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Policy Brief – Uzbekistan and Tajikistan

Ecolabelling & Standards for silk and ikat in Tajikistan and Uzbekistan



Tajikistan



Uzbekistan

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1. Introduction

The increasing demand for sustainable products from consumers and international buyers fuels discussions about ecolabels and international standards (Eiderstrom, 2019). Verified ecolabels and standards can serve as marketing tools and trade mechanisms, assuring stakeholders along global value chains of quality and sustainability criteria. One of the RUTSIS project objectives (Op 6.1.) is to elaborate a brief for ecolabelling scheme for ikat. In this respect, this working document aims to lay the foundation for discussions on how an ecolabelling scheme for sericulture could be embedded in Tajikistan and Uzbekistan. It provides basic definitions of standards and ecolabels, introduces the framework conditions in both countries, and proposes a way forward to close current gaps in the assessment of sustainability in sericulture. This policy brief also served as a basis for the initial regional stakeholder discussion on ecolabelling organised by the RUTSIS project team in June 2021 in Dushanbe. Therefore, the presented way forward was elaborated by complementing desk research with an expert group discussion.

2. Background

2.1. Standards

Standards can be described as a formula that describes the best way of doing something; this can include production, process management, service delivery and/or material supply (International Agency for Standardization, n.d.). Increasingly global supply chains, in which goods and services are traded across country and continental borders, call for defined and transparent product criteria or norms of material inputs and services (Moss & Harris, 2020). In such supply chains, standards serve as a form of trade governance, assuring transaction partners that goods and services meet quality requirements by

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providing some form of verification, for instance through 3rd party verification or self-assessment (Eiderstrom, 2019). Environmental and social standards can create market incentives for more sustainable, environmentally-friendly and socially acceptable production processes (Gracheva, 2019; International Agency for Standardization, n.d.). However, as such factors are crucial in upstream parts of supply chains, farmers and SMEs are often tasked with their implementation. Therefore, providing the necessary funds and an enabling policy environment that allows for financial, technical and institutional support for all actors in the supply chain is of utmost importance to raise the uptake of sustainability standards (Dr Petrokofsky & Dr Jennings, 2018).

The largest global standards setter is the **International Organization for Standardization (ISO)**, which consists of 165 members representing ISO in their country or region. ISO released more than 23,000 ISO-standards covering all kinds of technologies and manufacturing practices (International Organization of Standardization, n.d.). In the USSR, the state standards were approved by the **USSR State Standards Committee** using the abbreviation “**GOST**”, which since 1968 meant “The State Standard of the Union of Soviet Socialist Republics”. Nowadays called GOST-R, the standards are regulated under the Russian Federal Agency on Technical Regulating and Metrology (International Organization for Standardization, n.d.); they are still applied in Tajikistan as a basis for certification.

2.2. Ecolabels

An ecolabel normally takes on the form of a stamp or logo highlighting specific characteristics of a product or service. Ecolabels may or may not be subject to certification (Moss & Harris, 2020). Ecolabels can come as Type-1, Type-2 or Type-3 ecolabels of which Type-1 indicates the highest standards and is most credible (Eiderstrom, 2019). The ISO standard 14024 defines the principles for developing **Type-1 Ecolabels** (International Agency for Standardization, 2018), which must be voluntary, equally accessible and applicable to all potential applicants. They further need to be awarded by an independent third party (Global Ecolabelling Network, n.d.). Type-1 ecolabels certify overall environmental and social performance of a product or service. By indicating leadership across predefined sustainability criteria, ecolabels facilitate consumer choices for more sustainable products (Global Ecolabelling Network, 2004). According to the Global Ecolabelling Network (2019), ecolabels aim to combat climate change by reducing energy consumption and loss, tackle the plastic waste crisis by minimising packaging and the use of disposables, protect biodiversity by reducing toxic materials in products as well as the general use of natural resources, and accelerate the green transition by promoting sustainable practices (Global Ecolabelling Network, 2020).

