



Sustainable Development and China: Recommendations for the Forestry, Cotton and E-products Sectors



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Sustainable Development and China: Recommendations for the Forestry, Cotton and E-products Sectors

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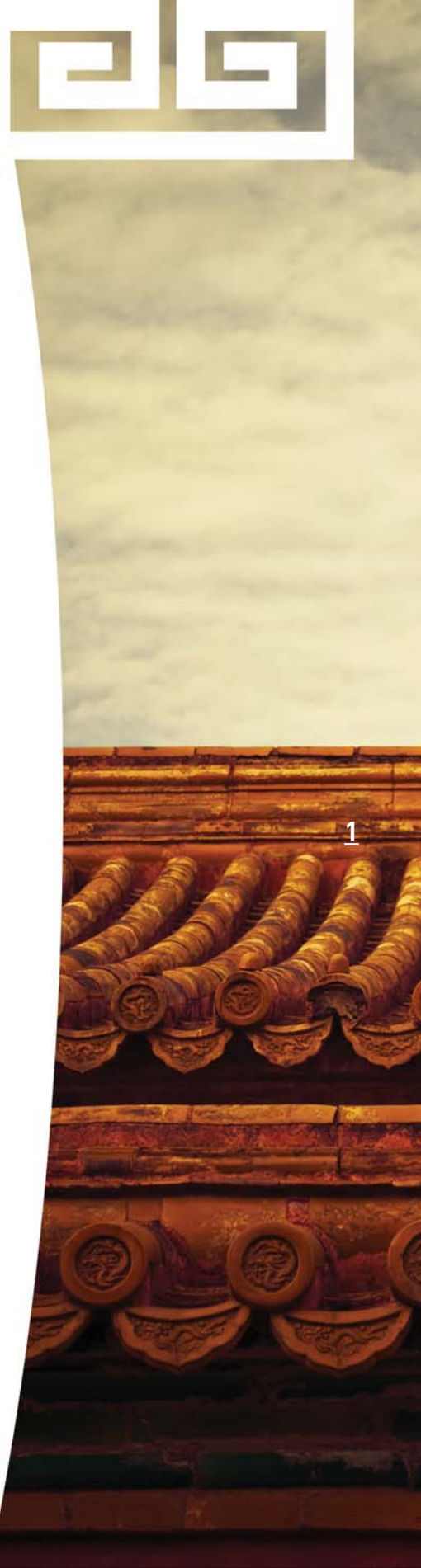
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Introduction


The Chinese government has set for itself the objective of attaining HeXieSheHui—or “harmonious society”—by 2020. Such an ambitious goal would be difficult for most nations to consider within such a short time frame even under normal conditions—and China’s rapidly changing role in the global economy is anything but normal. With the national GDP averaging more than nine per cent per annum since 1999, and with predictions that rapid growth will continue despite the global economic recession, China is faced with the rare opportunity of being able to plan on, and around, unprecedented and unusually high economic growth.

The expansion of the Chinese economy over the past two decades has been attributed to its opening economy, and to China’s entry into the World Trade Organization (WTO) in 2001. Since it joined the WTO, trade between China and the rest of the world has grown from US\$500 billion to US\$2.17 trillion. Over the same period, China’s merchandise exports have grown from US\$266 billion to US\$1.2 trillion in 2007. China is now the world’s largest producer of seafood, stainless steel, wood panels and laptop computers. It is the largest exporter of shoes, furniture and mobile phones. It is the world’s largest importer of cotton, copper and soybeans and the largest consumer of grain, meat and steel. China could well be the world’s largest economy by 2030.

Growth in China’s trade has been accompanied by a massive increase in the social and environmental impacts of the Chinese economy both in China and abroad. On its path to becoming the world’s most important economic player, China has also become a key factor in determining the planet’s overall well-being—it is the largest producer of goods, but is also recognized as being one of the largest contributors to global environmental degradation. China was reported to be the world’s largest consumer of coal in 1999 (International Energy Agency, 1999) and has been identified as the world’s second largest source of greenhouse gases (United Nations Framework Convention on Climate Change, 2005, 2008).

As the impact of China’s economy intensifies, the rest of the world has become increasingly concerned and vocal about the results. And while this concern is necessary given the severity and urgency of the social and environmental challenges currently facing the planet, it would be folly to expect, or even request, a purely “Chinese solution” to the world’s problems. As the world’s largest “middleman” in the global economy, China’s responsibility—and capacity—must be shared with the other nations and stakeholders who produce, consume and benefit from the supply of goods that pass to or through China. China’s burden is definitively a shared responsibility. However, as China’s economy and importance grows, so does its obligation to help deal with the world’s environmental challenges.

¹ The “China and Global Markets” project was built from an awareness of the need to establish more targeted supply-chain-oriented policy responses to the national and international social and environmental challenges resulting from China’s rapid economic expansion. The fundamental starting point for the project was a recognition that international supply chains inherently entail international responsibilities and that, as a result, shared strategies would need to be sought to effectively address the global impacts of China’s economic activity. The Global Commodity Chain Sustainability Analysis (GCCSA) research methodology links social and environmental impacts with private and public decision-making authority along international supply chains. By building on actual social and environmental challenges, as well as actual economic and political decision-making mechanisms, the GCCSA has the potential to not only provide improved policy-making efficiency, but also to operate as a framework for empowering individuals and institutions in the direct promotion of improved sustainability outcomes.



