



China Environment Forum



Woodrow Wilson
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for Scholars

This brief is part of a series under the China Environment Forum's Cooperative Competitors: Building New Energy and Water Networks Initiative, made possible by support from the Blue Moon Fund, Rockefeller Brothers Fund, U.S. Agency for International Development, and Vermont Law School

Making Green from Green – How Improving the Environmental Performance of Supply Chains Can Be a Win-Win for China and the World

By Ray Cheung

Managers and owners of Hanjiang Dafu and Putian Hanjiang shoe companies in Fujian Province thought they were being environmentally responsible by simply paying the fines the local environmental protection bureau had imposed on them for excessive air and wastewater pollution. These two Chinese shoe manufacturers, who employ over 3,000 workers to produce leather boots for international buyers, decided to pay the penalties rather than rectify the problem because it was cheaper than installing the necessary clean-up equipment. However, their actions, while legal, were neither acceptable to the Chinese public nor to their international buyers. Using the public disclosure of the companies' environmental records, Chinese nongovernmental organizations (NGOs) notified the shoe manufacturers' key customer—Walmart—of these continued pollution violations. In response, Walmart demanded that their suppliers solve their pollution problem if they wanted to continue to do business with the multinational. Within a year and under the supervision of the Chinese NGOs the companies cleaned up their air and wastewater emissions by utilizing the municipal environmental cleanup facilities. To this day, Hanjiang Dafu and Putian Hanjiang maintain their relationship with Walmart.



The case of Hanjiang Dafu and Putian Hanjiang shoe companies highlights how Chinese suppliers are improving environmental performance as a result of the green supply chain policies of their international buyers and growing domestic pressure from the Chinese government policies and civil society organizations. Some of these Chinese manufacturers have been able to reduce their environmental impacts by adopting practical and low-cost measures and receiving technical assistance from their multinational buyers and NGOs. However, Chinese suppliers continue to face significant barriers to improving environmental performance—most challenging are the high costs of such green investments and the lack of financial incentives from their buyers. As a result, only a minority of Chinese firms are becoming green supply chain suppliers.

WHAT ARE GREEN SUPPLY CHAINS?

The “greening” of a supply chain is the management process by which manufacturers, buyers, and retailers reduce their environmental impact throughout the value chain. It involves all stages, including product design, material selection, manufacturing process, transportation of goods, and the recycling and disposal of used goods.¹ Environmental goals that can “green” a company’s supply chain include:

- Reducing energy, water, and natural resource consumption.
- Increasing clean and renewable energy use.
- Decreasing waste production and pollution emissions.
- Improving waste byproducts treatment.

Many multinational corporations from various sectors are adopting green supply chains, which could have a big influence on Chinese suppliers.² For example, retailer Walmart seeks to be supplied 100 percent by renewable energy, create zero waste, and sell products that sustain natural resources and the environment.³ Manufacturer GE seeks to improve energy intensity by 3 percent by 2012 from its 2004 baseline level and reduce water use by 30 percent by 2015 from its 2006 baseline.⁴ The shipping company UPS aims to reduce its carbon emissions per one ton of cargo flown by 20 percent from 2005-2020.⁵ All three companies have significant operations in China.

WHY ADOPT GREEN SUPPLY CHAINS?

Market demand, regulatory pressure, and economic benefits are the principal drivers behind multinational corporations adopting green supply chain strategies.

Market Demand: Consumers across the globe increasingly want to purchase environmentally friendly products. As a result, companies are seeking to capture this market opportunity by adopting green supply chain policies. Boston Consulting Group in 2009 found in a survey of more than 9,000 U.S. consumers that 73 percent considered it important that companies have a good environmental record and a majority of those respondents were willing to pay a premium of 5 percent or more for green products.⁶

Regulatory Pressure: Governments in the large consumer markets of the United States and Europe prohibit products made from environmentally destructive materials. For example, the 2008 Amendments to the Lacey Act in the United States established severe penalties, including forfeiture of goods and vessels, fines, and imprisonment, for companies and individuals who import and export all plant-made products (e.g., furniture, paper, and lumber) that are illegally sourced from old-growth or tropical rain forests either in the United States or overseas.⁷ As a result, furniture companies and industry groups, including IKEA and the International Wood Products Association, are working with international NGOs to find ways to reduce illegal logging and adhere to the law.⁸ China notably is the world’s [leading importer of timber and exporter of wood furniture](#).⁹

