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Environmental Impacts of Trade Liberalization in the Silk Handicrafts Sector of the Lao PDR

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To inform the *Rapid Trade and Environment Assessment* for Lao PDR, seven background papers covering nine key economic sectors were commissioned by the RTEA Expert Advisory Panel, a body consisting of key government and private sector stakeholders established to provide overall guidance to the assessment process. These papers provided vital background information and illuminated key sector-specific policy recommendations for the main assessment and are seen as a valuable contribution to the growing body of in-country research focusing on the complex dynamics between trade and the environment in Lao PDR.

This research exercise was coordinated by the Science, Technology and Environment Agency and IUCN – The World Conservation Union in Lao PDR.

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Environmental Impacts of Trade Liberalization in the Silk Handicrafts Sector, Lao PDR

by Somphong Soulivanh*

Introduction

The silk handicrafts sector is an ancient sector of the Lao People's Democratic Republic (Lao PDR), which continues to play a vital role in the national economy. This sector has a strong domestic market, as Lao women use silk material for making clothes and traditional decorations. In addition, the naturally dyed and often handmade material has become synonymous with Lao culture throughout the world. As a result, demand from regional and international markets for Lao silk handicrafts is growing steadily and providing key export earnings and potential opportunities for domestic producers. In 2004, handicraft exports totalled US$13 million, accounting for 1.6 percent of total exports (MoIC & ITC 2006). The Third Lao PDR *National Human Development Report* notes that exports are expected to have reached US$15 million in 2005-06, with growth in this sector expected to continue (CPI & UNDP 2006).

Current trade liberalization efforts are helping to open new markets for this sector. The Government of Lao PDR (GoL) has now become a member of the Association of Southeast Asian Nations (ASEAN) and in turn a party to the ASEAN Free Trade Area (AFTA) and is also working towards accession to the World Trade Organization (WTO). However, the most important development for this sector has been the resumption in 2005 of Normal Trade Relations with the United States – now a key export market for Lao silk handicrafts (CPI & UNDP 2006). Other key international markets for Lao-produced silk handicrafts include Japan, the European Union and Australia. The silk handicrafts sector has also expanded due to a dramatic increase in tourism to Lao PDR over the last decade, as well as an expansion of regional trade with China, Thailand and Vietnam. In most of the key markets, including ASEAN, Lao handicrafts enter duty free under the Generalized System of Preferences (GSP), or face very low tariffs. Therefore, market access is not a problem for these products. However, supply of materials (increasing the scale of operations), ensuring quality and certifying origin and certifying the use of natural and traditional processes are key constraints in meeting the international demand for silk handicraft products.

It is in this context that this paper identifies environmental concerns and potential opportunities that may result from trade-related growth in the silk handicrafts sector in Lao PDR. Strategic recommendations to guide the sustainable development and growth of this sector are then outlined.

Section 1:

Overview of the silk handicrafts sector

1.1 Hurdles to overcome in the silk handicrafts sector

The handicrafts sector consists predominately of small family businesses spread across the country in rural and urban areas. It is common for rural people to produce handicrafts, especially when communities are not engaged in their primary occupation of agricultural production. Small family businesses, including producers, buyers and sellers and retail stores are also common in urban centers. Mainly due to the small and dispersed nature of these businesses, the sector remains largely unorganized and there are presently many barriers to supplying international markets. A few key issues

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include:

- *Supply of raw material:* In 2002, the land area used for mulberry plantations was 644 hectares in total, producing around 6.5 tons of silk per annum. In 2003, this area grew to 805 hectares with an estimated production of 9 tons of silk. During 2002-2003, the average amount of raw silk used in Lao silk handicraft production totalled about 120 tons, with an additional 20 tons per year of chemical silk products (Saphangthong 2006). These figures demonstrate the lack of capacity in the domestic market to supply the silk handicrafts sector, and the current need to import raw silk from countries such as China and Vietnam.
- *Supply of end products:* While a key competitive advantage to the sector in terms of using natural and traditional processes, the size and nature of silk handicraft businesses limit the amount of silk handicrafts that can be produced. Most businesses are family-run or small and medium-sized enterprises (SMEs), which do not have the production capacity to supply increases in demand for silk products.
- *Quality assurance and a national standard:* The GoL's *National Export Strategy 2006-2008* sets out the objectives of adding value and fostering diversification of the silk handicrafts sector (MoIC & ITC 2006). One key aspect identified is the need for quality assurance. Despite the fact that there has yet to be a quality control system or national standard for raw silk and silk fabrics, the Lao Handicraft Association is working towards creating awareness on the need for labels and certification. For example, the Japan External Trade Organization (JETRO) is cooperating with the Lao Handicraft Association to develop the quality of Lao silk textiles to be able to meet the Japanese market requirements through the brand name "Chai Lao" (MoIC & ITC 2006).
- *Certification:* Consumers in foreign markets not only demand quality, they often want to know that the products they are buying are traditionally-made with natural, 'green' inputs. Certification of products and production processes is important to capturing markets and obtaining premium prices. High quality, traditionally-made Lao silk handicrafts are premium products with a significant external demand. In this respect, there is significant risk that if the Lao silk handicrafts sector continues to source the majority of raw silk from other countries, and/or increases the size of production with non-traditional practices, the value of the Lao brand would be reduced. It is therefore critical at this point in time to assess how to develop the sector, while keeping the good reputation and quality that this product has begun to establish in international markets.