3. Framework conditions for standards and ecolabels

The following section describes framework conditions for standards and ecolabels in Tajikistan and Uzbekistan, including existing laws and regulation on standardisation and certification as well as existing ecolabelling schemes covering ikat and sericulture.

3.1. Tajikistan

In Tajikistan, legal and organisational requirements with regards to standardisation are regulated under the law **On Standardization of the Republic of Tajikistan** (2010) which states the main principles of standardisation as well as rights and obligations of involved stakeholders (Law in Standardization of the

Republic of Tajikistan No. 668, 2010). This law is supplemented by the law **On Conformity Assessment**, released in 2011 and adapted in 2012 (Law of the Republic of Tajikistan on Introduction of changes and amendments to the law of the republic of Tajikistan "On conformity Assessment" No. 889, 2012), as well as the decree "**On the List of goods (works, services) subject to mandatory certification**" (2008), including silk for example (Resolution of the government of the republic of Tajikistan "On the list of products (works, services) subject to the mandatory certification", 2008). The law **On Environmental Protection** (2011) (Law No. 760 of 2 August 2011 on Environmental Protection of the republic of Tajikistan, 2011) aims at ensuring sustainable socio-economic development, granting the right to a healthy environment, preventing negative impacts of economic and other activities on the environment, and organising a rational use of natural resources. Article 34 of the law defines **Environmental Certification** in Tajikistan as being carried out, either mandatory or voluntary, to ensure the environmentally safe implementation of economic and other activities by individuals and legal entities.

Tajikstandard is the official standards organisation of Tajikistan, representing ISO as a correspondent member in its country and issuing the interstate GOTS standards (International Organization for Standardization, n.d.). Tajikstandard also implements and supervises the state policy in the area of standardisation, certification and accreditation (Agency of Standardization, Metrology, Certification and Trade Inspection under the Government of Republic of Tajikistan, n.d.). In 2017, the latest catalogue with technical regulations and standards of GOSTs was created in Tajikistan, including 590 technical regulations for services and products covering various economic sectors. 16 of these GOSTs cover ikat and sericulture, including regulations for: silk and semi-silk tie-dyed fabrics, classification of resistance norms, methods for determining dimensional changes after wet processing, nominal widths, silk technical fabrics and live mulberry silkworm cocoons. A list of GOSTs concerning sericulture and ikat in Tajikistan is shown in Table 1 in the annex. As per the law On Environmental Protection, the authorised body for developing technical regulations on certifications and ecolabelling as well as creating mechanisms for their implementation is the **Committee on Environmental Protection** under the Government of the Republic of Tajikistan. At the moment, there are two state standards on environmental labels existing in Tajikistan, presented in Table 2 in the annex.

3.2. Uzbekistan

Uzstandard is the national standardisation agency of Uzbekistan and a member body of ISO, representing it in the country (International Organization for Standardization, n.d.). For raw silk, standards are described within the **state standard O'zDSt 3313-2018**, which assesses the quality of raw silk according to a catalogue of indicators. These indicators are separated in two groups – primary indicators and additional indicators (see Table 3 in the annex). Depending on the assessment of the indicators, the raw silk is placed into different rating classes. In addition, GOST standards are used for the certification of quality of raw silk in Uzbekistan (see Table 4 in the annex). These are developed by the **Uzbek Science Research Institute for Natural Fibers**.

In Uzbekistan, the fundamental basis for quality control and ecolabelling was laid in 1989, with the establishment of the **Certificate of Conformity**, a certification system embedded in the law on **Certification of Products and Services** (1993). The Certificate of Conformity approves the conformity of certified products with previously established requirements. Adding to that, the law **On Standardisation** (1993) defines that normative documents on standardisation include rules, standardisation norms, as well as classifiers of technical and economic information. A more recent policy development was the adoption of the resolution **On Introduction of the System of Voluntary**

Ecological Labelling of Products in the Republic of Uzbekistan (2019). In accordance with this document, it is established that voluntary ecolabelling of products must be carried out by accredited authorities and consider impact on the environment, public health and biological resources during production, use, consumption, transportation, storage and disposal of products. Further, the usage of the word “eco” (“эко”) is prohibited if a product or service is not certified with an ecolabel. Certain substances like medicines cannot be subject to ecolabelling (Resolution of the Cabinet of Ministers of the Republic of Uzbekistan, 2019).