Economic Benefits: Rising energy costs and raw material prices are increasing many companies’ operating costs. A study by the World Resources Institute and the global consultancy AT Kearney estimated that worldwide prices of oil, and natural gas could increase 22 and 50 percent respectively by 2018 from a 2008 baseline. The predicted price increases were driven by a scenario that included more stringent climate change regulations and a growing water scarcity in key agricultural regions.¹⁰

HOW THE GREEN SUPPLY CHAIN PUSH IMPACTS CHINESE SUPPLIERS

The impact of green supply chain strategies by multinational corporations on Chinese suppliers will be substantial



because China is the leading global exporter—accounting for as much as 10 percent of the world’s total exports.

Chinese suppliers that are unable to meet the green supply chain standards of their multinational buyers may not be able to continue to sell to such firms. For example, Walmart announced in 2008 that it will no longer purchase from Chinese suppliers with poor environmental performance records and its suppliers must provide certification of their compliance with China’s environmental regulations. Walmart also conducts audits on factory performance with regards to specific environmental criteria, such as air emissions, water discharge, management of toxic substances, and hazardous waste disposal.¹¹ These actions are significant as Walmart procures from some 10,000 Chinese suppliers. GE’s Supplier Responsibility Guideline Program also requires all of its suppliers to be in compliance with laws and regulations that protect the environment and to be subject to onsite inspections.¹²

In addition to such international pressure, Chinese suppliers are facing scrutiny about their environmental performance from the Chinese government and NGOs. To achieve its 11th 5-year plan of reducing pollution emissions by 10 percent and energy intensity per economic output by 20 percent, the Chinese State Council directed key government agencies, including the National Development and Reform Commission, the Ministry of Finance, and the Ministry of Environmental Protection, to prohibit tax incentives, restrict exports, and raise fees for energy intensive and polluting industries, such as steel, cement, and minerals extraction.¹³ Since 2007, the People’s Bank of China and the Ministry of Environmental Protection have required local Chinese banks to implement the Green Credit program, which aims to prevent loans to Chinese firms with poor environmental performance records.¹⁴ On a local level, governments have developed preferred supplier lists for companies producing environmentally friendly products for their purchasing needs.¹⁵ While the green credit programs have not been widely implemented by Chinese banks, these initiatives highlight the strong commitment of the Chinese government to achieve its environmental goals through diverse measures.

A handful of Chinese NGOs are actively monitoring the environmental performance of Chinese suppliers and exposing polluting suppliers to the domestic and international media with the aim of pressuring international buyers to stop purchasing from polluting firms. Since 2004, the [Institute of Public and Environmental Affairs](#) (IPE) has established the China Water Pollution Map, an online national pollution monitoring tool that links publicly available data on local pollution infractions to specific company names and locations. The map and database contains over 70,000 specific citations (as of September 2010) of companies violating emission standards and other environmental rules in China.

IPE also established the Green Choice Alliance (GCA), a consortium of Chinese environmental experts and NGOs representing local community members, to work with multinational buyers to independently track the compliance records of their Chinese suppliers and to facilitate corrective actions and public disclosure. Multinational buyers such as Nike, Walmart and Unilever are currently working with GCA and using the China Water Pollution Map to monitor and manage their environmental sourcing practices in China. As a result, more than 290 Chinese suppliers who were cited as environmental violators have received public and business pressure to take corrective measures and disclose their environmental performance to the public.¹⁶

International NGOs are also actively involved in monitoring procurement policies of both Chinese manufacturers and multinational buyers. Greenpeace China regularly investigates the environmental conditions of highly polluting industries in specific regions of China, such as the textile industry in Guangdong Province and the logging industry in Yunnan Province.¹⁷

