

World Silk Cocoons Production and Silk Road Effect

Hamid kheyroodin*

Assistant professor, Semnan University, Iran.

***Correspondence:**

Hamid kheyroodin, Assistant professor, Semnan University, Iran.

Received: 07 Jan 2026; **Accepted:** 15 Feb 2026; **Published:** 25 Feb 2026

Citation: Hamid kheyroodin. World Silk Cocoons Production and Silk Road Effect. Food Sci Nutr Res. 2026; 9(1): 1-5.

ABSTRACT

One of the important trade routes in the Asian continent was a road called the Silk Road, which connected different nations and civilizations along its path. According to ancient research conducted on the Silk Road, the importance of this road became clear to Europeans in the 19th century, and they began to conduct archaeological research and operations in this area. Incidentally, ancient objects and gold and jewelry were also discovered on this road, which are currently kept in the St. Petersburg Museum in Russia. The Silk Road Economic Belt has become a famous belt. Which can be considered due to the common history of the countries. On the other hand, it is the most important international initiative presented by China; it is a mega project in the modern era. In 1990, China's share in global production was about 3 percent; while this figure has reached 25 percent in 2015. Due to the impact of the Silk Road on the transportation of goods from China to West Asian and European countries, Iran welcomes China's plan to develop the Silk Road and considers it a good opportunity to increase political, economic, and military relations with the world's second economic power. The top silk producing countries are China, India, Uzbekistan, Vietnam, Thailand and Brazil. While in China.

Keywords

Silk production, Tourism, Silk Road, China economy.

Introduction

Silk is "the Queen" of the natural fibers grace to its special qualities: softness, high fineness, pleasant and delicate touch, a higher resistance than a steel wire, brilliant shining, elegant and shimmering appearance [1]. China is the world's largest and first producer of silk. It is produced by mulberry silkworms. The insects feed on the leaves of mulberry and oak trees during the larval stage of their life cycle. The silkworm cocoon is produced by a moth, which usually feeds on oak and mulberry trees, and its larvae are filamentous. In 2005, China accounted for 74% of the world's raw silk production and 90% of the world's export market. Historians consider the Chinese to be the first to learn about the method of silk production. According to them, silk fabrics were produced in this country more than four thousand years ago. There is also a long history of silk production in Iran. Before the birth of Christ, Iran was an important center for silk production. In later periods, silk production in Iran also flourished, however, Iranian silk has had

a global reputation since ancient times. Iranian artisans produce high-purity silk, which is an adaptation of Chinese silk and was exported to Iraq, Syria, and Antioch via the Silk Road [2].

Where does the Silk Road begin and end?

The most important part of the Silk Road entered the country from Sarakhs and, after passing through the cities of Mashhad, Neyshabur, Sabzevar, Shahrood, Bastam, Semnan, Kashan, Rey, Tehran, Hamedan, and Kermanshah (Figure 1).

In the past, herbal products were used to bleach silk through a difficult process, but today this process is done more quickly using chemicals. Since 25 percent of the weight of the silk is lost in the previous steps, substances such as iron, tin, and aluminum are added to it to both brighten it and increase its weight and strength.

After these steps, the fibers are used to become fabric. If silk is used in carpet production, it must be dyed. After dyeing, the fibers are used as raw materials for silk carpets.



Figure 1: Silk Road Map Images – Browse 768 Stock Photos, Vectors, and Video | Adobe Stock.

Result and Discussion

National Registration of Iranian Silk Industry

Traditional technologies are considered one of the most important subsets of intangible heritage. In the Iranian silk industry, five provinces are involved in the production of silk products at different stages: (Figure 2).

- Gilan (Fuman and Langrud cities) as the main center of silkworm breeding and silkworm rearing,
- Khorasan Razavi (Torbat Heydarieh County) as the main center of silk weaving,

- Isfahan Province (Kashan City) as the main center of silk weaving and carpet weaving,
- Qom is mentioned as the main center of silk dyeing,
- East Azerbaijan (Tabriz) as the main center of silk carpet weaving.