Additionally, the resolution introduces an official ecological safety mark for Uzbekistan, called EkoUz, which was initiated by Uzstandard but is currently developed in collaboration with the Russian Ecological Union. The ecolabel is envisioned to distinguish three levels, indicated by different colours. Companies that fully adhere to the requirements of the ecolabelling system, will be granted the use of the full-colour version of the logo. The three different logo types can be seen in Figure 1.

Figure 1: Envisioned National Ecolabel for Uzbekistan



4. International Best Practices

4.1. International Ecolabels and their Criteria

When developing an ecolabelling scheme, it is not necessary to reinvent the wheel. Interested stakeholders should take a close look at existing ecolabels and assess whether synergies can be created or whether an existing infrastructure could be used. **Common Core Criteria** and **Mutual Recognition Agreements** can facilitate this process (Global Ecolabelling Network, n.d.).

While there are only a few ecolabels that focus especially on sericulture, like the Royal Peacock label from Thailand, many ecolabels certify sustainability in the textile industry as a whole. Textile ecolabels

Box 1: Overview of Silk Criteria from Nordic Swan and GOTS Ecolabel


 <p>Nordic Swan Ecolabel</p> <p>Evaluation criteria:</p> <ul style="list-style-type: none"> Water consumption Organic cultivation of mulberry trees Chemicals usage 	 <p>Global Organic Textile Standard (GOTS)</p> <p>Evaluation criteria:</p> <ul style="list-style-type: none"> Fair wages & working conditions Workers safety from chemical exposure Chemical usage
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often include silk products as a sub-category, like the Nordic Swan and GOTS. Information regarding their respective criteria on silk can be taken from Box 1. A list presenting a broader selection of international ecolabels for textiles is shown in Table 5 in the Annex. With regards to sericulture, international examples of ecolabels show that most labels have defined criteria in the areas of **environmental impacts, social issues, manufacturing processes and animal friendliness** (for examples, refer to Box 1). Environmental impacts include water consumption in mulberry farming or organic cultivation of mulberry trees for example. Social issues refer usually to fair working conditions in silk factories. The area of manufacturing processes covers spinning, weaving and dyeing of silk products as well as the use of recycled silk and carbon neutral production methods. Lastly, if silk production primarily focusses on animal friendliness, it is also referred to as 'peace silk'.

4.2. Establishing an ecolabelling concept

The development of a new ecolabelling concept starts with **taking stock** of the environment. The public policy framework should be examined to ensure compliance with laws and regulations, and an assessment of economic and environmental conditions provides insights to the feasibility and objectives of the ecolabel. Once the creation of an ecolabel is found to be feasible and desirable, **laying the foundation** is the next step. Having analysed data on economic, environmental and public policy conditions, a rationale for the ecolabel should be formulated. This includes the scope, target groups and products as well as stakeholder involvement and funding requirements. Subsequently, the **design** step focuses on the major activities and processes of the ecolabelling scheme. The requirements established must be in line with the efforts that can be expected from local producers and manufacturers. The core of the design step is the development of **certification criteria** as well as the **certification and licensing process**. The certification and licensing processes involve legal entities as well as local certification authorities. An ecolabelling scheme that has the potential to become self-sufficient further needs a well-structured **business plan**. Having drafted the business plan, the **implementation** of an ecolabelling scheme is the last thing to do which usually follows a six-step approach: (1) select product categories, (2) develop related criteria, (3) sell the programme, (4) certify product, (5) license companies, and (6) monitor compliance (Russ, et al., 2009).