POTENTIAL ENVIRONMENTAL BENEFITS OF GREEN SUPPLY CHAINS

If successful, the environmental benefits to China from green supply chain procurement could be significant. Chinese exports are estimated to account for as much as 25 percent of China’s total greenhouse gas emissions, according to Chinese government officials.¹⁸ In addition, the majority of Chinese exporters are privately owned small and medium enterprises (SMEs), which account for more than 70 percent



of China’s export economy.¹⁹ China’s more than 42 million SMEs are the country’s highest energy consumers and worst polluters. According to Chinese government researchers, export products made by SMEs compared to those made by larger Chinese firms consume 30 to 60 percent more energy.²⁰ Green supply chain procurement could help improve the environmental performance of the SME sector, one of main sources of air and water pollution in China. Chinese SMEs are privately owned enterprises where staff numbers are less than 2,000, annual revenues are under 300 million Yuan, or with total assets under 400 million Yuan.²¹

HOW ARE CHINESE FIRMS ABLE TO MEET THE GREEN SUPPLY CHAINS REQUIREMENTS?

In the face of international and domestic pressures, some Chinese suppliers are actively adopting measures to improve their environmental performance. According to the report *Greening Supply Chains in China: Practical Lessons from China-based Suppliers in Achieving Environmental Performance* by the World Resources Institute and IPE, some China-based suppliers who were once cited as violators of environmental regulations have reduced their water and air pollution by adopting practical low-cost measures. These include replacing the manufacture of highly polluting products with environmentally friendly alternatives and working with local government to expand the use of existing environmental infrastructure, such as wastewater treatment facilities. Through such measures, these suppliers were able to come into compliance with environmental regulations, reduce their operational costs and maintain their relationship with multinational buyers. The core drivers for these improvements were that the companies’ environmental performance was actively monitored by NGOs and that the suppliers received support from independent third-party entities, such as a professional environmental consulting firm, in identifying problems and implementing the environmental solutions.²² A summary of some of the lessons drawn from case studies in this WRI/IPE report is presented below in Figure 1.

Figure 1. Practical Management Lessons from the Case Studies

Situation	Action Taken	Challenge Resolved
Identify Environmental Problem	Engage key stakeholders—the government, customers and citizen groups—to identify environmental problems and find solutions.	Receive input to create solutions that reduce the costs of environmental investments; gain financial support for improvements; and strengthen business relationships with buyers.
	Use critical and professional feedback from third-party stakeholders to break a “business as usual” mindset.	External feedback and criticism presents an opportunity to drive structural and operational changes that can improve a firm’s environmental performance and its operational efficiencies in both the immediate and long term.
Implement Solution	Evaluate opportunities to replace the manufacture of highly polluting products with environmentally friendly alternatives.	New environmentally friendly products may reduce environmental investment costs, increase margins and establish a closer purchasing relationship with buyers.
	Leverage the demands of international business and the threat of local job losses to command local government support for improvements in environmental performance.	Local government support can help lower the cost of a supplier’s environmental investment when a strong case is made that support will improve the economic development of a particular region.
	Work with governments to optimize the use of existing local environmental infrastructure.	Connection to local public environmental waste treatment infrastructure can significantly reduce the supplier’s environmental investment costs and lead to significant improvements in environmental performance.
Monitor Progress	Establish open and transparent communication about environmental performance with local communities and public interest groups.	Open dialogue with the local community and environmental organizations combined with public disclosure of environmental performance can build trust, rehabilitate a company’s reputation and create a more favorable operating environment.

Source: Ma & Cheung, et al. (2010). “Greening Supply Chains in China: Practical Lessons from China-based Suppliers in Achieving Environmental Performance.” *WRI Working Paper*.



