

## An Analysis of Public Private Partnership in Sericulture in Jammu and Kashmir State (India)

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### Abstract

Sericulture industry has occupied a prominent place in the industrial development in Jammu and Kashmir. Sericulture industry in Jammu and Kashmir having glorious history in the past but still is not having bright name in silk production and export. In spite having suitable agro-climatic conditions for the development of silk industry, Jammu and Kashmir produces negligible amount of silk products every year. The aim of this paper is to highlight the development of sericulture through public private partnership and trends of cocoon production in Jammu and Kashmir. Like other sectors of the economy, PPPs would bring this sector to that platform where its growth would be optimum.

**Keywords:** silkworm, cocoon, moth, J&K, labour intensive, public private partnership etc.

### Introduction

Sericulture is both an art and a science of rearing of silkworms for silk production. Sericulture is an eco-friendly agro-based, labour intensive, rural cottage industry providing subsidiary employment and supplementing the income of rural farmers especially the economically weaker section of the society. The industrial production of raw silk and fabric employs a large number of semi literate and semi skilled poor workers throughout the year. Thus, a large portion of the cost incurred in the conversion of soil to silk, which receives poor workers in the value addition at each stage like cocoon production, silk reeling, fabric production, dyeing and printing.

Asia is the major producer of silk in the world and it produces over 98.5 percent of global output. Although there are more than 40 countries on the world silk map, bulk of its production comes from China and India, followed by Brazil, Uzbekistan, Thailand, Vietnam, Korea and Japan. The total production of world's raw silk at the end of 2011 was 131479 metric tonnes. India is the biggest consumer of raw silk and silk fabrics and second largest producer in world with a production of 23060 metric tonnes in 2011-12, in which mulberry silk production constitutes 18,272 MTs (79.24 %) and non-mulberry silk production was 4,788 MTs (20.76%). India's share in the global production is over 17.54 per cent. The Mulberry silk cultivation is mainly practiced in five states namely, Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu and Jammu & Kashmir which jointly account for about 97% of the total mulberry silk production in the country. Karnataka ranked first with its contribution of 7360 MTs followed by Andhra Pradesh (5119 MTs) and West Bengal (1865 MTs) while Tamil Nadu registered highest production in bivoltine raw silk production with 351 MTs 2009-10. Production of vanya silk (Tasar, Eri and Muga) during 2010-11 were 1166, 2760 and 124 MT's respectively.

The State of J&K has 2,850 hectare of land under mulberry plantation, out of which 1,990 hectare is in the Jammu division and 860 hectare in Kashmir division. It provides employment to 25500 rural families as a subsidiary occupation in the state, by producing about 860MTs of silk cocoon. The income generated from this industry is about 1100 lakh annually by cash without any role of middleman. It has been estimated that out of total cocoon production only 20-30% is consumed within the state and rest is exported.

Public private partnership (PPP) is a key tool for rapid economic development of any country. PPP facilitates greater efficiency and innovation in the production, and promotes rapid economic development. PPP gives more flexibility in production and delivery of products than government services. Like other sectors of the Indian economy (roads, water, and ports) where PPP is already working, it is estimated that if this model will introduce in sericulture industry, sericulture industry will obtain big push in terms of finance, technology, efficiency in production and delivery of products, which will reduce the cost of silk production that leads to increase in the exports of raw silk and finished products of silk.

### Objectives

1. To find out the development of sericulture in Jammu and Kashmir through public private partnership.
2. To highlight the ways of income earning in the process of mulberry cultivation to silk weaving.

### Sericulture: An Overview

Silk is produced from cocoons of an insect usually and rather inaccurately called the "silkworm." Sericulture is both an art and a science of rearing of silkworms for silk production. It is unparalleled grandeur, natural sheen, and inborn affinity for dyes, high absorbance, light weight, soft touch and high durability and known as the "Queen of Textiles" in the world. Sericulture is an eco-friendly, agro-based, labour intensive, and rural cottage

industry providing subsidiary employment and supplementing the income of rural farmers especially the economically weaker section of the society. Silk as a weavable fiber was first discovered by the Chinese empress Xi Ling Shi during 2,640 B.C. and its culture and weaving was a guarded secret for more than 2,500 years by the Chinese.