Box 2: Overview of Silk Criteria from India Silk Mark and Royal Peacock

 <p>India: Silk Mark</p> <p><i>Your Assurance of Pure Silk</i></p>	 <p>Thailand: Royal Peacock</p>
<p>Evaluation criteria:</p> <ul style="list-style-type: none"> • Purity of fabric • Origin of silk and worms 	<p>Evaluation criteria:</p> <ul style="list-style-type: none"> • Origin of silk worms • Spinning and weaving technique • Type of thread • Proportion of other material like decorations or other fabrics <p>➔ Four levels indicating different quality standards</p>

In the case of sericulture there are two countries that serve as best practice examples which have established labels for silk, though rather focused on quality insurance and socio-economic aspects than on environmental criteria. The Royal Peacock was introduced in Thailand in 2002, while the India Silk mark emerged in 2004. Their criteria can be taken from the Box 2 above.

5. Way Forward

Tajikstandard, the **Agency of Standardization, Metrology, Certification and Trade Inspection** under the Government of Tajikistan, as well as Uzstandard, the **Standardization, Metrology and Certification Agency** of Uzbekistan build great starting points in both countries to push forward the process of certifying sustainable sericulture (Agency of Standardization, Metrology, Certification and Trade Inspection under the Government of Republic of Tajikistan, n.d.; Uzbek Agency for Technical Regulation, n.d.). Close collaboration with the sericulture industry would inform them about its needs and ambitions. Further, cross-country collaboration among the two agencies would be beneficial with regards to the development of standards and ecolabels.

In June 2021, a regional roundtable on ecolabelling was organised in Dushanbe by the RUTSIS project. The roundtable served as a platform for networking and exchange of experiences between representatives of the standardisation and certification bodies of Uzbekistan and Tajikistan. In addition, the first version of the present policy brief on ecolabelling, providing an overview of international and best practice in ecolabelling and possibilities for developing an ecolabelling schemes for silk and ikat for both countries, was presented to stakeholders at the event. The brief was a foundation for discussions which in turn promoted ecolabelling initiatives among local stakeholders. As Uzbekistan has established national ecolabel, surely Tajikistan can benefit from this experience, therefore proposals for a study tour to Uzbekistan were voiced by the roundtable participants. Exchange of experience, especially about the development of a national ecolabelling system in Uzbekistan, could be of great help to Tajikstandard, regardless of different institutional frameworks on standardization in Uzbekistan and Tajikistan. Another opportunity to support the establishment of a national ecolabel in Tajikistan would be to provide Tajik stakeholders with documentation on the ecolabel developed in Uzbekistan. Thus, despite the dissimilar institutional structures, could encourage and stimulate local producers in Tajikistan to develop or support the acquisition of an ecolabel for silk and ikat production.

Moreover, well established silk certification schemes from other countries, like India or Thailand, can be considered as role models. **International dialogues** among these countries will foster knowledge exchange and build expertise. Established international textile ecolabels that also cover silk products can further be an entry-point for individual sericulture companies to access global markets by benefiting of the existing infrastructure of these ecolabels.

The services associated with verifying the compliance with either standards or ecolabelling schemes entail high costs. To avoid putting a financial extra burden on local manufacturers, sound governmental or other supportive **funding schemes** are needed.