In addition, multinational buyers such as Walmart, GE, and Nike, are partnering with international NGOs to provide technical assistance to their Chinese suppliers. For example, the U.S.-based Institute for Sustainable Communities, with support from multinational buyers like Walmart and GE and donor agencies including USAID, has established the Environmental Health and Safety Academy, which trains Chinese suppliers in environmental management techniques.²³ The Environmental Defense Fund is working with Walmart's Chinese-based suppliers to improve their energy efficiency by providing trained engineers to identify and implement energy saving solutions.²⁴

CHALLENGES FOR GREEN SUPPLY CHAINS IN CHINA

Despite the growing number of NGO and multinational company initiatives, the scope of green supply chain initiatives in China remains limited. For example, Walmart's goals to improve the energy efficiency of its Chinese suppliers are focused only on its top 200 factories.²⁵ In addition, most suppliers do not voluntarily improve their environmental performance, but will only take action when they are pressured from their buyers, NGOs, and the news media. In addition, Chinese suppliers are reluctant to adopt environmental improvements to their operations that require expensive long-term investments.²⁶ Key issues that prevent Chinese suppliers from improving their environmental performance include:²⁷

Extended green investment payback: Though improving resource consumption provides long-term cost savings, the payback for making such investments can take as long as three years, which is difficult for many Chinese suppliers to afford because of short-term buyer contracts.

Lack of financial incentives from green supply chain buyers: Large multinationals are often unwilling to commit to long-term contracts for Chinese suppliers, which discourages suppliers in making environmental performance investments.

Rising operational costs: Rising resource and labor costs also affect Chinese suppliers. Wages in factories have increased on average by 25 percent each year since 2007. Suppliers, discouraged by these and other rising costs, often

choose not to make environmental investments that can raise operating costs even more.

Limited access to finance: Most Chinese suppliers are SMEs and have poor access to traditional financing means such as bank loans. As less than 10 percent of all bank lending in China, Chinese SMEs thus do not have access to the capital required for making environmental investments.²⁸

Intense domestic and global competition: The industries in which Chinese suppliers compete include thousands of domestic and international firms. The resulting constant pressure on Chinese SMEs to cut costs often includes cutting back on environmental protection investments, if only to remain in business.²⁹

One potential consequence of green supply chain strategies is that many Chinese suppliers could choose not to sell to multinational buyers with sustainability procurement requirements, so as to avoid making the required environmental improvements. The possible implications of such a scenario for multinational buyers is that they could lose a reliable and diverse source of suppliers who can make high-quality and low-cost products in an environmentally sustainable manner. While many multinational buyers can source from suppliers in other countries, the developed logistics infrastructure of China's manufacturing base continues to provide distinct advantages to multinational buyers. As a result, it would be difficult for many multinational buyers to procure from outside of China. In addition, China is one of the largest consumer and retailing markets for these international firms. It would not be economically or politically practical to meet this growing demand with foreign-made goods. Thus, there is an incentive for multinational buyers with green supply chain initiatives to help many of their Chinese suppliers meet the requirements.

MOVING FORWARD GREEN SUPPLY CHAINS IN CHINA

Punitive measures, such as the loss of business from multinational buyers and public pressure, have proven to be important drivers for raising the environmental standards of China's suppliers. However, the scaling of green supply chain initiatives in China, in which large numbers of Chinese manufacturers are incentivized to voluntarily make



environmental investments and improve their performance requires the establishment of a clear set of business incentives from multinational buyers,³⁰ such as:

Long-term purchasing contracts: Multinational buyers could offer long-term purchasing contracts for Chinese suppliers with high levels of environmental performance. This would enable Chinese manufacturers that invest in structural environmental improvements in their operations to earn an acceptable payback for their investments.

Access to capital: Multinational buyers could work with their Chinese suppliers with high levels of environmental performance to secure financing on favorable terms from banks to improve their operations. Such assistance would lower the operational costs of the Chinese suppliers and create a clear financial incentive for suppliers to improve their environmental performance.

Partnerships with local capital providers: Multinational buyers could work with local Chinese banks to provide credit to Chinese suppliers who meet high environmental performance standards. For example, the buyers and their international partners can train banks to develop the proper credit and performance risks metrics to accurately assess the credit-worthiness of Chinese suppliers who secure long-term purchasing contracts from green supply chain buyers. This would encourage more banks to lend to suppliers who improve their environmental performance.

FINAL THOUGHTS

Chinese suppliers continually prove that once they put their energies into achieving a business goal, they are usually able to achieve it better, faster, and cheaper than their international competitors. These energies could also be devoted to driving improvements in the environmental performance of Chinese industry. Key to catalyzing such a supply chain greening would be for multinational buyers to work with their Chinese suppliers to create the correct incentive structures to drive environmental improvements in a scalable manner. By doing so, Chinese firms and their international partners can contribute to sustainable economic development in China and around the world.