Silk industry can be classified into two parts. First part is Sericulture, which involves four important operations viz., Mulberry cultivation, Silkworm egg production, Silkworm rearing and disposal of cocoons. The second part includes reeling, twisting, dyeing, weaving and printing.

### **Mulberry Cultivation**

Mulberry leaf production (Moriculture) is an important part without production of mulberry silk is not produced; the basic food for rearing of silkworm is mulberry leaves on which the quality of silk depends. Mulberry leaf production is being practised in different areas under different agro-climatic conditions. About four to five hundred species of animals are known to produce silk but only few are known to be commercially exploited. Nearly, 95% of the silk comes from the mulberry silk worm, which is named as *Bombyx mori*. Commercial silk from all other sources is collectively called as non- mulberry silk or vanya silk. The distinction arises from the rearing of silk worms either upon mulberry leaves or on other plants.

There are five major types of silk of commercial importance, obtained from different species of silkworms which in turn feed on a number of food plants: Except mulberry, other varieties of silks are generally termed as non-mulberry silks. India has the unique distinction of producing all these commercial varieties of silk.

**Mulberry silk:** This silk is produced from silkworm named as *Bombyx mori* that are primarily survives on mulberry leaves of the mulberry plant and is cultivated and reared indoors. This moth belongs to China originally and it is the major silk producing moth and is found in all silk producing countries of the world like Japan, India, Korea, Italy, France, Russia etc. The silk threads produced by this moth are white or yellowish in colour.

### **Non mulberry silk:**

**Tasar Silk:**—this is copper brownish in colour and is slightly coarse in texture. Which mainly survive fed on leaves of Oak, Asan and Arjuna trees. Tasar silk is mainly produced in Jharkhand, Bihar, Chhattisgarh, Madhya Pradesh, Orissa and West Bengal & Andhra Pradesh.

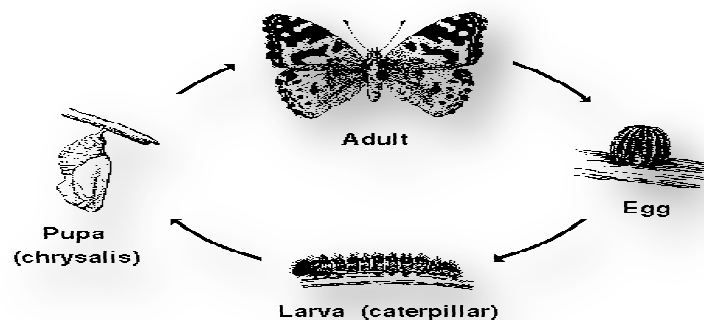
**Eri Silk:** – Eri is unique variety and is spun from cocoons which are copperish in colour. It is primarily produced in India and is used for manufacturing of wraps (chaddars).

**Muga Silk:** - It is golden yellow colour silk obtained from semi-domesticated multivoltine silkworm and is mainly produced in Assam.

**Oak Tasar:** - it is the finer variety of tasar, which feeds on natural food plants of oak. It is produced in the sub-Himalaya belt of India. China is the main producer of this silk type.

### **Life Cycle of silkworm**

The silkworms of all varieties pass through four different stages shown in following figure.