6. Bibliography

- Uzbek Agency for Technical Regulation. (n.d.). Retrieved from <https://www.standart.uz/en/>
Agency of Standartization, Metrology, Certification and Trade Inspection under the Government of Republic of Tajikistan. (n.d.). Retrieved from <http://standard.tj/en/Welcome>
- Centro Tessile Serico Sostenibile SRL. (n.d.). *ABOUT SERI.CO.* Retrieved from <https://www.textilecomo.com/en/about-seri.co>
- Dr Petrokofsky, G., & Dr Jennings, S. (2018). *The effectiveness of standards in driving adoption of sustainability practices: A State of Knowledge Review.* University of Oxford, 3Keel LLP.
Retrieved from https://www.oneplanetnetwork.org/sites/default/files/the_effectiveness_of_standards_in_driving_adoption_of_sustainability_practices.pdf
- Eiderstrom, E. (2019). Green products in the market place. *Webinar: Ecolabel, what is that? And how to develop a new ecolabel?* Retrieved from https://www.youtube.com/watch?v=HGrxpC_PS1A
- EU Ecolabel. (2014). Ecological criteria 2014/350/EU.
- European Parliament and the Council of European Union. (2008). Official Journal of the European Union | L 353/1 "On classification, labelling and packaging of substances and mixtures, amending and repealing". *Regulation (EC) No 1272/2008.*
- Global Ecolabelling Network. (2004, July). Introduction to Ecolabelling. Retrieved from <https://globalecolabelling.net/assets/Uploads/intro-to-ecolabelling.pdf>
- Global Ecolabelling Network. (2020, October). GEN MAG. *Measuring the performance of ecolabels (Edition 37).* Retrieved from <https://www.oneplanetnetwork.org/sites/default/files/global-ecolabelling-network-gen-magazine-edition-37.pdf>
- Global Ecolabelling Network. (n.d.). Defining the true meaning of green. Retrieved from <https://www.oneplanetnetwork.org/sites/default/files/gen-type-1-ecolabels-for-consumers-brochure-2019-digital.pdf>
- Global Ecolabelling Network. (n.d.). *Global Ecolabelling Network.* Retrieved from Common core criteria: <https://www.globalecolabelling.net/eco/common-core-environmental-criteria/>
- GLobal Standard gGmbH. (2020, March 1). *Global Organic Textile Standard.* Retrieved from Version 6.0: https://global-standard.org/images/resource-library/documents/standard-and-manual/gots_version_6_0_en1.pdf
- Global Standard gGmbH. (n.d.). *Are you allowed.* Retrieved from https://www.global-standard.org/images/resource-library/documents/GOTS-flyers/GOTS_
- Gracheva, Y. (2019). The GLobal Ecolabelling Network. *Webinar: Ecolabel, what is that? And how to develop a new ecolabel?* . Retrieved from https://www.youtube.com/watch?v=HGrxpC_PS1A
- Ifoam. (2020, May 18). *Organic Family of Standards.* Retrieved from That's Organic - Worldwide: https://www.ifoam.bio/sites/default/files/2020-05/familyframe_web_0.pdf
- Internationa Organization for Standartization* . (n.d.). Retrieved from Members: GOST R Russian Federation : <https://www.iso.org/member/2176.html>

International Agency for Standardization. (2018). Retrieved from ISO 14024:2018 Environmental labels and declarations — Type I environmental labelling - Principles and procedures: <https://www.iso.org/standard/72458.html>

International Agency for Standardization. (n.d.). Retrieved from Standards - ISO STANDARDS ARE INTERNATIONALLY AGREED BY EXPERTS: <https://www.iso.org/standards.html>

International Association of Natural Textile Industry. (2015). *Naturtextil IVN certified Best Standard Criteria, version 6.0*.

International Association of Natural Textile Industry. (n.d.). Retrieved from About Global Organic Textile Standard (GOTS): <https://naturtextil.de/en/ivn-quality-seals/about-global-organic-textile-standard-gots/>

International Association of Natural Textile Industry. (n.d.). *Flyer "Die Qualitätszeichen des IVN":* . Retrieved from https://naturtextil.de/wp-content/uploads/2016/09/05_IVN-ConFlyer_deu.pdf

International Organization for Standardization. (n.d.). Retrieved from Members: <https://www.iso.org/members.html>

International Organization for Standardization. (n.d.). *International Organization for Standardization*. Retrieved from Members: Uzbekistan : <https://www.iso.org/member/308878.html>

International Organization of Standardization. (n.d.). Retrieved from About Us: <https://www.iso.org/about-us.html>

Law in Standardization of the Republic of Tajikistan No. 668. (2010, December). Dushanbe. Retrieved from https://www.wto.org/english/thewto_e/acc_e/tjk_e/WTACCTJK21A1_LEG_1.pdf

Law No. 760 of 2 August 2011 on Environmental Protection of the republic of Tajikistan. (2011, August 2). Retrieved from https://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=90340