The Chinese government has, as part of its policy efforts towards ensuring social harmony, recognized the growing urgency of its impacts both domestically and internationally. Over the past decade, the Chinese government has enacted a number of major environmental regulations, including the Energy Conservation Law (1998), the Clean Production Law (2003) and the Renewable Energy Law (2006). Moreover, in 2006, China announced a plan to spend US\$175 billion on protecting the environment. The main challenge facing the Chinese government at present is not one of recognition of the sustainability challenges it faces, but one of building the appropriate infrastructure to deal with them.

Moving from acknowledgement and legislation to actual impact will require an expansive implementation network that extends well beyond the borders of China itself. Global supply chain cooperation across private and public stakeholders offers a concrete vehicle for managing sustainability impacts related to China's production, consumption and trade. Cooperation with the international community on environmental issues is not new for China. As signatory to more than 50 international environmental conventions and 38 bilateral environmental conventions, China has a long history of cooperation on environmental matters.

In this spirit, China has also been working directly with the international community through the China Council for International Cooperation on Environment and Development (CCICED) since 1992 with a view to seeking joint solutions to the social and environmental challenges resulting from China's growth.

In 2006—building on initial guidance from the CCICED—the International Institute for Sustainable Development (IISD) and the Chinese Ministry of Commerce (MOFCOM), with the support of the Swiss State Secretariat for Economic Affairs (SECO), formed an international taskforce with the objective of identifying concrete and strategic opportunities for building more sustainable global supply chains in selected sectors of particular importance to China.¹ Based on the relative economic importance and their representative diversity in the nature of the role played by China in global supply chains, the international taskforce identified the forestry, cotton and E-products sectors as initial areas for joint investigation.

The core results and recommendations of the research led by the international taskforce are presented on the following pages.



Towards a Sustainable Forestry Sector

Global forest trade was valued at US\$327 billion in 2004, accounting for 3.7 per cent of all global trade. Developing countries account for the majority of supply, while developed countries account for the majority of consumption. China straddles this stereotype, playing the role of an important consumer as well as exporter of wood products. Although per capita consumption of industrial wood in China is small compared to industrialized countries—one-seventeenth that of the U.S.—China's overall wood market has a large footprint both at home and abroad; and the market is expanding rapidly.

Between 1997 and 2007, China's imports of timber products grew by 300 per cent, from 40 million cubic metres to 120 million cubic metres. Cellulose used for local paper product consumption makes up a majority (65 per cent) of wood imports into China. The remainder is used in timber products. China's total wood product exports amounted to roughly 40 million cubic metres in 2007. China is the largest producer and exporter of wood panels and furniture.

The growth in China's wood trade can be attributed to several factors including:

- rapid growth of the Chinese economy and improvement in living standards;
- lack of domestic forestry resources;
- stringent domestic forest protection programs;
- strong demand for wood products on international markets;
- supportive government policies for wood remanufacturing; and
- inexpensive capital and labour.

The rapid growth in timber imports to China is driving expansion in production across its developing country supply base. Although Chinese supply currently comes from more than 80 source countries (up from 54 in 1997), representing a wide variety of production systems and capacities, production growth is principally located in countries with high levels of poverty and inadequate governance, capacity and infrastructure for sustainable production.

The dependence of China on countries with poor forestry enforcement and management mechanisms renders it extremely vulnerable to association with highly negative social and environmental impacts. Chinese demand—whether for domestic use or for re-export—is often the most significant factor driving the growth of production and exports in China’s principal supplying countries. In specific cases, there is evidence that Chinese demand is putting negative pressure on the environment ranging from reduced carbon sequestration capacity, reduced biodiversity, increased soil erosion, flooding, desertification and overall exposure to climatic events. Deforestation rates of most of its principal source countries are officially above .5 per cent (Malaysia, .65 per cent; Indonesia, 1.91 per cent). Weak forest management also facilitates illegal logging and trade, a factor that has led to China becoming the single most important importer of illegally logged timber. Associated social impacts include displacement of forest-dependent people from their land and livelihoods, and sub-standard labour practices.

China’s timber imports come principally from Asia (more than 70 per cent). Africa, which at three per cent of total imports, still represents only a small portion of total overall Chinese trade, is nevertheless one of the fastest growing sources of Chinese forest product imports. The rapid growth of Chinese consumption of timber exports from developing countries has established China as the single most important investor in the development and expansion of many foreign timber supply chains.

Mozambique, with 85 per cent of its total production going to China, serves as a case in point. Between 2001 and 2006, the value of timber exported from Mozambique to China grew more than tenfold from US\$1.5 million to US\$19 million. It has been reported that forestry and labour laws are persistently being ignored by the majority of logging firms and sawmills operating in the country. Shipping volumes are frequently underreported and shipping is tainted by corruption and bribery. Mozambique’s official deforestation rate is .26 per cent per annum, but actual numbers are likely significantly larger. In addition to allowing generalized over-logging, the forest industry in Mozambique has poor worker protections—indeed, most workers in the sector do not even have basic contracts. The dominant presence of Chinese business interests operating in Mozambique presents a special opportunity to facilitate the implementation of sustainable forest management practices within the country.