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¹ For more information about green supply chains, visit the U.S. EPA Green Supplier Network:

<http://www.epa.gov/greensuppliers>.

² For more information about multinational firms adopting green supply chains initiatives see the Sustainability Consortium:

<http://www.sustainabilityconsortium.org>.

³ *Walmart 2010 Sustainability Report*. (2009). [Online]. Available:

<http://walmartstores.com/sustainability/7951.aspx>.

⁴ *GE Ecomagination 2009 Report* (2009). [Online]. Available:

<http://ge.ecomagination.com/report.html>.

⁵ *2009 UPS Corporate Sustainability Report*. [Online]. Available:

<http://www.responsibility.ups.com/Sustainability>.

⁶ Boston Consulting Group. (2009, January). *Capturing Green Advantage for Consumer Companies*.

⁷ World Resources Institute. (December 2009). "Factsheet: Are You Ready for the Lacey Act."

⁸ See Forest Legality Alliance: <http://www.wri.org/fla>.

⁹ For more information on China's forestry and timber sector see Ma Tianjie (2008). "Interconnected Forests: Global and Domestic Impacts of China's Forestry Conservation." [Online]. Available: http://www.wilsoncenter.org/topics/docs/forestry_aug08.pdf.

¹⁰ World Resources Institute and A.T. Kearney, Inc. (2008, November). "Rattling Supply Chains: The Effect of Environmental Trends on Input Costs for the Fast-Moving Consumer Goods Industry."

¹¹ Walmart. (October 2010). "China Sustainability Summit Fact Sheet."

¹² General Electric. (2010, October 22). "GE Supplier Responsibility Guideline (SRG) Program." Presentation. Beijing

¹³ *China Daily*. (2010, October 9). "China expected to achieve green goal on schedule: Minister."

¹⁴ *Xinhua*. (2008, Feb 13). "China implements strict loan policy to curb polluting industries."

¹⁵ FutureGov. (2009, April 28). "China's local govts embrace green procurement."

¹⁶ For more information about IPE and the Green Choice Alliance see: <http://www.ipe.org.cn/>.

¹⁷ See Greenpeace reports on China's water pollution (http://water.greenpeace.org.cn/china_water_crisis.php?page=the_job); textile pollution in Guangdong (<http://www.greenpeace.org/eastasia/news/textile-pollution-xintang-gurao>); and forestry campaigns in Yunnan (<http://www.greenpeace.org/eastasia/campaigns/forests>).

¹⁸ *Reuters*. (2009, March 16). "China wants importers to cover some emission costs."

¹⁹ *Xinhua*. (2009, August 31). "Government pledges strong support for innovation-based SMEs."

²⁰ Peng Fei. (2008, May 23). "Implementing Long Term Strategic Energy Efficient Goals and Measures. State Council Development Research Center. [Online]. Available: http://www.drcnet.com.cn/DRCNet.Channel.Web/expert/showdoc.asp?doc_id=199429

²¹ Ibid.

²² Ma Jun, Ray Cheung, et al. (October 2010). "Greening Supply Chains in China: Practical Lessons from China-based Suppliers in Achieving Environmental Performance." *WRI Working Paper*. World Resources Institute, Washington, DC.

²³ For more information about ISC's Environmental Health and Safety Academy see: http://www.iscvt.org/where_we_work/china/article/ehs_academy.php.

²⁴ For more information about Environmental Defense Fund's partnership with Walmart see: <http://www.edf.org/page.cfm?tagID=1458>.

²⁵ Walmart. (2010) China Sustainability Summit Fact Sheet.

²⁶ BSR. (2010). *Unlocking Energy Efficiency in China: A Guide to Partnering with Suppliers*.

²⁷ This section draws heavily from Ma Jun, Ray Cheung, et al. (October 2010).

²⁸ *Xinhua*. (2009, January 30). "China gropes for solutions to SME financing difficulties."

²⁹ Ma, Jun, Cheung, Ray, et al. (October 2010).

³⁰ Ibid.