**Figure -1: life cycle of silkworm**

**First stage Egg:** Egg is the first stage of a silkworm's life cycle. The female moth lays an egg about the size of an ink dot during summer or the early fall. The egg remains in dormant stage until spring arrives. The warmth of the spring stimulates the egg to hatch, which takes twenty to thirty days for the eggs to hatch

**Second stage Larvae:** The silkworm, upon hatching, is about 1/8th of an inch and extremely hairy. Young silkworms can only feed on soft mulberry leaves. However, during the growth phase they can eat tougher mulberry leaves as well. The larval stage lasts for about 27 days

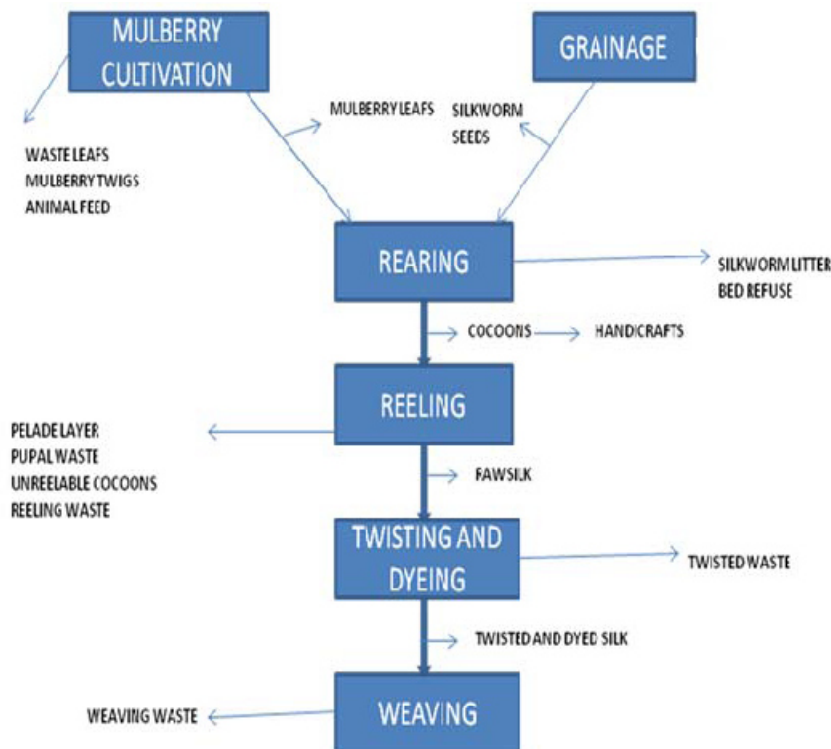
**Third stage Pupa or Cocoon:** Cocoon is the stage in which the larva spins silk threads around it, which is produced by their salivary glands. It is in this stage that silk is extracted from them. The larva traps itself inside the cocoon in order to pupate. The colour of the cocoon varies, depending upon what the silkworm eats. It can range from white to golden yellow. The raw silk of a single cocoon is unfolded; it will contain raw silk thread of about 300 to 900 meters in length.

**Forth stage Adult Moth:** this is the stage when adult moth comes out of its cocoon by cutting one side; its only

purpose is to mate with the opposite sex. Within 24 hours of mating, the male moth dies, while the female lays eggs 300 to 400 at a time, after which she dies as well.

Normally, there is only one season in a year when silkworms reproduce to give one generation. However, in countries like India and China, silkworms reproduce continuously, round the year.

**Process of mulberry silk production:** Silk production goes different complicated stages starting from mulberry cultivation to weaving of cloth is shown in the below diagram.



### Sericulture in Jammu And Kashmir State

Sericulture is one of the traditional occupations of Jammu and Kashmir. J&K state is known for producing bivoltine silk of international quality. The climate of Kashmir is temperate and congenial for rearing both univoltine and bivoltine silkworm species for cocoon production. These cocoons are superior to the multivoltine ones produced in the rest of the country, and are comparable to international quality. Sericulture helps in improving the economic condition of the landless farmers and weaker sections of the society and providing employment opportunities especially for women's during pre and post cocoon activities. Sericulture supplements the income of the farmers in addition to their returns from the other crops. With the increased economic needs due to changing social status and unpredictable market trend of different kinds of produces by the farmers of the state, sericulture has assumed special significance as an important subsidiary occupation. Presently about 25500 rural families generating income worth Rs.1100 lakh annually & 1 lakh mandays in private reeling sector are associated with this profession. However production of quality bi-voltine silk is still a challenge in J&K having enormous potential to produce bivoltine silk of international grade, can help to reduce the import of bivoltine silk in the country.