The heavy dependency of foreign timber producers upon Chinese markets places China in a strategic position of influence. Chinese imports account for more than 40 per cent of Russian production; 50 per cent of Indonesian production; and more than 75 per cent of production for Tanzania and several other East African countries. Beyond its considerable market authority, Chinese companies have a growing presence on the ground across its international timber supply base. This context, combined with the fact that the majority of Chinese imports remain in China for domestic consumption, suggests that China bears a clear responsibility for ensuring that its foreign timber supplies are sourced from sustainable sources—if for no other reason than to ensure the longevity of its supply.

At the same time, with at least one-third of Chinese imports being re-exported to supply foreign markets through major furniture and materials distributors in North America and Europe, it is also clear that the international community will have a role to play in building coherent supply chain policies and investments to enable appropriate management and decision-making at the production level for sustainable forestry. Multi-stakeholder cooperation in the development and implementation of internationally recognized sustainability standards (such as the Forest Stewardship Council) offers a particularly promising shared vehicle for leveraging public and private sector investment and support for sustainable forest management enterprises.

China has a clear interest in continuing to import timber, but only to the extent that such imports serve to further supplement and reinforce the Chinese supply base. Meanwhile, the concentration of purchasing power within China itself and across global timber product supply chains, provides a strong foundation for ensuring substantial and beneficial change across its developing country supply base.

Based on our more detailed analysis of the global timber supply chain, four key strategies offer a basis for China in promoting the sustainability of its forestry supply chains:

- establishment of stronger monitoring and enforcement of timber production and trade to prohibit illegal sources;
- stimulation of better forest management at the national level in supply countries;
- stimulation of better and more transparent business practices among wood product traders; and
- stimulation of better forestry practices through improved supply chain management.

Building on this basic framework, we offer the following recommendations for the Chinese government, as part of a larger international effort, to improve the sustainability of timber production across its timber supply base.





2.1

Forestry Recommendations

RECOMMENDATION 1: Build Capacity for Sustainable Forest Management:

Provide targeted supplying countries with financial and technical aid to build forest governance and management capacity by working with, and investing in, local public sector forest reform and stakeholder engagement processes, management infrastructure and production capacity. Focus on building source country capacity for both legal compliance as well as compliance with internationally recognized standards for “sustainable management practice” (for example: Forest Stewardship Council; Programme for the Endorsement of Forest Certification; Sustainable Forest Initiative).

RECOMMENDATION 1.1: Build Sustainable Forest Management within the Sino-African Development Fund: Explicitly allocate a portion of its Sino-African Development Fund to the improve forest governance, capacity and implementation of sustainable forest management practices.

RECOMMENDATION 1.2: Leverage Regional Partnerships for Sustainable Forest Management: Enter into new national or regional partnerships aimed at improving sustainable forest management on the ground. In particular, prioritize investment in Russia and West and Central Africa. Increase investment in, and promotion of, the Congo Basin Partnership and the Asian Forest Partnership.

RECOMMENDATION 1.3: Join International Efforts in Implementing Capacity Building: Collaborate with the International Tropical Timber Organization (ITTO) in the identification of needs and project implementation through the Bali Partnership Fund, FLEGT Programme and/or other bilateral funding mechanisms. Become a proactive participant in, and contributor to, the United Nations Forum on Forests as a means to seeking joint international implementation strategies.

RECOMMENDATION 2: Build Markets for Sustainable Forest Products:

Adopt a proactive role in ensuring the sustainable management of global forest product chains by improving market transparency and encouraging the growth of markets for sustainably produced forest products.

RECOMMENDATION 2.1: Improve Information Base on Forest Sector Sustainability:

Establish a mechanism for monitoring, reporting and disseminating information on the social and environmental impacts of China’s forest industry, both domestically and abroad. The system should build upon, and be consistent with, the ITTO’s internationally recognized “criteria and indicators for sustainable forest management” while seeking maximum compatibility with voluntary mechanisms such as Forest Stewardship Council and the Programme for the Endorsement of Forest Certification schemes.

RECOMMENDATION 2.2: Implement Sustainable Forest Procurement: Implement a robust and comprehensive sustainable wood-product procurement program. Establish a Chinese procurement program focusing on enforcing legal compliance as a baseline, moving towards the integration of compliance with sustainability standards at a later, but specified, time. In order to ensure cost-effectiveness, a Chinese government procurement program should be based on: an analysis of the sustainability impacts of wood products and their non-wood alternatives; internationally accepted standards for sustainable forestry; mandatory minimum procurement requirements; and a transparent and replicable process that can be adopted or adapted by other key buyers such as local authorities.

RECOMMENDATION 2.3: Build “sustainability” into the Chinese Forest Product Brand: Seek strategic improvement of the market value of the Chinese brand by proactively encouraging private sector investment in sustainable forestry and forest products. In order to address this, efforts should be made to adopt preferential tax policies for Chinese firms that either purchase sustainable products or themselves comply with internationally recognized sustainable forest management practices. In order to ensure the credibility and sustainability of its sustainability branding, there should be national investment in a forest supply chain tracing system.

RECOMMENDATION 2.4: Adjust VAT Policy to Promote Sustainable Forestry: In order to reduce dependence on unsustainable forest production in supplier countries, the elimination of the Chinese VAT refund policy on processed wood products including furniture should be considered. Alternatively, VAT refund eligibility should be restricted to certified sustainable forest products; at a minimum, the Chinese government should consider removing the VAT exemption policy on wood product re-exports so that such trade would not be encouraged unnecessarily. As a first step in identifying the most effective means for building sustainable VAT policy for forestry products, an inter-departmental working group should be established to define the parameters of such a system.