Law of the Republic of Tajikistan on Introduction of changes and amendments to the law of the republic of Tajikistan "On conformity Assessment" No. 889. (2012, August 1). Dushanbe. Retrieved from https://www.wto.org/english/thewto_e/acc_e/tjk_e/wtacctjk28_leg_2.pdf

Moss , E., & Harris, R. (2020). *A Global Mapping and assessment of standards, labels and claims on plastic packaging*. Retrieved from https://www.oneplanetnetwork.org/sites/default/files/unep_ci_2020_can_i_recycle_this.pdf

Nordic Ecolabelling. (n.d.). *The official ecolabel of the Nordic countries*. Retrieved from <https://www.nordic-ecolabel.org/nordic-swan-ecolabel/>

One Cert Inc. (n.d.). *OneCert Certification Packet*. Retrieved from <https://onecert.com/packets/>

RainOgilvie. (n.d.). *The Royal Peacock Logo: The certification trademark of Thai silk standards*. Retrieved from (Source: www.qsds.go.th): <https://rainogilvie.com/pages/the-royal-peacock-logos-the-certification-trademark-of-thai-silk-standards>

Resolution of the Cabinet of Ministers of the Republic of Uzbekistan. (2019, May 27). Resolution of the Cabinet of Ministers of the Republic of Uzbekistan № 435. *Implementation of a voluntary environmental labelling system in the Republic of Uzbekistan*. Retrieved from <https://lex.uz/docs/4355493>

Resolution of the government of the republic of Tajikistan "On the list of products (works, services) subject to the mandatory certification". (2008, October 1). Dushanbe. Retrieved from https://www.wto.org/english/thewto_e/acc_e/tjk_e/wtacctjk17a1_leg_7.pdf

Russ, M., Polak, J., Loewe, C., Frisenborg, L., Wegener Waidtløw, J., Paxevanos, N., . . . Lichtl, M. (2009). *Training Handbook. Eco-labelling: What it is& How to do it*. United Nations Environment Programme. Retrieved from https://www.oneplanetnetwork.org/sites/default/files/unep_el_training_handbook.pdf

Silk Mark Organization of India. (n.d.). Retrieved from <http://silkmarkindia.com/>

Technical Card n. 24. (n.d.). Retrieved from Safeguard of Health in Textiles.

7. Annex

Table 1: GOSTs concerning sericulture and ikat in Tajikistan

No	Product name	TN VED product code
1.	Silk carpets	5701101000, 5701901000
2.	Dyed fabrics from silk threads or silk waste	5007205900, 5007206900, 5007903000, 5007909000
3.	Cotton fabrics mixed mainly or exclusively with silk fibers	5212139000, 5212149000
4.	Knitted blouses, blouses and others from silk	6106903000
5.	Women's silk dresses	6204491000
6.	Blouses, and others from silk	6206100000
7.	Shawls, scarves, etc. from silk	6214100000
8.	Silk ties, bow ties, etc.	6215100000

Table 2: State standards on environmental labels in Tajikistan

No	Code MKC	Standard Designation	Name of the standard. Indication of introduction
88.	13.020.50	CT PT GOCT P 14020-2010	Environmental labels and declarations. Basic principles
89.	13.020.50	CT PT GOCT P 14024-2010	Environmental labels and declarations. Environmental Labels. Type I. Principles and procedures

Table 3: Indicators of Silk Standards in Uzbekistan

Type of indicator	Content
Main Indicators	• Deviation in linear density
	• Purity for minor defects
	• Cleanliness for major defects
	• Unconformity 1
	• Unconformity 2
Additional Indicator	• Rewinding ability
	• Relative breaking load
	• Elongation at break
	• Connectivity
	• Unconformity 3
	• The maximum deviation in linear density
	• The condition of the skeins

