weaving and/or reeling, are floated with the members of family based household industries. These societies are certified by KVIC (Khadi Village Industries Commission) or KVIB (Khadi Village Industries Board). All the KVIC/KVIB societies are supposed to create the backward linkage, i.e., with reeling/spinning unit under their own initiatives. Only in exceptional cases they are entitled to buy products from outside.

From the annual report of 2011-12 of Directorate of Sericulture, Government of West Bengal, it was found that presently 32 reeling cooperatives units are in operational stage.

Majority of the silk weavers in West Bengal work on their own looms in their own houses using machineries obtained either from societies or private silk merchants. They receive piece-rate wages from putters-out and thus the agents who actually subcontract the work to individual weavers play a dominant role.
The weaver, just by virtue of his ownership of the weaving tools is not an independent manufacturer. Even the independent and comparatively affluent weaver who owns a loom and work with own raw materials (i.e., yarn etc.) is largely subjected to the conditions of the output market. It is the silk merchants who provide marketing channels for most of the outputs by otherwise independent weavers. Thus the weaving artisanal classes are at the mercy of the dominant merchant class. The tragedy is that the poor artisan classes are left with no choice other than depending on money lenders for the working capital. This often results in contractual bondage of these artisanal classes to money lenders, which has proved to be unfavourable in terms of realization of returns for this artisanal silk industry in West Bengal.

Fig 6.4 Supply Chain in Artisanal Silk Industry (Mulberry) of West Bengal



6.3.4 Problems faced by various Stakeholders at different stages of Supply-chain of Artisanal Silk Industry of West Bengal

The major impediments in sericulture development across the districts in West Bengal can be identified as lack of region specific silkworm breeding technology suitable for West Bengal condition, small land holding of the mulberry cultivators and poor socio-economic condition of artisans, extreme climatic condition, under-developed post cocoon sector which includes reeling and spinning sector, ill-developed powerloom division, etc. However, it would be worth analyzing if the issues can be categorized under the different stages of the supply chain in the artisanal silk industry. Grossly, we categorize the supply chain into four stages- (i) Mulberry cultivation; (ii) Silkworm rearing; (ii) Reeling, Spinning & Twisting; (iii) Silk Weaving. Farmers and artisans connected with each phase of the supply-chain faces several problems, some of which are general and the rest of them are region specific issues. This section gives the opportunity to delineate those difficulties which is hindering the growth of artisanal silk industry in West Bengal.

(i) Problems faced by the Mulberry Farmers

- Most of the mulberry cultivators possess fragmented mulberry lands which raise its operational costs.
- Closer proximity of mulberry lands to the residential area opens up the possibility of infiltration by domestic cattle to graze the lands and that enhances protection cost of the mulberry cultivators.
- Large numbers of silk worm rearers in the districts of West Bengal do not have adequate land and irrigation facilities for cultivating mulberry. They purchase mulberry-leaves from the market.
- 60% land of mulberry cultivation in Malda is low lying, which is flooded every year during the monsoon. Stagnation of water is harmful for mulberry cuttings and that creates scarcity of cuttings in the market.
- Ali (2008) commented that mulberry leaf productivity is gradually diminishing due to knot nematode diseases of the roots and the local variety is more susceptible to the diseases compared to the improved variety.
- The use of manures and fertilizers per acre of land is very low in the district of West Bengal, which lowers the productivity of mulberry leaf. Moreover, it is not possible for the farmer to invest large amount of money to upgrade productivity. Even big farmers and landlords also lease their surplus land to poor farmer who grow mulberry.
- Despite efforts of the Technical Service centres, transfer of modern technology to the farmers is substantially low due to their intrinsic backwardness coupled with illiteracy.

(ii) Problems of the Silkworm Rearers

- Silkworm rearers purchase eggs without the knowledge about its quality. As there is lack of testing facilities across the districts of West Bengal, rearers are bound to purchase eggs of inferior quality from local non-licensed grainages and that affects quality of silkworms. For example, Malda is not self-sufficient in the supply of DFLs from the Central Silk Board and the State Governments and it also comes from local licensed or non-licensed grainages.
- Due to poor economic backgrounds, most of the silkworm rearers in the districts of West Bengal do not have separate silkworm rearing house with modern equipments

like open window, net, fan, air, cooler, heater etc. The rearers also use traditional methods to disinfect the rooms and thereby making the process more unhygienic leading to low productivity in silk.

- Paucity of working capital is actually the crux of all issues. Due to financial insolvency the rearers can neither buy high quality DFLs, nor purchase mulberry leaves of premium quality.
- Silkworm cocoons are sold within 5-6 days of harvesting and reach to silk weaving centres through various intermediaries or channels. It has been noticed that the marketing of mulberry cocoon is officially regulated in all major silk producing states of the country except West Bengal. The cocoons are sold and reeled within 10 days before the moth pierces the cocoon and therefore most of the time rearers make distress sale becoming pawns at the hands of mahajans, private agencies or reelers.