RECOMMENDATION 3: Participate in International Initiatives: Become a proactive participant in key international sustainable forestry initiatives.

RECOMMENDATION 3.1: Join International Efforts to Implement International Carbon Accounting for Forest Management: Work with the international community in establishing and implementing a system of carbon accounting and payments associated with sustainable forest management practices so that carbon is secured alongside—and not at the expense of—other environmental and social benefits from forests. As a first step, it is recommended that China become an active participant in the Reduced Emissions from Deforestation and Forest Degradation (REDD) initiative while setting clear forest-based emissions reduction targets.

RECOMMENDATION 3.2: Reduce Illegal Logging by Implementing a Forest Law Enforcement, Governance and Trade Initiative: Adopt a proactive role in monitoring and enforcing the legality of the international timber production it sources and trades. With this in mind, it is recommended that China become a full member of the European Union’s Forest Law Enforcement, Governance and Trade (FLEGT) initiative while looking into a mechanism for applying a formal FLEGT licensing scheme for Chinese importers of wood products.



Towards a Sustainable Cotton Sector

Cotton is one of the most important and widely produced agricultural and industrial crops in the world. It is estimated that the cotton is planted on about 2.5 per cent of the world's arable land, making it one of the most significant in terms of land use after food grains and soybeans. When family labour, hired on-farm labour and workers in ancillary services such as transportation, ginning, baling and storage are considered, total involvement in cotton sector reaches one billion people, in addition to millions of jobs in allied industries such as agricultural inputs, machinery and equipment, cotton seed crushing and textile manufacturing.

In 2006 China produced 6.5 million tonnes of cotton, accounting for roughly 25 per cent of global production and making it the single largest producer globally. Although China has been an important player in the cotton and textile sector for some time, growth in the sector over the past decade, fuelled by trade liberalization, has also expanded the country's reliance on external sources for its cotton supply. Whereas Chinese production previously supplied virtually all of its domestic needs, the past decade has seen imports rise from 50,000 tonnes per annum in 1999 to 3.8 million tonnes in 2006. China's cotton imports, which account for 45 per cent of global trade in cotton, are sourced principally from the U.S. (46 per cent) and Africa (14.9 per cent).

In terms of value, cotton is one of China's most important agricultural crops. Cotton production offers the sole source of livelihood for the majority of China's 100,000 cotton farmers and is a critical input to the more than 7,500 textile companies that produce an estimated RMB 488 billion of cotton cloth. Cotton and textile production is therefore a key component of the Chinese economy and represents a major social asset to the country. Moreover, between 2003 and 2005, cotton grew dramatically from RMB 27.6 billion to RMB 41.1 billion showing the continued importance of international trade as a contributor to China's economic well-being.

At the same time, the cotton and textile sector also has been linked to serious negative social and environmental impacts—principally at the sites of cotton production and textile manufacturing. Between 7,000 and 29,000 litres of water are used per kilogram of cotton produced, making cotton a core driver of diminishing water supplies both within China and internationally. Cotton is also the most heavily treated agricultural commodity, responsible for one third of all pesticide application globally. Run-off from cotton chemical application threatens the integrity of marine ecosystems.

In textile manufacturing, significant amounts of toxic chemical pollutants and dyes are released through waste water in the textile treatment process. The pollutants arising from textile processing can have serious impacts on local marine and wildlife and can

lead to the pollution of local drinking water sources. Meanwhile, textile processing and garment production facilities have a history of low wages and working conditions with reports of many factories operating outside of the range of legally acceptable working conditions and wage levels.

The social and environmental impacts associated with the global cotton and textile chain vary significantly from country to country. This diversity is particularly evident across Chinese domestic production, U.S. production and African production, which together account for 83 per cent of total cotton consumption in China. Among these sources, the most serious social and environmental consequences associated with China's global cotton chain are found within China itself. Chinese cotton production is among the least efficient in the world from the perspective of resources used per kilogram produced.

Chinese cotton production requires an average 3,000 to 5,000 cubic metres of water per hectare—with a majority of the water being supplied through irrigation from regions experiencing declining water tables. At the same time, it is estimated that 30–40 per cent of all pesticides applied in China are applied to cotton.

Although a significant portion of environmental impacts in China can be reduced through improved farming practices (utilization rates of pesticide application are estimated at 10–30 per cent), comparative advantage associated with the African climate makes rain-fed and reduced input cotton production systems more viable in African source countries.

Heavy subsidization of cotton production around the world has also led to reduced prices for cotton on international markets. Although this provides a “net benefit” to cotton consumers, it has led to net reductions in the welfare of the poorest cotton producers—Chinese and African producers in particular. Ensuring that those most in need can secure viable and stable livelihoods from cotton production needs to be built upon an overall plan of transparent and free markets—markets that have a better capacity to respond to natural endowments and corresponding comparative advantage in production while incorporating full cost pricing.

Based on these observations, three key strategic opportunities are available to China, as it moves towards promoting the overall sustainability of its global cotton and textile supply chain. As a basic strategy, there is much that China can and should do to improve the efficiency and sustainability of its domestic cotton and textile production facilities. However, China's long-term cotton strategy will also need to take into account the comparative advantage for cotton production in other countries, particularly those in the African region, which have the capacity for lower input production. Finally, by promoting broad compliance with internationally recognized “sustainable practices” for cotton production and textile manufacturing, China has the opportunity to reinforce its reputation for quality, resulting in a stronger domestic economy as well as improved social and environmental outcomes—both domestically and globally.