Table 4: GOST Standards Related to Raw Silk in Uzbekistan

No	GOST ID	Standard description
1.	GOST 9845-83	Silk and semi-silk tie-dyed fabrics. General specifications
2.	GOST 18484-87	Silk and semi-silk fabrics. Classification of norms of crease resistance
3.	GOST 25132-82	Silk and semi-silk fabrics. Classification of pilling norms
4.	GOST 9315-90	Silk and semi-silk fabrics. Method for determining dimensional changes after wet processing
5.	GOST 9202-87	Silk and semi-silk fabrics. Nominal widths
6.	GOST 22542-82	Silk and semi-silk fabrics. Abrasion resistance standards
7.	GOST 19907-83	Glass twisted complex yarns electrical insulating fabrics. Technical conditions
8.	GOST 12422-78	Silk technical fabrics. Test methods
9.	GOST 23761-89	Silk shoe fabrics. General technical conditions
10.	GOST 25227-82	Silk and semi-silk fabrics. Primary packaging and labelling
11.	GOST 187-85	Silk and semi-silk fabrics. Determination of grade
12.	GOST 20236-87	Silk and semi-silk fabrics. Stability and extensibility standards
13.	GOST 20723-89	Clothing fabrics of natural twisted silk. Technical specifications
14.	GOST 20722-75	Clothing fabrics of natural silk, man-made threads and mixed. General specifications.
15.	GOST 8493-57	Air-dried cocoons of mulberry silkworms. Specification
16.	GOST 21061-87	Live mulberry silkworm cocoons

Table 5: Selected International Ecolabels with Relevance for Sericulture

Ecolabel	Description
GOTS	The Global Organic Textile Standard (GOTS) (International Association of Natural Textile Industry, n.d.) is one of the leading certifications for organic textile products in the world. GOTS is a processing standard and the minimum requirement standard of the International Association of Natural Textile Industry (IVN). It certifies the production chain of products containing >70% organic natural fibres. As it is a processing standard, the raw material input however is not certified by GOTS but has to be certified by a national organic farming standard or animal husbandry (kbA or kbT) such as the EU Organic Standard, the USDA National Organic Program (NOP) or other standards of the IFOAM Family (Ifoam, 2020). A

Ecolabel	Description
	<p>30% share of the fibres' input may be composed of conventional natural fibres (excluding cotton and angora), recycled synthetic fibres or viscose and another 10% may be conventional synthetic and man-made fibres (International Association of Natural Textile Industry, n.d.). The standard awards products which are sustainable in terms of labour standards, product safety and environmental protection. GOTS labelled products for instance may not include GMO, heavy metal or hazardous substances (GLobal Standard gGmbH, 2020) in the production process (except copper and iron if not exceeding a particular percentage in blue, green and turquoise dyes). Furthermore, it requires the strict separation of certified products from conventional fibres and goods while storing, a detailed documentation and traceability of the products' supply chain and compliance with social standards according to the ILO. A product can only be labelled with a GOTS seal when all of its parts and the complete production chain meet the GOTS requirements (Global Standard gGmbH).</p>
<p>IVN Best</p>	<p>The IVN Best certification is based on the GOTS-certification but the standard's criteria differ in some areas. Hence, IVN Best can be described as a more demanding standard with higher requirements in terms of limit values and permitted chemicals that may be used in the production process (International Association of Natural Textile Industry, 2015). The standard prohibits the use of GMO, pesticides and other hazardous substances in sericulture (e.g. for cultivation of mulberry trees) and the processing of raw materials according to (EG) Nr. 1272/2008 (CLP) (European Parliament and the Council of European Union, 2008). In the dyeing and finishing process the restricted use of substances is allowed but excludes the use of heavy metals (except iron for dyeing). Thus, weighting of silk with metal salts is permitted for silk yarn finishing. When meeting the standard's requirements for chemical substances, natural as well as synthetic dyes may be used for dyeing. In comparison to a 70% share for GOTS certification, IVN Best requires 100% organic natural fibre input in the finished product (PES sewing thread may only be used when covered with cotton). The IVN includes silk as a certifiable natural fibre. Nevertheless, the detailed specifications of the standard mainly refer to cotton and wool but can also be applied to silk products.</p>
<p>EU Ecolabel</p>	<p>The EU-Ecolabel certifies the environmental friendliness of a range of product groups and services such as cosmetics, cleaning agents and tourist accommodations. Various textile products from interior textiles to garments, accessories and their components may as well be certified when meeting the ecological criteria 2014/350/EU. The EU-Ecolabel defines its criteria in the field of sustainable production, quality criteria, social standards and consumer safety. The certification of silk fibres is not yet covered by this label (EU Ecolabel, 2014).</p>
<p>Nordic Swan Ecolabel</p>	<p>The Nordic Swan Ecolabel sets strict environmental requirements based on a lifecycle approach and continuously reviews and updates them to reflect the state-of-the art. The certification covers 59 different product groups including more than 200 different product types. Among these, silk is part of "Textiles, hides/skins and leather". The establishment of the ecolabelling scheme was a cross-regional effort</p>