(iii) Problems of the Silk Reelers

- Silk reeling equipments can be broadly classified into four units – Traditional Unit or Charka, Cottage Basins[3], Multi-end Reeling Machines and Filature. Besides filature and multi end reeling machines all other units are based on elementary technology and restrict the scope of reeling quality silk. West Bengal presently possesses 2 state run filatures and 4 state run multi-reeling machines in 2011-12 while comparatively large number of charka units (10400 numbers) and cottage basins (8556 numbers) are available under private ownership.
- There is one state run filature at Madhughat in Malda district and another in Berhampore in Murshidabad, the optimum production rate of which is about 800 to 850 grams of silk yarn per day (De Sarkar et al., 2013); But the volume of cocoons the government agency could procure can hardly satisfy 20-25 percent requirement of these reeling units to run the filature.
- Reelers of West Bengal procure a sizeable quantum of dry cocoons from outside market viz, Maharashtra and Jammu & Kashmir. Though the state has an extensive base of primary cocoon production but quality cocoon is still brought from outside market, which raises the transaction cost and raw silk production becomes cost inefficient.
- The forward linkage sector, i.e., the weaving sector is underdeveloped in West Bengal. The reelers of West Bengal largely look forward to the southern states and, Benaras and Bhagalpur for the disposal of processed yarn.

(iii) Problems of the Silk Fabric Weavers

- Weavers belonging to the Societies collect raw materials through societies while independent weavers in West Bengal are free to mobilize yarn from the market and undertake independent weaving. In fact, they are able to procure yarn from the silk reelers on credit. But in that case they have to depend upon private silk merchants who claim unusual share in the value added.
- Most of the silk weavers are using pit looms in almost all the societies as well as handloom clusters. These looms are dangerous especially in the monsoon as the pits become favourite dwelling places of poisonous snakes. On the other hand, the frame looms are too expensive for the poor artisans as well as for the societies.
- No trade union body is in existence for the weavers and their wage is being fixed by the apex body of the society. The private silk merchants operate just at the lower level

and their competitiveness is largely a contribution of captive labour force and ultimately the labour is paid a price which is less than his value of marginal product (Banerjee, 1995).

6.4 Conclusion

Sericulture, as is evident now, is an important livelihood option in rural West Bengal providing employment to more than 1 lakh families in the rural and semi-urban areas. The productivity level of sericulture (land and leaf) is not low compared to that of the major silk producing states in the country, which opens further scope to research and analyse about its productivity. A field level survey in the major silk producing district of West Bengal, i.e., Malda, will be helpful to identify the issues on the field. The next chapter would make an empirical analysis of these survey findings while this chapter in a nutshell has thrown light on the evolution of sericulture in West Bengal as a whole since the inception of the planning period. A state level comparative study has confirmed that land based productivity is not hindering the growth of mulberry sericulture in West Bengal while progress of the artisanal silk industry reveals loopholes in several dimensions. Small holding capacity of the rural farmers and poor economic condition of the artisans have been identified as major impediments in the path of development of sericulture in West Bengal. The rural moneylenders/ traders (*dadani mahajan*) utilizes this advantage and extracts a major part of the pay-off intruding into the supply chain of the industry. It has been found that in Malda district approximately Rs. 10-12 crores are getting rolled as capital investment and source of this working capital lies with rural traders who ultimately claims unusual share from their value addition. In the textile policy the objective of the Central as well as State government always concentrates on the extension of sericulture through acreage and production, ignoring the exploitation of the artisanal classes at each level of value addition in the supply chain. In the absence of institutional apathy and well-linked credit system in these remote rural areas coupled with financial illiteracy of the rural artisans, the objective of development seems to be far away. The Twelfth Five Year Plan (2012-2017) has especially focused on certain issues of sericulture as major goals or aspirations for the development of sericulture through rural reconstruction. Evolution of season and climate specific, disease resistant robust silkworm breeds has been given greater emphasis. The technology feasibility study in consultation with Central Silk Board and JICA (Japanese International Co-operation Agency) is already under process. Establishment of a Silk Park at Malda is also about to take place in the near future. Another important endeavour has been to link sericulture with major agro-based program like RKVY (Rashtriya Krishi Vikas Yojana), MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act), which are expected to bring better funds to this sector.

End Notes

1. For details, see Saeed Muhammed (2003): Technical Barriers to Trade- Cheap Silk yarn Imports threatens Bengal Farmers, The World Trade Review, Vol No. 3.(6) .
2. Denier is a weight through which fineness of the silk is measured and average denier of a bivoltine silk is much smoother than that of multivoltine silk.
3. Charka and Cottage basin are the simple appliances of silk reeling which require two persons to for operation. The Cottage basin is an improvement over the charka, but both severely restrict the scope for reeling quality silk.
4. For details See Bagchi, S.N., Saha, A.K., Ghosh, A.,Sengupta, D.,Das,S.K. and Sarkar, A. (2008), Development of Sericulture in West Bengal through IVLP, Indian Silk, Vol.27.,No.2, June, 2008, p. 12-15.
5. For details See Saha, A.K., Datta-Biswas, T., Das, S.K. and Mohanty, S.M. (2008), Bivoltine Rearing during Adverse Season in West Bengal, Indian Silk, Vol 47, No.1, May, 2008, p.5-7.