Building on these general observations, and drawing from our more detailed supply chain analysis, we make the following recommendations starting on the next page.

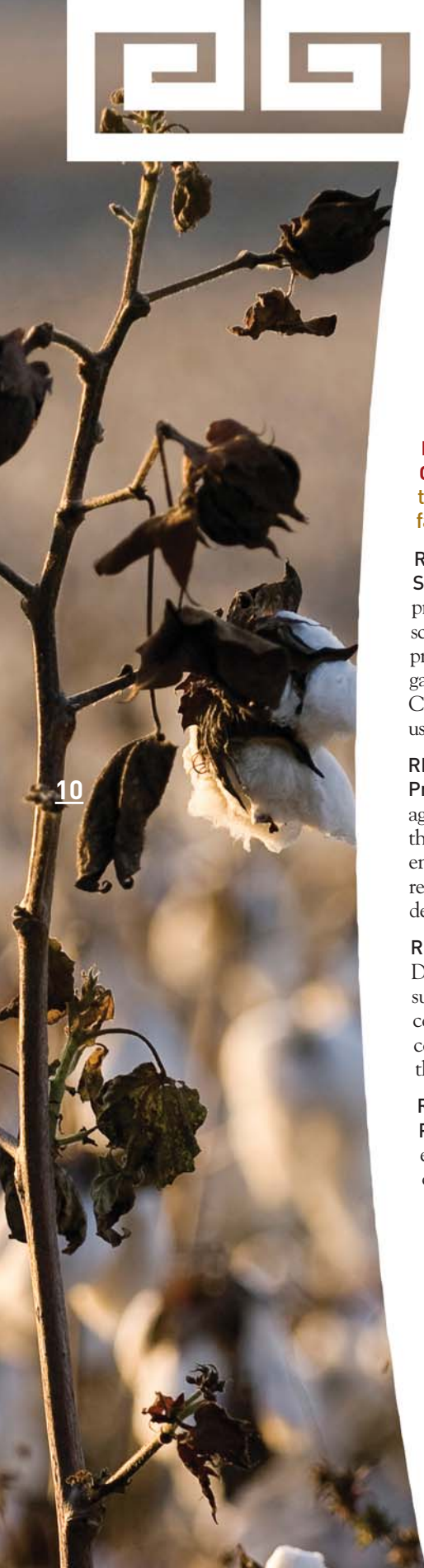
COTTON GROWING PRACTICES IN SEVERAL COUNTRIES Source: Guérin (2007) after ICAC.²

	China	U.S.	Brazil		Mali
			Mato grosso	Other Brazil	
Fertilizers					
N (kg/ha)	225 to 300	100	180	30	44
P (kg/ha)	50 to 150	90	120	60	33
K (kg/ha)	100 to 220	80	220	40	18
Pesticides					
Spray per season	20	6*	8**		5
Hazardous	6	wide range	8		8
Defoliants					
% cotton area	25	60	20		
Hazardous	Slightly	Slightly	Slightly		Almost nil
GM					
% cotton area	66	76 (2004)	20		0

*GM cotton (Monsanto figures) **Integrated Pest Management (IPM)

² Guérin E. and T. Voituriez (2007), “Survey of cotton/textile trade impact assessments,” background document prepared for the CCICED, Iddri.





3.1

Cotton Recommendations

RECOMMENDATION 1: Develop a National Market Growth Strategy for Sustainable Cotton: Encourage the development and growth of sustainable cotton markets through improved information gathering and targeted economic policies favouring cotton from sustainable sources.

RECOMMENDATION 1.1: Develop a National Information Strategy on Cotton Sustainability: Build an information base on the sustainability impacts of Chinese cotton production, processing and consumption. The information system should track basic science-based social and environmental indicators across foreign and national cotton production and textile manufacturing sources. It is recommended that information gathering and analysis on cotton production be made compatible with the International Cotton Advisory Committee (ICAC) data processes and that this information base be used as a starting point for determining sustainable trade policy in the cotton sector.

RECOMMENDATION 1.2: Establish an International Standard for Sustainable Cotton Production: Join forces with the international community to reach an internationally agreed upon definition of sustainable cotton production through active participation in the Better Cotton Initiative (BCI). Through its participation in the BCI, China could ensure that regionally relevant standards are developed under the initiative. It is recommended that China enter such a process with the intention of using the standards developed under the initiative as the baseline for policy development in the cotton sector.

RECOMMENDATION 1.3: Promote Sustainable Sourcing Through Green Trade Policy: Design cotton trade policy to encourage cotton production and sourcing from sustainable supply chains. Preferential fiscal, tariff and tax treatment should be provided to sustainable cotton production (in accordance with internationally accepted standards as per organic cotton principles, the Better Cotton Initiative above or an alternate international process that China might care to initiate) both domestically and internationally.

RECOMMENDATION 1.4: Adjust Tariff Quota Policy to Promote Sustainable Production: Adjust its tariff quota allocation to state-owned enterprises in order to encourage “environmental competition,” by allocating import quotas on the basis of compliance with internationally recognized sustainability criteria.

RECOMMENDATION 2: Develop a National Strategy for Environmentally Sound Cotton Production: Require domestic cotton and textile producers to adopt sustainable production practices in line with internationally recognized sustainability standards. Where compliance is economically unfeasible, assistance should be provided to Chinese producers to transition out of cotton or textile production.