Ecolabel	Description
	among Denmark, Finland, Iceland, Norway and Sweden (Nordic Ecolabelling, n.d.). Silk is classified as natural, and more specifically animal fibre. Its environmental performance is measured by looking at water consumption, organic cultivation of mulberry trees as well as chemicals used in dyeing.
OneCert	OneCert is an internationally operating certifier of various organic standards for textile products, raw materials and the food industry. The company provides an overview of organic labels applicable for textile products which may be certified by them such as US NOP, EU (EC No. 834/2007), GOTS, TE standards (GRS, RCS). Besides being an official accreditor, OneCert's services include consulting on the way towards a certification and the distribution of information packages for producers which may be requested through their website (One Cert Inc., n.d.). For certification, manufacturers prepare an organic system plan (OSP) which at first is reviewed by the consultant agency, followed by an inspection of the production site and an evaluation report. OneCert identifies organic labels which are applicable for the product and in a last step, may then issue the appropriate certifications to their customers.
Royal Peacock	<p>The Royal Peacock logo certifies Thai silk standards, which is registered in 22 countries. The quality control programme for Thai silk protects the health, safety and well-being of the people making the silk and sets high quality standards for the fabric produced. Four grades of silk – gold, silver, blue, and green – indicate varying quality standards of silk (RainOgilvie, n.d.):</p> <ul style="list-style-type: none"> → Gold: hand-spun silk using simple folk tools; graded thread and woven with a wooden hand-loom; native silk worms; silk may be decorated with maximum 20% of silver or gold threads → Silver: hand-spun silk; woven with a wooden hand-loom; native silk worms or hybrids; silk may be decorated with maximum 20% of silver or gold threads → Blue: no restrictions on reeling and weaving processes; native or modified silk worms; foreign silk threads must be clearly indicated on the products → Green: no restrictions on reeling and weaving processes; native silk worms as a main source of materials with other fabrics as complimentary components, proportion must be clearly indicated on the products; other decorative materials can be used
Silk Mark India	In order to enhance transparency for end-consumers when buying silk products, the Indian Ministry of Textiles introduced the Silk Mark India in 2004. The label, which features a stylised butterfly as its symbol is operated by Silk Mark Organisation of India (SMOI) and hallmarks products made of 100% natural silk. With a code on product tags or sew-in labels, customers have the possibility to trace the manufacturer of the silk (Silk Mark Organization of India, n.d.).
Seri.co	The Italian Seri.co label is another national silk mark certifying manufacturers registered in Italy with at least two production steps carried out within the country. The standard focuses on consumer health & safety in terms of harmful chemical

Ecolabel	Description
	<p>residues on fibres, resource-saving production and corporate social responsibility. Beyond environmental and social aspects Seri.co grants ethical approaches in product design and marketing and provides a quality standard for Italian silk production (Centro Tessile Serico Sostenibile SRL, n.d.). The label is given to companies whose products comply with the defined quality criteria for silk products ranging from high performance outdoor wear to interior fabrics including various fastness and fibre performances (Technical Card n. 24).</p>