1.2 Overview of environmental concerns in the sector

In further developing the silk handicrafts sector, consideration should also be given to the potential environmental impacts. This sector is viewed as having a low environmental footprint at present due to predominately organic sericulture and natural and traditional methods of production. Nevertheless, as the sector attempts to scale-up its production to meet increasing demand, there is a strong likelihood that environmental impacts will ensue.

Key environmental impacts outlined in Section 2 include the potential for:

- Positive impacts arising from increased international demand for natural 'green' silk handicrafts produced in an environmentally-sound manner;
- Negative impacts of increased water consumption and water pollution as production increases; and
- Negative impacts of increased land use for the plantation of mulberry trees for silk cultivation.

1.3 Policy and regulatory framework for the silk handicrafts sector

The Ministry of Industry and Commerce (MoIC) has devised a *National Export Strategy* to develop the silk handicrafts sector (MoIC & ITC 2006). This export strategy has been combined with the previous, more general handicraft strategy that was not geared specifically to increasing exports.

The Government's policy for the silk handicraft sector, outlined in the *Industrial and Handicraft*

Development Strategy toward 2020 (MoIC 2004) identifies the following objectives and key priorities:

- To stimulate production to supply domestic and export demand, and, at the same time, contribute to job creation, increase incomes and alleviate poverty step by step;
- To develop the handicraft and artisan sector over the next 20 years to be a key employer and to contribute to local and human development;
- To reach the target for the handicraft and artisan sector of US$10 million in 2005; US$15 million in 2010 and US$20 million by 2020, which would represent an average growth rate of approximately 14 percent per year;
- To develop the handicraft and artisan sectors together with the preservation of cultural heritage, human resource development and commercialization;
- To promote local participation in the artisan sector and promote family businesses or SMEs; and
- To promote environmentally sound production processes in the silk handicraft sector by reducing raw material use, energy and waste, while increasing production.

To manage potential environment impacts and control wastes from industrial developments, the GoL has promulgated several laws and regulations, including:

- Forest Law, 1996.
- Water and Water Resources Law, 1996.
- Land Law, 1997.
- Environmental Protection Law, 1999.
- Environmental Impact Assessment Regulation, 2000.

The Ministry of Industry and Commerce is also responsible for aspects of laws and regulations concerned with environmental management, such as:

- Industrial Processing Law, 1999.
- Environmental Impact Assessment Regulation, 2005.
- Waste Water Discharge Regulation, 1994 and 2005.

Section 2:

Trade-related environmental impacts and national experiences in improving environmental sustainability in the sector

2.1 A general qualitative evaluation of the environmental impacts of trade

The *Industrial and Handicraft Development Strategy* (MoIC 2004) sets a 14 percent-per-annum growth target for the sector. If barriers such as supply, quality and certification can be overcome, the strong demand for Lao silk handicrafts abroad will most likely lead to the strengthening and growth of the industry in order to meet this target. Taking this growth scenario, this section provides a preliminary evaluation of some of the key impacts that should be considered to ensure that growth is sustainable, both economically and environmentally.

2.1.1 The growth of an environmentally-friendly industry

Sericulture in Lao PDR is inherently environmentally friendly. Mulberry plantations are organically grown to feed silkworms, and Lao silk textile processing often uses natural dyes with no chemical processing.

This gives Lao silk producers a unique selling proposition and an opportunity for the Lao silk handicraft sector to access regional and international premium niche markets (MoIC & ITC 2006). The demand for these 'green' products abroad has the potential to have a significant positive impact on Lao PDR's environment as more silk and silk handicrafts are produced in this way. Moreover, the lower value, higher impact option of producing high-input goods is foregone (e.g., chemical fertilizers and pesticides in mulberry growing). Indirect effects such as increased environmental awareness may also occur.