Thus, the file of the indigenous Iranian silk industry with the names of these five provinces was registered in the list of intangible heritage of Iran in 2017.

Steps of Producing Silk

Silkworm rearing

At this stage, the cocoons must be harvested to collect the materials needed to produce silk thread. The female silkworm lays about 300 to 500 eggs at a time. These eggs eventually develop into silkworms, which are kept in a controlled environment until they become larvae. At this stage, the silkworms are continuously fed a large amount of mulberry leaves as food to encourage growth. It takes about 6 weeks for these worms to reach their maximum ability. They begin to spin the cocoon around themselves by twisting their bodies

Extracting Silk Thread from Silkworm Cocoons

Each silkworm in this process can create a silk thread 100 meters long. When the silkworms have finished spinning the cocoon, it is time to extract the raw silk thread. For this, the cocoons are placed in boiling water to soften and dissolve the gum that holds the cocoon together. This step is one of the most crucial steps in the production of silk thread. Because by doing this step, we ensure that the durability of the silk thread produced is greatly increased.



Figure 2: Show the steps of producing silk fabric from silkworms and dyeing it.

Silk Yarn Dyeing

Once the silk threads have been thoroughly washed and then dried, it is time to begin the dyeing process. In traditional techniques for dyeing silk, natural resources such as fruits or leaves of plants are used. The threads are soaked in hot water with the dyeing leaves for a while. This process is repeated several times during the production of silk threads to ensure color stability and proper quality.

Spinning

The spinning wheel has always been and will be an inseparable part of the silk yarn production process.

Weaving

The weaving stage is the final step in the silk yarn production process. In this step, the final pieces of silk are joined together and various textures are created. Weaving refers to the intertwining of two sets of yarns that together create a strong and uniform fabric [3].

Silk thread does not absorb static electricity. While this feature is usually seen in polyester fabrics. Also, silk does not cause allergies to people due to the amino acids in the proteins and is very compatible with the skin. However, silk production represents only about 0.2% of the global production of natural fibers [4].

Fabrics woven from silk thread do not stick to the skin. In addition, silk is much less sensitive to heat than polyester. The color of silk fabric is also much brighter than polyester. The resistance of silk fibers can be compared to nylon fibers.

The global production of silk cocoons decreased in the interval 2011-2017 from 501,772 MT in the year 2011 to 414,788 MT in 2022, meaning a reduction by 17.4% (Figure 3).

Silk production in Iran

Silkworms are of great economic importance in Iran and have attracted much attention due to their high profitability. Given the high price of silk thread, we can count on a high income from this job. This profession, also known as silkworm breeding in Iran, has become an activity that many people in cities and villages are engaged in Iran silkworm feeds exclusively on mulberry leaves, which are its only main source of food. The silkworm's diet is almost exclusive and is based mainly on mulberry leaves (Table 1).

At the Shanghai Cooperation Organization summit in Kyrgyzstan, the revival of the Silk Road was proposed by the Chinese country. After that, the Chinese President issued an order to revive the Silk Road using tourism trips, and Chinese tourists began traveling along the Silk Road.

Although a large part of the main Silk Road has been destroyed in recent years due to the fact that it was not a place for land travel and trade, but now the Chinese, who consider the city of "Xi'an" (Isfahan's adopted sister) as the starting point of this road for the trade of silk and other goods such as perfumes, food, dried fruits, leather, agricultural machinery and industries on this road, intend to revive it with their tourists [3,5,6].