**Table 1: Sericulture trends, cocoons prod. Productivity, income and Employment in J&K**

Year	Cocoon crop(MT)	Income generation(lakh)	Silkworm rearers (no's)	pop	% change in mulberry trees	Raw silk prod. MTs	% change in raw silk prod.
2006-	833	726	20263		-	90	-
2007-	803	500.00	20055		2.43	89	-1.12
2008-	738	455.67	19700		1.04	82	-8.53
2009-	810	800.00	22800		0	100	18.0
2010-	860	1100.00	25500		6.78	110	9.09

Source: Economic Survey, 2010-11

It is evident from the table that 25500 rural families are practising sericulture as a subsidiary occupation in the state, by producing about 860Mts of silk cocoon. The income generated from this industry is about 1100 lakh annually by cash without any role of middleman. It has been revealed from the table that growth rate of mulberry trees shows positive trend except 2009-10, but raw silk production shown negative growth from 2006 to 2009, after that raw silk production shows positive growth due to widening of domestic and export market and with the help of government institutes.

The State has 2,850 hectare of land under mulberry plantation, out of which 1,990 hectare is in the Jammu division and 860 hectare in Kashmir division. The area has been calculated on the basis of 1800 trees per hectare as the plantation is in highly scattered form.

In the state large number of our village population deriving the greater part of their income from sericulture in hilly and far flung area. Therefore faster growth in sericulture is necessary to provide boost to their incomes. Rising income in sericulture will help reduce the rural-urban imbalance. Therefore, a new approach in sericulture is necessary in view of the fact that it can strengthen the productivity based on agriculture economy in such areas where other activities to provide livelihood are minimal.

### **Public Private Partnership**

Public-Private Partnership (PPP) is a general name that is being applied to several different types of contractual agreements between the government and the private sector for the purpose of providing public infrastructure development and services provision. It is an arrangement between a governments or government owned entity on one side and a private sector entity on the other, for the provision of public assets or services by the private sector entity for a specified period of time. Many middle-income economies of the world, the provision of public infrastructure and services become challenge for government; it is evident from many countries of the world that these economics grow fast due to public private partnership. It is not difficult to imagine PPP becoming manifestly popular across the developing world. PPP sees the private sector increasingly taking on activities which was previously provided by the State. Nowadays the State becomes the “buyer” rather than the supplier of services. As the word “partnership” suggests, that its aim is to create an infrastructure, by combining the best capabilities of the public such as legislation, regulations, social concern etc and innovation, efficiency, and finances provided by private sector to find a solution to infrastructure-related public needs. PPP therefore describes the structure of the relationship between the two parties and ensures that the best of both contributes to optimal public services

According to Milton Friedman – US Nobel Prize -winning economist, “Nobody spends somebody else’s money as carefully as he spends his own. Nobody uses somebody else’s resources as carefully as he uses his own. So if you want efficiency and effectiveness, if you want knowledge to be properly utilized, you have to do it through the means of private property”.

Public private partnership has different forms as follows:

**Build-Own-Operate-Transfer (BOOT):** The private sector is responsible for the design, construction and operation of the infrastructure over the project term, with ownership and control returning to the public sector at contract’s end.

**Build-Own-Operate (BOO):** Here the private sector retains complete ownership of the infrastructure, design and construction phases and also continues to operate the facility, essentially replacing the government as provider of public services for the length of the contract term.

**Build-Transfer-Operate (BTO):** In this case the public sector assumes ownership of the infrastructure, for completion of the design, build phases, and leasing it back to the private sector for operation.

