

The Environmental Issues in Textile and Garment Trade

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Abstract At present, new energy and environmental protection as the theme of “low-carbon economy” are becoming the world’s economic development objectives; the relationship between trade and environment has become increasingly close. China’s textile and garment industry is one of the most polluting industries, and the environmental problems will become an important issue to the whole industry. This chapter aimed to discover the current environmental issues in textile and garment trade, in order to optimize the development of textile and garment industry and find solutions to these problems. This chapter mainly discussed four issues that were environmental pollution, green barriers, environmental labeling system, and low carbon.

Keywords Environment · Low-carbon economy · Textiles and garment · Trade

1 Introduction

After Copenhagen Climate Conference, climate change has aroused global attention. Specifically, environmental issues as well as low-carbon economy, low-carbon life style, and low-carbon consumption now are prevailing, and the low-carbon production is regarded as the major economic engine driving the sustainable growth for various industries. Among China’s major industries, textiles and garment industry is notoriously known as a pollution-intensive industry, with alarming emissions of industrial effluence and waste gas. In the context of low-carbon economy, textile and garment industry is among the “ranking high” industries that call for immediate change in relation to environmental problems. Some foreign countries set up strict environmental protection standards to build green trade

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barrier, which generates certain impact on China's export trade as China's reforming and opening accelerates. At the same time, China's environmental problems are becoming increasingly serious (Zhang 2010). As the pillar industry in China's export trade, textile and garment industry is facing more critical environmental problems. These problems would only become even more paramount as the overall environmental protection awareness increases. This study aims to review and outline the overall condition of environmental problems challenging textile and garment trade, thus providing beneficial basis for finding a way out in dealing with environmental protection issues related to China's textile and garment trade.

Currently, there are two factions according to the environmental problems which are related to international trade: free trade upholders and environmentalists. The upholders of free trade highlight the maximization of individual interests, attributing the world's economic progress to the increment of individual fortune, whose realization is best achieved through the permission of free trade. From their point of views, trade liberalization can benefit the environment and the environmental damage is the consequence of improper environmental policies instead of the trade institution itself. Porter hypothesis is the representative of the belief of this faction (David and MÓNica 2008). In contrast, the environmentalists' top concern is the ecosystem, and they emphasize on the common interests of humans and long-term interests of the individuals. In some cases, objectives of environmental protection are achieved at the cost of immediate interests of individuals. Environmentalists stress the needs to strengthen the rights of member states in trade in formulating environmental policies and propose to address the environmental problems related to trade by means of international environmental agreement and restrictive trade measures. The environmental race-to-the-bottom theory and the pollution haven hypothesis support the claims of the environmentalists.

2 Environmental Behaviors of China's Textile and Garment Industry

Textile and garment industry has long been China's traditional pillar industry as well as typical export-oriented industry, with trade surplus reaching over hundreds of billions of dollars. However, the environmental problems incurred are particularly severe. The pollution caused by textile and garment industry is specifically restraining the development of China's textile and garment trade.

Due to the influence of multiple factors during the earlier development stage of China's textile industry, including low technical level and backward production process and equipment, the environmental pollution that occurred in the production process was spectacularly prominent. At present, the emission of waste gas and water in the production process of textile industry is the major environmental problem (Wu 2011).

Table 1 Industrial waste water emission of textile and garment industry

Year	Total industrial waste water emission of textile industry (ten thousand tons)	Perception of total industrial waste water emission of nation (%)
2004	165,270	8.35
2005	181,417	8.4
2006	211,619	10.17
2007	239,663.1	10.86
2008	245,606	11.3
2009	253,843.2	12.14
2010	257,508.1	12.15

Source China Statistical Yearbook

2.1 Waste Water

Industrial waste water is the No. 1 environmental problem faced by textile and garment industry as one of the several industries characterized by enormous water utilization and industrial waste water emission. Table 1 shows the industrial waste water emission of textile and garment industry in recent years.

It can be seen from Table 1 that the total industrial waste water emission of textile industry was over 1.6 billion tons annually, accounting for 8.35 % of the total industrial effluent emission in 2004 and 12.15 % of the total in 2010. This figure constantly increased on a yearly basis, ranking among the top five in terms of the industrial waste water emission.

2.2 Waste Gas

The waste gas is mainly generated by several ten thousands of boilers used to supply energy to textile and garment industry, which discharge large quantities of combustion waste gas, SO₂, and smoke dust, causing serious pollution. Another major emission source is the production process of the textile industry. Due to its technical defect or incomplete process control, the waste gas emission occurs.