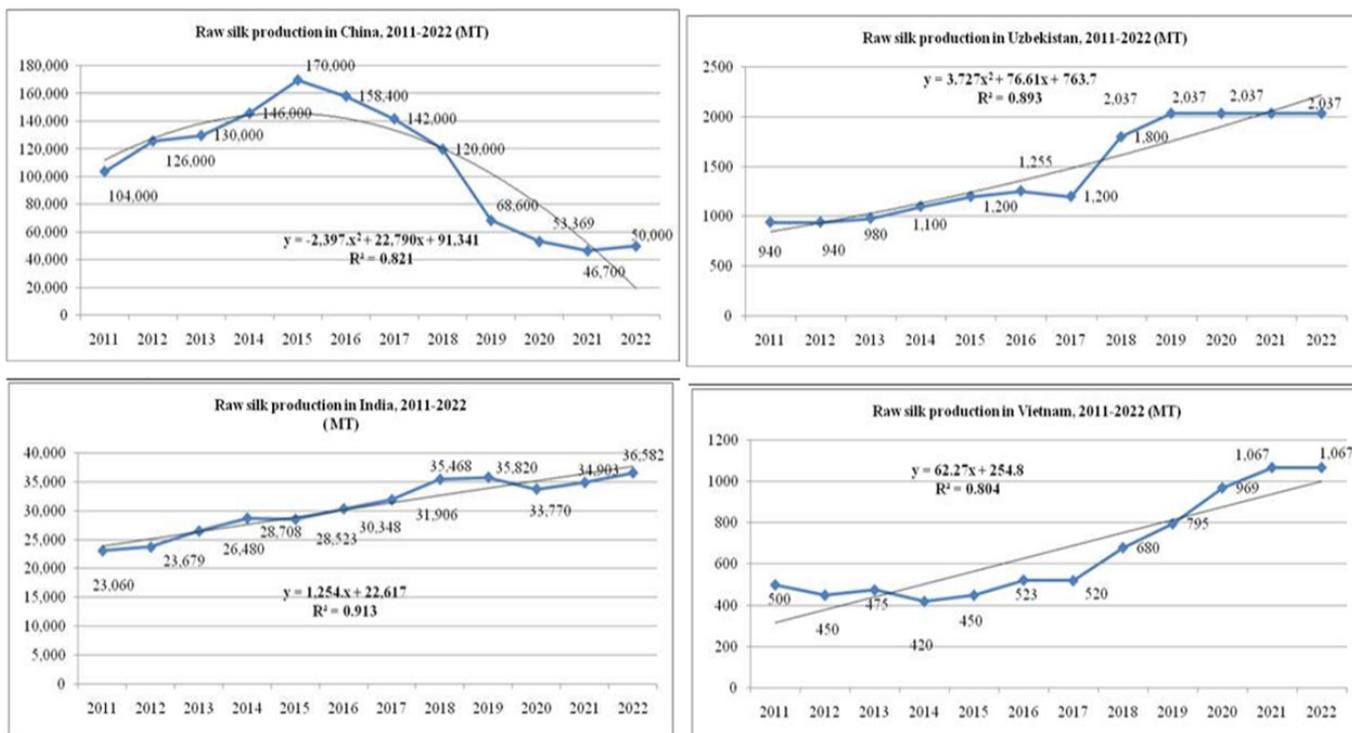


Figure 3: Silk produced in 4 major producing countries in different years [2].

It is suggested that creating facilities for the development of visa services and foreign exchange services, communication services for travel along the Silk Road route should be important priorities for the prosperity of tourism on this route. Promoting tourism on the Silk Road is not only a strategy for the restoration of heritage and protection of the Silk Roads, but can also provide opportunities for entrepreneurship and development of the local economy. In this regard, it is recommended to review the National Comprehensive Plan for Silk Road Tourism with an emphasis on cities located on the historical Silk Road route, which is approved by UNESCO.

Russia's position on the Silk Road

Currently, goods are transported from Europe to Asia along the traditional "southern" sea route through the Suez Canal. Its length is 13,000 nautical miles (more than 24,000 kilometers), while the new route in the north of Russia is only 5,800 nautical miles (about 10,700 kilometers). The "southern" route is not only longer, but also high customs fees and risks on cargo owners. In such a situation, this route seems to complement the Great Silk Road in its own way, becoming an integral part of the Silk Road and, therefore, a strategic route.