RECOMMENDATION 2.1: Invest and Promote New Environmentally Friendly Cotton Production Technologies: Invest in the development and application of new cotton technologies and varieties in order to meet the growing demands of technical and sustainability standards increasingly being applied in the cotton sector. Such support should be based on careful analysis of the long-term sustainability implications with special care being taken in the adoption or support of any GMO technologies.

RECOMMENDATION 2.2: Support Sustainable Cotton Production Through Green Box Measures:

In order to stimulate the growth in market-led sustainable production from the pilot project level to mainstream production, WTO green box measures should be designed to prioritize income support towards covering the cost of implementing sustainable production practices at the domestic level.

RECOMMENDATION 2.3: Ensure Regional Social Harmony Through Balanced Application of Sustainable Cotton Production Policy:

An intentional strategy for balancing the distribution of cotton and textile production, and benefits, across different regions within China should be designed with the objective of minimizing social and environmental impact, based on regional comparative advantages and needs.

RECOMMENDATION 2.4: Strengthen Regulation on the Use of Toxic Chemicals:

Toxic chemicals associated with cotton production and textile processing should be formally identified and phased out through the use of a stringent monitoring and regulation at the regional and sub-regional levels. Regulatory action should be complemented with a targeted taxation scheme at the national level.

RECOMMENDATION 2.5: Promote the Use of Cotton By-products and Recycling:

Promote the comprehensive use of cotton by-products such as stalks and cotton seeds and waste cotton apparel through the provision of tax incentives for enterprises reaching specified usage levels and investing in by-product utilization technologies.

RECOMMENDATION 3: Promote International Cooperation for Sustainable Production and Trade: Promote the development of Sino-African cotton trade by developing African capacity for the sustainable production of high quality cotton and by reducing barriers to Sino-African cotton trade.

RECOMMENDATION 3.1: Eliminate Duties on African Cotton Imports: Eliminate duties on African cotton imports, in accordance with the commitments outlined within China's African Policy White Paper.

RECOMMENDATION 3.2: Invest in Technological Development for the Sustainable Cotton Production in Africa: Strengthen Sino-African Agricultural Cooperation, as stipulated within China's African Policy White Paper, by intensifying cooperation in agricultural technology to improve the sustainability and quality of African cotton; carrying out experimental and demonstrative agricultural technology projects; and promoting the adoption of best practices in cotton production and processing.

RECOMMENDATION 3.3: Improve Predictability and Transparency in Sino-African Cotton Trade: Enable greater price stability in Sino-African cotton commerce by encouraging the use of over-the-counter forward contracts between Chinese traders and traders operating in Africa. Additional price risk management mechanisms, such as hedging or insurance "capping" schemes, should also be explored for cotton production exported to China.



Towards a Sustainable E-products Sector

China's importance as both a supplier and consumer of electronic goods and equipment or E-products has grown at an unprecedented pace over the course of the past decade. Since its entry into the WTO in 2001, China's E-product manufacturing sector has entirely reoriented itself from an industry driven primarily by domestic markets, to a fundamentally export-driven sector and the world's most important supplier of many, if not most, major E-products on the market today.

The E-product sector now accounts for 10.2 per cent of the country's total industrial output value and 6.3 per cent of national industrial profits. While the rapid transition towards global market leadership in the E-products sector has produced significant economic benefits at both the national and community levels, it has also placed increasing pressures on the local and global environment.

Perhaps not surprisingly, the single most important environmental impact arising from E-products are those impacts associated with energy use. Both the manufacturing and use phases of E-products are highly energy intensive. The growth of E-products can, therefore, be directly linked to growing demands for energy globally and corresponding growth in air pollution and greenhouse gas production. At a more local level, E-products manufacture, recycling and disposal present serious threats to personal and community safety through the heavy metals and chemicals used in processing and production.

As the number and quantity of E-products in use grow, so do the challenges associated with managing an ever-growing quantity of E-waste. In 2006, China generated an estimated two million tonnes of E-waste—a figure that is expected to grow to 5.5 million tonnes by 2015. In addition to managing its own E-waste, however, the low labour costs associated with China's informal recycling sector have rendered it a prime destination for much of the world's toxic E-waste products. Despite the implementation of a general ban on the trade of E-waste, it is estimated that between two and 33 million tonnes of E-waste enter China illegally each year.

E-waste in China is recycled almost entirely through informal household dismantling workshops which are typified by:

- manual extraction (with the use of hands and hammers), causing exposure to cadmium, lead and mercury;
- open burning (used to extract metals from wiring), producing emissions of carbon monoxide, particle matters, hydrogen chlorides and dioxins;
- acid stripping (precious metals extraction from circuit boards and chips), producing emissions of heavy metals and dioxide gases; and
- de-soldering (printed circuit boards), producing toxic lead fumes.

Of the estimated 700,000 workers involved in the collection, dismantling and material recovery of E-waste in China, approximately one third work in informal dismantling and recovery workshops with little government supervision and often without adequate protective equipment.

With respect to variances in the distribution of impacts across different geographic locations of the international supply chain, it is clear that the largest total impact from products *produced* in China, are found within China itself. Elevated impacts at the manufacturing, use and end-of-life phases combined with the size of the domestic market suggest that domestic impacts of the E-product sector will continue to rise rapidly for the foreseeable future. Nevertheless, it is also worth noting that the use phase of E-products is the stage with the most environmental impact. As such, with 50 per cent or more of E-products going to foreign destinations (and rapid increases in export levels annually), foreign impacts are also significant, and increasing.