Benefits from PPP:

1. It helps in utilising the private sector skills and technology to deliver projects in a more efficient manner so that cost will reduce.
2. It helps in the promotion of new technique of production through innovation.
3. Private sector capacity and flexibility are seen to be superior to the public sector, and PPPs therefore allow projects to be finished more quickly and on schedule than those attributed to public sector provision.
4. With the introduction of PPP the different types of risks (finance, timeframe, planning permits, community consultations) is transformed from public sector to private sector, therefore burden on public sector is reduced.
5. The investment in the economy will increase due to the increased participation of private sector (PPP).
6. It helps in increasing budget finance due to the transfer of responsibility of some projects to the private sector, which was previously provided by the government.
7. There is political leverage to be gained from PPP agreements in terms of public perception and financial management credentials, as projects are delivered on time with less impact on the budget and provide superior quality infrastructure or services.

### **Sericulture and Public Private Partnership in J&K State**

The Government of India defines PPP as "a partnership between a public sector entity and a private sector entity

(in which 51% or more of equity is with the private partner) for the creation or management of infrastructure for public purpose for a specified period of time, on commercial terms.

It is well known that road infrastructure is the largest PPP segment in India till date. This sector receives huge investment which leads to rapid growth in that particular sector. Therefore Public Private Partnerships (PPP) is expected to play a vital role in other sector as well, particularly sericulture development. The strategy is to promote sericulture as a poverty alleviation programme as it is an industry being carried out by small and marginal farmers. Initiatives like setting up of cocoon banks, providing working capital to reelers for purchase of cocoons, incentives on production of silk yarn, setting up of exchanges have been already taken by the Government to sustain the private sector and motivate unemployed youth to the post cocoon sector but these initiatives are not sufficient to bring sustainability in this sector in the state. Therefore PPP will facilitate greater efficiency and innovation in the production, and promotes rapid economic development. Like other sectors of the Indian economy (roads, water, and ports) where PPP is already working, it is estimated that sericulture industry will obtain big push in terms of finance, technology, efficiency in production and delivery of products, which will reduce the cost of silk production, that leads to increase in the exports of raw silk and finished products of silk. Sericulture industry has both forward linkages ( twisting, weaving and dying) and backward linkages (mulberry cultivation, rearing of cocoon and reeling of silk) which provides employment mostly for women and backward section of population, thus it is imperative to develop this sector to reduce rural- urban imbalance in one side and reduction of poverty on the other side in the state. Sericulture industry in J&K faces number of problems like shortage and poor quality of mulberry leafs, houses without proper ventilation, lack of trays for rearing etc. Therefore PPP is one of the solutions which tackle these problems and promote mechanization and rationalization in the field of mulberry cultivation, silkworm rearing and silk reeling to bring down the cost of raw silk. PPP will also enhance the economic viability of reeling activity through effective utilization of by-products which leads to proper and timely marketing facilities. Joint efforts of government and private sector would boost this industry. The evidences comes from other sectors that due to PPP the investment rate is increasing which leads to compound growth in that particular sector, sericulture is lacking due to low investment in terms of land under mulberry cultivation, lack of dwelling houses, infected seed, which is supplied by the government in the state, if PPP is allowed to invest in this particular sector, sericulture industry will grow both horizontally (base will increase) and vertically (increasing productivity, efficiency in terms of cost of production). In short according to Winston Churchill, former Prime Minister of Great Britain, "If we are together, nothing is impossible. If we are divided, all will fail". Therefore, if both the sectors work together in this particular sector, it is certain that it will help in the reduction of poverty, increase women empowerment, reduce rural- urban imbalance and increase employment, which is the challenge for the state government.

### **Conclusion**

The state of Jammu and Kashmir is having a temperate climate, as such offers salubrious conditions for production of high quality silk, but this industry is not growing as it is estimated. Therefore PPP is one of the alternative solutions to promote the development through automation of the process of silk production and bring down the cost of raw silk. Besides it will also enhance the economic conditions of reeling activity through effective utilization of by-products which leads to proper and timely marketing facilities, thus reducing the economic imbalance between rural and urban areas. Joint efforts of government and private sector would boost this industry with the supply of disease free eggs, modernization in mulberry cultivation, rationalization of marketing of raw silk, use of by-products of raw silk, awareness of low cost technologies at farmer's level etc.

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