On the other hand, increased trade of silk products in international markets requires more domestic production, and, in order to achieve this objective and meet demand, the industry will need to grow by increasing inputs of raw materials, water and energy. Increasing the scale of silk handicraft production raises a number of environmental concerns, especially concerning water and land use.

2.1.2 Water resources

Water is a key resource which supports socio-economic development in Lao PDR, especially the hydropower and irrigation sub-sectors. Efficient use of water resources is a critical factor in realizing the Government's dual strategic objectives of poverty reduction and sustainable economic growth. Sustainable water management will become an increasingly important issue as more and more sectors develop and compete for the right to use clean water resources. Ensuring water quality and availability is thus vital to Lao PDR's development prospects. These aspects have been recognized by the Government and reflected in legislative and other measures aimed to encourage efficient and sustainable use of water resources.

Even though Lao silk production primarily uses natural dyeing, the sector does necessitate the use of some chemicals for bleaching for certain colours of silk. At present, silk production methods use a significant amount of water in the process of bleaching and dyeing, and these activities create wastewater. In addition, wastewater treatment systems, if they exist, often do not meet the best available technical standards and small handicraft companies often lack the time, experienced staff and financial resources to upgrade. As a direct consequence, wastewater facilities end up discharging this waste into the public sewer system without adequate treatment. It is not common for either water or chemicals to be recycled during the production process.

Wastewater and chemical use will invariably increase when production is increased. In order to maintain water and environmental quality in Lao PDR, appropriate measures and management practices will need to be adopted in relation to increased production in the silk handicrafts sector. Government legislation such as the *Environmental Impact Assessment Regulation 2005* and the *Waste Water Discharge Regulation 1994 and 2005* already exists. These laws distinguish between different business operations; requiring different levels of environmental diligence and allocating responsibility to different levels of authority based on the size of a business operation. Small businesses, such as those in the handicrafts sector, are often under the responsibility of district authorities. It is, therefore, important that these details are known and that regulations are enforced.

2.1.3 Land resources

The Lao silk handicrafts sector relies on mulberry plantations for raw silk, although the majority of this raw material is not sourced from Lao farmers but imported from neighbouring countries (MoIC & ITC 2006). To capture more of the high-value market abroad, the Lao silk sector will either need to increase domestic production of silk, or ensure that imported raw silk is of the highest quality in order to compete in the international silk trade.

The Government's *National Export Strategy* recommends a substantial increase in domestic raw silk production (ITC 2006). According to STEA's *Environmental Performance Assessment Report* (2006), Lao PDR has about 5.9 million hectares of potentially cultivable land, of which 800,000 hectares are cultivated for rice or secondary crops in lowland areas. Upland areas, identified in Lao PDR as landscapes with a slope greater than 12 percent, cover between 80-85 percent of the country's area. The land areas for planting rice and supplementary crops are limited. Land-use planning and land

classification for industrial plantation are necessary to avoid inappropriate industrial plantations on the areas for vital for food production (e.g., rice paddies). As highlighted in the *National Export Strategy*, the demand for Lao silk handicrafts and the need to ensure standards of quality and rules of origin could lead to the rapid expansion of mulberry plantations throughout the country; hence, the strategy calls for promotion of national sericulture through the development of new technology and extension services to farmers (MoIC & ITC 2006). If this occurs there will be a need to allocate proper areas for mulberry plantations to avoid or mitigate negative impacts. There will also be a need to ensure that there is sufficient incentive for environmentally-friendly production methods.

There is also the potential to import raw silk if there is insufficient domestic supply for the Lao silk handicrafts sector. This, however, is not a preferred option, as using Lao silk in Lao silk handicrafts is more marketable. Also, the use of imported silk would make it difficult to monitor quality assurance, gain organic credentials and meet rules of origin requirements. The use of imported raw silk will however reduce pressure on land resources for the production of silk.

2.2: Case study: A step towards better environmental practices in the Lao silk handicrafts sector

Nikone Handicraft was established in 1992 as a privately-owned handicraft centre that produces locally-made textiles and fashion accessories (MoIC 2005). The centre is located in Dongmieng village, Chanthabury district, Vientiane, and currently employs 51 labourers. Nikone Handicraft produces a wide range of products and is recognized as one of the leading natural dyeing centres in Lao PDR, using only traditional methods and natural materials in its production processes.