It is also important to note that even though a majority of the social and environmental impacts occur within China, the responsibility for these impacts is largely borne by the international community in the following ways: as the principal consumer of Chinese E-products; as home to the majority of original equipment manufacturers (OEMs) responsible for the design and marketing of E-products; and as the source of significant amounts of E-waste redirected to China at the end-of-life stage of the product cycle. Given this context, it will be critical that the Chinese government work hand-in-hand with the international community to address China's sustainability challenges in the sector.

China's special role as the world's leading destination for foreign E-waste, combined with its vast system of informal recycling and disposal for E-waste, presents both an environmental challenge and opportunity. The current absence of information and management infrastructure related to the E-waste sector within China gives rise to serious pollution problems. At the same time, the efficiency of China's informal collection of E-products places it in a strong position to reap significant benefits through E-waste recycling with the adoption of the appropriate management techniques.

Although there is a wide range of options available for the Chinese government in its efforts to ensure that the growing E-products sector contributes in the most positive manner possible to national and global well-being, the Chinese government needs to focus its leadership on creating change where the greatest impact can be generated for the lowest cost. Fundamentally, the basic criterion of "cost-efficiency" suggests an overarching preference for initiatives that: leverage existing initiatives and investment; and establish a foundation for the integration of best practices *within the existing market structure*.

Based on our analysis of the social and environmental impacts of E-products, both within China and abroad, three basic areas for improvement can be identified that provide a baseline set of objectives for any policy action aimed at attaining improved sustainability across the sector:

- improved management and handling during E-product manufacture;
- improved management and handling during E-waste collection, dismantling and disposal; and
- improved design for the reduction of energy and resource use (during both production and use phases) and the maximization of recyclability (eco-design).

The main challenge facing Chinese (and international) policy-makers in this context is the identification of effective mechanisms for stimulating the efficient adoption of such improvements without jeopardizing the economic growth needed to maintain economic development. Building on the existing policy framework and related private initiatives both nationally and internationally, we propose three basic policy responses to improve China's contribution to the sustainability of global E-product supply chains:

1. a National Sustainable E-product Growth Strategy;
2. a National E-waste Strategy; and
3. an International Action Plan on the Responsible Trade and Disposal of E-waste.



4.1

E-products Recommendations

RECOMMENDATION 1: Develop a National Sustainable E-product Growth Strategy: Launch a “National Sustainable E-product Growth Strategy” explicitly aimed at stimulating “green” economic growth in the E-product sector through investment and innovation for sustainable E-product design and production practices.

RECOMMENDATION 1.1: Fortify National Eco-design Legislation: Improve the consistency, and strengthen the implementation infrastructure, of China’s existing E-product eco-design legislation. More specifically, there is a need to establish detailed guidelines and targets for China’s existing eco-design legislation using the EU Directive establishing a framework for the setting of Eco-design Requirements for Energy-using Products as a possible model. A comprehensive review of existing legislation should form the basis of further legislative efforts.

RECOMMENDATION 1.2: Provide Fiscal Support for Eco-design and Eco-production: Develop and implement preferential tax rates on products that comply with internationally recognized eco-design standards. Industry coalitions and associations within the Special Export Zones should be given targeted support to stimulate sustainable E-product design and production.

RECOMMENDATION 1.3: Provide Investment Support for Eco-design: Establish a fund dedicated to eco-design research and development. Establish and sponsor a “national institute” for eco-design.

RECOMMENDATION 1.4: Build the Market for Eco-design Products: Strengthen the implementation of the current Chinese energy label by expanding product coverage and by linking requirements to the international Energy Star labelling system.

RECOMMENDATION 1.5: Build the Market for Preferable Production Practices: Expand and strengthen the implementation of its Procurement of Environmentally Labelled Products Policy by setting and monitoring mandatory percentage-based targets for sustainable E-products procurement.

RECOMMENDATION 2: Develop a National E-waste Strategy: Implement a comprehensive National Strategy for the Responsible Collection and Treatment of E-waste based on increased transparency and coherence across existing E-waste management legislation and programs, as well as the drafting of new legislation to fill existing E-waste management gaps.

RECOMMENDATION 2.1: Establish a Legal Framework for E-waste Management: Facilitate and support the set-up of a legal framework for E-waste management and define the role of all stakeholders, in particular the role of the E-products manufacturers, importers, distributors and consumers, and of E-waste collectors, dismantlers and recyclers.

RECOMMENDATION 2.2: Establish an End-of-life System for E-waste: Facilitate the establishment of a secure financing scheme for managing and maintaining a sound and safe end-of-life system for E-waste.

RECOMMENDATION 2.3: Establish an E-waste Treatment Quality Assurance Scheme: Implement a comprehensive E-waste treatment quality assurance scheme. The scheme should consist of a licensing and auditing system that builds on international E-waste collection and treatment standards. Licensing under the scheme should be made dependent upon regular reporting as well as a demonstration of safe and sustainable handling and treatment practices. Employment of low-skilled workers in the currently informal, but highly efficient, E-waste collection scheme needs to be maintained as much as possible.

RECOMMENDATION 2.4: Improve Clarity and Impact of Existing E-waste Import Rules: Establish a set of national guidelines for the identification of E-waste imports. This should be complemented with additional technical assistance resources for customs officials in the implementation of China's official ban on E-waste imports. There is also a need to revise existing rules for related (non-prohibited) E-waste and E-waste fractions imports to take better account of actual product make-up and toxicity levels.