Table 2 shows the increasing emission in waste gas of textile and garment industry during the period 2004–2006. The total waste gas emission peaked in 2006—for 466,000 tons. After that, some improvement took place until 2010.

From the point of trade, with other factors unchanged, the growth rate of export trade volume of textile industry showed the same variation trend with that of the industrial effluent emission. That is, the high growth rate of export trade volume came at the expense of high emission load. In other words, low trade growth rate naturally follows if the emission load is kept at low level.

Table 2 Waste gas emission of textile and garment industry

Year	Total waste gas emission of textile industry (ten thousand tons)	SO ₂ emission (ten thousand tons)	Smoke emission (ten thousand tons)	Dust emission (ten thousand tons)
2004	44.11	30.66	12.22	1.23
2005	46.25	31.15	13.52	1.58
2006	46.6	32.4	13.5	0.7
2007	42.18	28.82	13.2	0.16
2008	41.37	27.58	13.49	0.31
2009	40.38	26.85	13.33	0.2
2010	38.75	25.84	12.77	0.14

Source China Statistical Yearbook

Generally speaking, China's textile export trade is closely associated with the environmental performance. We believe that the environmental regime is the crucial factor in textile and garment trade.

3 Analysis on Environmental Regime in Textile and Garment Trade

As the public awareness of environmental protection keeps increasing, practicability, esthetics, and durability which used to be the major criteria of the products can no longer completely satisfy the consumer requirements. Instead, the customers now have a growing demand on the security and sanitation of the products. As a response, some regimes and measures related to international textile and garment trade are gradually improving and developing. The next section is devoted to the introduction of common regimes and measures adopted in textile and garment trade, including green barrier, environmental indication system, carbon footprint, carbon labeling, and carbon tariff (Jiang et al. 2013).

3.1 Green Barrier

There are mainly two categories of green barrier in textile and garment trade.

The first category of green barrier is set against the environmental impact produced during the entire process, including design, production of garments, the scrapping, and recycling of the garments. For instance, garments only manufactured by enterprises which are certified to ISO 9000 standards are permitted to enter the trade exhibition held by America and European Union. It is also required by European Union that any garments sold in EU countries should meet ISO 14000 standards regarding to the pre-production, manufacture, sales, use, and post-use

treatment. ISO 9000 refers to the quality management system standard and is a collective term of a family of standards. International standard organization (ISO) then issued ISO 14000 series environmental management standard.

The second category of green barrier is set against the negative impact of the products on the security and health of the customers (Lin 2010). That is, the textile and garments manufactured are not allowed to produce negative impact on the health of the customers. For instance, European Union prohibits the use of pesticide containing toxic metallic compounds in cotton planting since 1997; the ban on decabrominated diphenyl ether as a brominated flame retardant (BFR) in textiles, which came into force on January 1, 2010, is stipulated in the amendment to eco-label.

Hong Kong (China), Japan, America, and European Union have long been the four major markets for China's textile and garments export. A growing environmental and security concern in these countries directly results in increasingly sound and stringent green trade barrier system and standards. The implementation of green trade barrier system involves all of the aspects of textile and garment industry, from the production and sales to the scrapping and after-use process. And high expenses of equipment and certification lead to increased cost, posing great challenge to China's textile and garment export trade.

3.2 Environmental Indication System

Environmental indication system for textiles consists of two forms, i.e., indication system for the life cycle of textiles and single-aspect environmental indication system (Li 2013). The former, also known as eco-indication system for textiles, requires that every aspect in the textile trade, including research and development, production, transportation, use, and recycling, brings no damage to both the environment and human health. The environmental indicator is only issued when all of the environmental protection requirements are met. Single-aspect environmental indication system reflects the environmental impact of textiles in a specific aspect, e.g., "no damage to human skin," rather than provide information regarding the relationship of textiles to other environmental aspects. The second system does not require complex and strict analysis as the first one does, and the cost incurred by the obtainment of this certification for the manufacturers is lower.

Environmental indication system produces both positive and negative impacts on China's textile and garment trade. The positive impact is that the environmental indication system can increase the brand awareness of the enterprises which have been certified and urge the enterprise to save resources, recycle the waste products, and reduce the management cost. As a consequence, the product structure of China's textile and garment export can be adjusted and the international competitiveness of the textiles will be enhanced, with better capacity to circumvent the green trade barrier set by the developed countries. The negative impact includes the increased cost for the export-oriented enterprises and the weakened price advantage

of China's textile and garment export products, which might impede the entry of China's textile and garment products into the international market.