At Nikone Handicraft, silk is primarily dyed using dyeing liquids obtained from natural materials, such as bark, leaves and fruits. According to Nikone Handicraft, the centre uses water for bleaching, dyeing and rinsing. A three-step rinsing process is employed through the use of a dual water tank system. This entails that approximately 240 litres of water are used during each rinsing step, which amounts to a discharge of 720 litres for the three-step rinsing process that runs directly into the surrounding environment. In one day, the centre uses about six cubic metres of water in the silk production process.

Wastewater discharge is generated mostly during the bleaching and dyeing processes. Data collected during a survey of Nikone Handicraft suggested that wastewater was the major source of waste generated by the centre. In order to reduce wastewater generation, several causes that lead to high water consumption and wastewater generation were identified. In this centre, it was found that poor dye fixation and an obsolete washing technology were the main contributors to wastewater generation.

The centre cooperated with the MoCI to conduct experiments to reduce water consumption. The results of the experiment found that the rinsing water used during the final two steps of the processing system could be reused. The process was then modified accordingly.

It is a case in point that Nikone Handicraft - one of Lao PDR's best known handicraft centres - is striving to be more environmental friendly. Using materials that mostly derive from the natural environment certainly helped the centre in its quest to be more environmentally friendly. Despite the fact that the centre uses natural materials, its use of obsolete and inefficient technology resulted in a large quantity of wastewater discharge. It was concluded that bleaching and dyeing processes are the source point of wastewater generation. Efforts are currently being made to address these issues, however a number of constraints associated with small business, including the lack of access to technical skills and to finance, were cited by the project research as impediments.

Section 3:

Conclusions and strategic policy recommendations for the silk handicrafts sector

3.1 Conclusions

The key environmental concern related to this sector is wastewater. Wastewater discharge does not currently have a significant environmental impact due to the small size of the sector and the fact that it is predominately composed of small family businesses. Other environmental concerns at present are minimal; sericulture in Lao PDR is environmentally friendly by default and uses natural dyes during processing. Presently, the GoL is promoting a policy of encouraging cleaner production and processing methods to ensure the least impact on the environment.

Sericulture in Lao PDR is fundamentally environmentally friendly, since mulberry is organically grown to feed silkworms. Moreover, Lao native silk weaving is naturally dyed with little or no chemical processing. This gives Lao silk a unique selling proposition and an opportunity for the Lao silk handicrafts sector to access international niche markets.

3.2 Strategic policy recommendations

As set out in this paper, there is a significant potential to develop the Lao silk handicrafts sector, particularly traditional silk textiles, and to add value and foster diversification in the sector. Several recommendations below outline actions the Government could take to realize this potential:

- **Implement the *National Export Strategy* and work with the Lao Handicraft Association and the Lao National Chamber of Commerce and Industry through the creation of a silk handicraft fund to promote this sector.**

  The GoL and private sector may consider developing training programs to encourage members of the Handicraft Association to improve processing and natural dyeing techniques and ensure quality certification to make silk products more competitive and help producers meet international standards.

- **Redesign waste water treatment systems, reduce water used in the production process by recycling waste water and up-grade to technologies that have fewer environmental impacts.**

  Possibilities for future work include:

  - as the case study of Nikone Handicrafts demonstrates, reusing water from the various rinsing steps in order to increase the efficiency of water use in the processing of silk handicrafts;
  - further research on other environmentally-sound production and processing methods to reduce raw material and energy consumption; and
  - working with the Lao Handicraft Association to promote cleaner production and processing techniques and technologies.

- **Enable the Lao silk handicrafts sector to grow sustainably through:**

  - creating awareness of environmental management practices and encourage their use;
  - ensuring that small to medium-scale silk handicraft centres employ, or have access to environmental specialists to monitor quality and control wastes;
  - providing market information as to quality and designs for silk handicraft products;
  - fostering value-addition and diversification by linking this sector to other sectors, such as agriculture and, importantly, tourism;

- establishing a National Production Centre for sericulture to improve and develop as well as disseminate traditional and improved techniques;
- creating annual environmental performance awards to recognize quality and raise awareness of Lao brand-name silk products following the example of “Chai Lao”. The Lao Handicraft Association and the Lao National Chamber of Commerce and Industry are well-placed to establish such an award each year;
- facilitating quality control system for raw silk and fabrics as well as finished silk handicraft products through certification, including the “G-Mark” and ISO 14000, in order to capture premium niche markets both at the domestic (through tourism) and international levels;
- increasing capacity building and training in this sector to improve environmental performance and techniques for weaving, making silk string, dyeing, marketing and quality control; and
- establishing a Silk Handicraft Fund to encourage the development of the “One Village One Product Movement,” given the importance of this sector to rural agricultural family businesses and to preserve traditional techniques.

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