RECOMMENDATION 2.5: Build an Information Base for Improved Management of E-waste: Implement a national system for gathering and compiling data on the quantities and sources of domestic and imported (both legal and illegal) E-waste.

RECOMMENDATION 3: Join in the development of an International Action Plan for Sustainable E-waste Management: Work with the international community toward the establishment of an International Action Plan for the Responsible Trade and Disposal of E-waste.

RECOMMENDATION 3.1: Participate in International Dialogue: Support the organization of a major international conference to launch an international dialogue on an international E-waste Action Plan with a view to improving compliance rates with the Basel Convention guidelines and obligations. The United Nations Environment Programme and the Basel Convention Secretariat, should be solicited as partners and/or co-organizers of the process.

RECOMMENDATION 3.2: Develop an International E-waste Treatment Standard: Work with the international community in the establishment of an international standard for the environmentally sound management of E-waste as a starting point for enabling improved private sector management of E-waste.

RECOMMENDATION 3.3: Support Harmonized Implementation of E-product Treatment Legislation: Launch an international process aimed at harmonizing the implementation procedures for diverse Waste from Electrical and Electronic Equipment and Restriction of Certain Hazardous Substances regulations in order to reduce Chinese compliance costs and improve overall supply chain efficiency.

RECOMMENDATION 3.4: Encourage Global Private Sector Partnership: Facilitate, in collaboration with the United Nations Environment Programme, a global multi-stakeholder, supply chain-based approach to monitoring and managing trade in E-waste. The process should build on, and work with, existing multi-stakeholder E-waste partnerships, such as the Mobile Phone Partnership Initiatives; the Global Knowledge Partnerships in E-waste Recycling Programme; the Global Computer Refurbishment and Recycling Partnership; and Solving the E-waste Problem: A Synthesis Approach Initiative.



Towards a Sustainable Trade Strategy

The China and Global Markets project provides a foundation for building systemic, trade-based solutions to the sustainability challenges facing China in the context of its massive economic growth. Given the inter-dependent nature of global markets and the dispersed social and environmental impacts along international supply chains, tools that rely on leveraging existing market dynamics and relationships will be of critical importance. Although the nature and impact of China's role varies in the different sectors investigated by the global markets project to date, several broad strategies stand out as potential components for a sustainable trade strategy for China:

- 1. National capacity building:** China has a direct ability to determine its own domestic capacity. Limitations on current production, monitoring and enforcement capacity represent key areas where additional investment is needed in order to ensure compliance with existing and forthcoming sustainability policy. Areas of particular need and/or opportunity include:
 - a. improved information gathering and monitoring of the sustainability impacts of production and trade;
 - b. improved coherence among national production and trade policies related to social and environmental protection; and
 - c. fortified policy implementation infrastructure through investments in technical assistance and training.
- 2. Leveraging sustainable markets:** The impacts of trade and supply chains are, fundamentally, market-driven. So long as markets fail to internalize the social and environmental costs associated with production, market growth will lead to decreasing global social welfare. By promoting the growth of markets that explicitly integrate sustainability considerations into commercial transactions, the Chinese government can provide a systemic and economically efficient stimulus towards improved practices both within China and abroad. Areas of particular need and/or opportunity include:
 - a. a green public procurement policy with mandatory procurement targets;
 - b. preferential fiscal policies for sustainable products; and
 - c. public/private partnerships in the design and marketing of sustainable products.
- 3. International cooperation:** Notwithstanding the importance of China within the global marketplace, China cannot be expected to implement full supply chain solutions unilaterally. Defining and implementing the appropriate terms for sustainable production and trade are fundamentally an international task. As such, the relevance and potency of a broader sustainable trade strategy will depend largely on China's willingness and ability to play an active role in international processes. Areas of particular need and/or opportunity include:
 - a. participation in the development of international (public and multi-stakeholder) standards for sustainable practice; and
 - b. seeking means for monitoring and enforcing responsible and legal trade in commodities and goods with considerable sustainable development impacts.

China has entered an unprecedented stage of economic growth. Home to one-fifth of the world's population, China's domestic markets and production base are set to establish China as the world's single largest economy by 2030. China's rapid and foreseeable economic growth places it in the unique position of being able to redefine its manufacturing base and trading relationships in accordance with the core principles of sustainable development over a relatively short time frame. And while the opportunity before China is clear, it is also clear that taking full advantage of this opportunity will only be possible with the cooperation and support of its trading partners.



The Global Markets Project is a joint initiative of the International Institute for Sustainable Development and the Chinese Ministry of Commerce (MOFCOM). It is aimed at identifying practical strategies for ensuring the long-term sustainability of China's growth process. Fuelled by an international research team and guided by a high-level international advisory panel, the project provides a forward-looking and constructive approach to transitioning key Chinese supply chains from "business as usual" to a "sustainable business" paradigm.

This report, which summarizes the results of the first phase of the Global Markets Project, provides an overview of the social and environmental impacts associated with the Chinese forestry, cotton and E-product supply chains, as well as a corresponding set of recommendations to the Chinese government as it moves towards its objective of attaining HeXieSheHui ("harmonious society"). The report's conclusions suggest a series of concrete actions available to the Chinese government as it seeks to leverage the forces of the market as a vehicle for stimulating sustainable production, consumption and trade.