3.3 Carbon Footprint, Carbon Labeling, and Carbon Tariff

With the global expansion of the influence of low-carbon economy, "low carbon" has also become one of the mainstream business values in international supply chain, which gives rise to the conceptualization and implementation of carbon footprint, carbon labeling, and carbon tariff (Wen 2013).

1. Carbon footprint

Carbon footprint refers to the influence of one's resources awareness and behaviors on the natural world. To put it simply, it is the carbon consumption of individuals and enterprises (Sun et al. 2011).

However, the carbon footprint during the entire life cycle of the textiles is difficult to calculate at present. Since many uncertain factors are involved in the carbon footprint of plant fibers during its planting and growth and the life cycle and washing methods for the textiles are diversified, an effective method for calculating the carbon footprint during the use and recycling of the products is still unavailable. Additionally, as the chain from agricultural production to industrial production and to the use and discarding of the products is particularly long, the calculation precision of the carbon footprint of the final products is hard to guarantee. In spite of this, the concept of carbon footprint along with its calculation method which is being constantly improved provides a solid technical support for the sustainable development of textile and garment industry.

2. Carbon labeling

Carbon labeling refers to the label of quantitative index of the greenhouse gas emissions during the entire production process of the products on the product label, with the aim to mitigate climate change, reduce greenhouse gas emissions, and to promote the low-carbon emissions technology. In this way, the customers are informed of the carbon information of the particular product that is purchased. Carbon labeling is mainly used for export products.

So far, China has not yet adopted carbon labeling, and the researches and reports relating to carbon labeling for textile and garment industry are rare. Most of the textile spinning enterprises have weak awareness in this respect and are rather passive. However, the external pressure of low-carbon economy is now growing for the textile and garment enterprises, and the irreversible trend is that the textile spinning, printing and dyeing, and garments enterprises in developing countries would be required by developed countries to attach carbon labeling on the products, to specify the carbon emissions of the products during the entire production process. Carbon labeling would become an effective approach to judge whether the products meet the ecological and environmental requirements in the era of low-carbon economy (Wu et al. 2011).

3. Carbon tariff

Carbon tariff refers to the special tariff imposed if the products fail to meet the standards set by the import countries relating to energy saving and emission reduction. As low-carbon economy is an irreversible trend, carbon tariff is also an avoidable reality. According to the report released by the World Bank, if the carbon tariff is to be implemented on the international market, China's manufacturing industry would be confronted with a tariff of 26 % on average, and as a consequence, China's export volume would drop by 21 %. Or if the carbon tariff is implemented by America and Europe, the new trade barrier established would directly impair the global competitiveness of China's textile and garment export. A more harsh result will be that more than 20 million workers in textile and garment industry would be faced with unemployment.

The implementation of carbon tariff is undoubtedly a lethal blow to China's textile and garment industry. Increased cost combined with other adverse factors would result in the industry transfer of some foreign textile processing enterprises into countries with lower costs. If that is exactly what happens, the yearly decreasing trend for China's textile industry is unavoidable. Moreover, as an additional tariff, carbon tariff would be another disaster for the recession of China's textile and garment industry.

4 Conclusion and Prospect

Textile and garment industry is China's traditional pillar industry in national economy which is closely associated with people's livelihood, and it is also the industry with significant competitive advantages on the international market. On one hand, textile industry is the typical pollution-intensive industry, whose expansion in production scale as a result of trade growth has brought enormous damage to China's environment. On the other hand, the succession of environmental trade barrier set by foreign countries raises new challenges to China's textile and garment export. The contradiction between economic growth and environmental deterioration is becoming more prominent than ever during the production of textile products.

The major reason for numerous trade restrictions encountered by China's textile and garment export trade is that China's textile and garment products cannot satisfy the environmental and health requirements raised by foreign countries. Green trade barrier, environmental indication system, and carbon emission can be used as subterfuges by developed countries to turn down China's products. However, the environmental problem is indeed the un-negligible problem troubling China's textile and garment trade. To better resolve this problem, we should attempt to gear our awareness to international conventions while internationalizing the economic development. It is the government's responsibility to promote the understanding of environment-related problems and to introduce advanced measures from the foreign

countries, so that these measures can be adapted to China's conditions. The environmental problems should be analyzed from a long-term perspective, and the attempt to increase the environmental standards of China's products to the internationally accepted level should be made. The strict legislation is also needed to avoid some international disputes, so as to eliminate the barrier to China's textile and garment export trade.

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