The Silk Road included many different regions, nations, and ethnic groups. When we see that two villages, a short distance apart, speak different languages, it is natural to see how many different languages and cultures existed along this route. The Silk Road was originally a trade route, but it gradually became a route for cultural exchange. From this perspective, the Silk Road is also considered a cultural and artistic route [7].

Country	2012-13	2013-14	2014-15	2015-16	2016-17
China	130000	146000	170000	158000	142000
India	26480	28708	28523	30348	31906
Uzbekistan	980	1100	1200	1256	1200
Thailand	680	692	696	712	680
Brazil	550	560	600	650	600
Vietnam	475	420	450	523	520
Iran	123	110	120	125	120
Others	449.1	467.6	481.8	498.27	48138

R⁶ ResearchGate
World raw silk production: (Quantity in ...

Table 1: World raw silk production: (Quantity in Metric Tonnes).

Conclusion

Iran is one of the countries that considers the Silk Road as a strategic opportunity for its region and the surrounding countries to create a balance in international political economy trends. Attention to the importance of the value chain, in addition to economic and commercial motives and goals, has also found

geostrategic, geopolitical, geoeconomic and tourism dimensions. Projects related to the World Tourism Organization in the last decade and the "Silk Road Initiative" plan by China in 2013 with 110 projects in 65% of the world's three continents, including two plans to build the Silk Road Economic Belt and the 21st Century Maritime Silk Road, show the importance of this road for the development of tourism and the economy of Iran [8]. The New Silk Road plans and projects, with the participation of all citizens, companies, governments, collaborative innovation, will become a global model for sustainability [9].

Iran is one of the countries that considers the Silk Road a strategic opportunity for its region and the surrounding environment to create a balance in economic, political, and international trends. Because historically it has been an important country on the route of this road. Revival of this position in the form of all regional international Silk Road transportation projects and plans such as the Silk Road Initiative by China in 2011, the second economic power of the world, and the Silk Road Plan of the United States, the first economic power of the world, and plans related to the World Tourism Organization [9]. National and domestic plans can greatly contribute to the revival of the geoeconomic position of Iran's tourism in attracting tourism, given the existence of 8 neighboring and adjacent countries of the Silk Road with a common history [10].

Considering the rich potential of our country in the field of tourism attractions, of which historical, natural, cultural and religious buildings are a part, it seems that the capital generated from this industry for the country is small. And the government should invest in this area, such as building toilets, hotels, restaurants, electricity, parks, and international currency exchange cards.

Acknowledgments

We thank dr. Seyfolah *Sadodin*. directure Semnan university in Iran.

References

1. Nair KS. The socio-economic worth of silk farming. *Sericologia*. 2021; 61: 69-73.
2. <https://inserco.org/en/statistics>
3. Kheyroodin Hamid. Silk Road Effect and Architecture. First conference in Silk road. Semnan university. Iran. 2025.
4. Popescu A. Considerations on the trends in the world silk trade, *Scientific Papers Series Management. Economic Engineering in Agriculture and Rural Development*. 2018; 18: 385-400.
5. Kheyroodin Hamid, Khosro ghhazvinian. *Science and Agricultural technology*. 2016.
6. Kheyroodin hamid. The importance of *Ricinus communis* (castor bean) for human health. *The American Int J Res Pharm Sci*. 2025; 7: 22-30.
7. Kamrani Ahmed, Bahadri Ali. The Role of the Silk Road in the Movement of Nations' Religions and Beliefs. *Moscow Quarterly*. 2012; 7: 22.

-
8. Shariati Nia, Mohsen Azizi, Hamid Rez. Iran-China Cooperation in the Silk Road Economic Belt. *Quarterly Journal of Foreign Relations*. 2017; 4: 29.
 9. Agrawal N. *Global Value Chains are the New Silk Road*. Dubai: The National. 2016.
 10. Shadpour H. Silk Road and areas of rehabilitation and its tourism potential (with emphasis on Semnan province). National Conference on Capabilities, Barriers and Solutions for Tourism Development in Semnan Province. Semnan. 2008; 18.