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Managing Greenhouse Gas Emissions in the Supply Chain: Opportunities in China

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About This Report

This working paper assists global companies in reducing greenhouse gas (GHG) emissions with their Chinese suppliers.[1] Findings are based on interviews with multinational buyer companies; two roundtable discussions with companies, suppliers, and partners; and a review of literature on reducing GHG emissions in the supply chain.

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This working paper is part of BSR's research on Business in a Climate-Constrained World. Please direct comments or questions to Ryan Schuchard at rschuchard@bsr.org and Nate Springer at nspringer@bsr.org.

ABOUT BSR
BSR is a global nonprofit organization that works with its network of more than 250 member companies to build a just and sustainable world. From its offices in Asia, Europe, and North and South America, BSR develops sustainable business strategies and solutions through consulting, research, and cross-sector collaboration. Visit www.bsr.org for more information about BSR's more than 20 years of leadership in sustainability.

[1] "Greenhouse gas," "GHG emissions," and "GHGs" are used throughout this report as umbrella terms to describe greenhouse gas (GHG) emissions that contribute to climate change. "Supply chain GHG management" is an approach to managing and reducing GHG emissions in the supply chain to achieve corporate climate change goals.

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Introduction

China holds significant potential for multinational companies to reduce greenhouse gas emissions in their supply chains. Companies are beginning to see the potential, yet results remain elusive.[2]

China overtook the United States as the world's largest emitter of GHG emissions in 2006. The Chinese government plans to cut emissions 17 percent per unit of GDP by 2015.

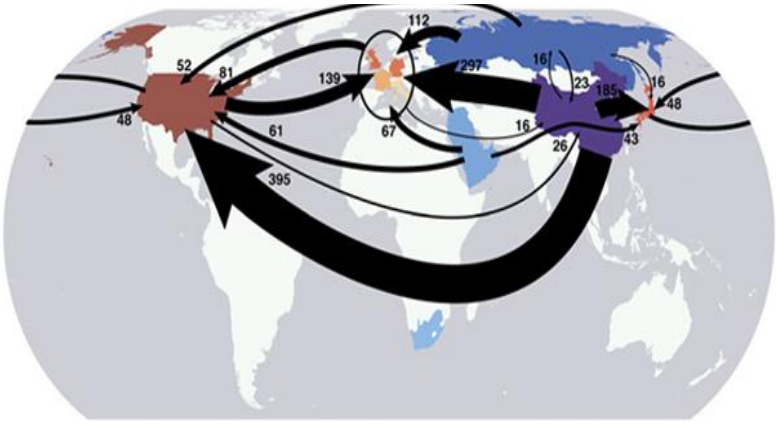
Sources: U.S. Energy Information Administration (EIA) and China's 12th Five-Year Plan (2011–2015).

China Holds Great Potential for Corporate Climate Progress

China is a top source of potential greenhouse gas (GHG) reduction. The country is responsible for around a quarter of the world's annual emissions and has an economy with an energy intensity higher than the global average.[3] Furthermore, the potential to reduce emissions in Chinese manufacturing is estimated at around 25 percent.[4] This status has led to significant interest by civil society organizations in mobilizing creative solutions, and the government is taking strides to improve energy productivity through diverse measures, such as GHG emissions trading and incentives to purchase efficient equipment.[5]

China is also the world's largest exporter.[6] Emissions in the supply chain are responsible for 70 to 80 percent of all lifecycle emissions for most manufacturing industries.[7] Many companies—especially those involved with manufacturing and energy-intensive processing—consolidate significant portions of their supply chains in China. Indeed, around 25 percent of total global GHG emissions are "embedded" in products for export, and the lion's share of that is from China (see Figure 1).[8] As such, many companies' biggest opportunities for aggressive emissions reductions to meet climate goals lie in their supply chains.

Figure 1: *Flows of Emissions Embedded in Exports (in megatons of CO2 per year)*



Source: Davis and Caldeira, "Consumption-Based Accounting of CO2."

[2] Carbon Disclosure Project (CDP) and Accenture, "Collaborative Action on Climate Risk: Supply Chain Report 2013–2014."
[3] U.S. Energy Information Administration, "International Energy Statistics"; World Resources Institute, Climate Analysis Indicators Tool (CAIT) 2.0.
[4] Shen, "Energy Saving Potential of China."
[5] Song, R., "Inside China's Emissions Trading Scheme: First Steps and the Road Ahead."
[6] U.S. Central Intelligence Agency, "Country Comparisons: Exports."
[7] Huang et al.,"Categorization of Scope 3 Emissions for Streamlined Enterprise Carbon Footprinting."
[8] Embedded emissions in exports are generated in the process of sourcing raw materials, manufacture, and transport of products for export. They are emissions generated before export.

Recognizing this situation, a growing number of multinational company buyers have set goals to reduce GHG emissions in their Chinese supply chains. Recent examples include Walmart's commitment in 2008 to improve the energy efficiency of 200 factories in China, and Hewlett-Packard Company's (HP) goal in 2013 to reduce greenhouse gas intensity by 20 percent among its first-tier suppliers. These companies understand that relatively modest changes to their business practices could motivate suppliers to reduce emissions substantially.[9] The past eight years have seen an uptick in corporate activities in supplier accounting, disclosure, energy efficiency training, and other forms of supplier engagement (see sidebar). Some companies have seen business benefits through supply chain efficiencies, greater supply chain visibility, and stronger relationships with key suppliers.[10]

Despite increased attention to supply chain GHG management, aggressive GHG reductions are elusive. In our experience, there remain startlingly few examples of suppliers who can credibly report emissions reductions greater than 20 percent as a direct result of activity by multinational companies. Recent reports by the Carbon Disclosure Project (CDP) also show that there is a disconnect between company efforts and supplier results. While 69 percent of buyers are investing in emissions reduction, only 27 percent of suppliers are doing the same.[11] These indicators suggest slow progress in the absence of measurable emissions reductions.

Approaches to Supply Chain GHG Management

Investor GHG disclosure:

» *Goal:* Increase transparency of climate risks and opportunities.

» *Examples:* CDP reporters and CDP Supply Chain Leadership Coalition

Procurement integration:

» *Goal:* Incorporate GHG emissions as one procurement parameter.

» *Examples:* Electrolux, IKEA, and Kohl's

Energy and cost savings:

» *Goal:* Improve supplier energy cost base.

» *Examples:* Walmart Supplier Carbon Performance (SCP) and Walmart

Product lifecycle management:

» *Goal:* Improve the profile of embedded GHGs in a product.

» *Examples:* IKEA, Levi's, and Timberland

BSR's Business in a Climate-Constrained World Strategy

Aggressive emissions reductions are needed to hold the global mean temperature to 2°C above preindustrial levels in order to avoid the worst risks to society and business.[12] BSR's Business in a Climate-Constrained World strategy is a three-year initiative designed to mobilize our network and insights to support urgent, ambitious, and sustained business action on climate resilience. The strategy's core is to identify *stabilization wedges* for emissions reductions across industry clusters and to implement reductions with BSR member companies and other stakeholders.

BSR began our work in supply chain GHG emissions reductions with our members in consumer products and manufacturing industry sectors in 2005. We trained suppliers for apparel and other manufacturing sectors in South China on energy efficiency through BSR's China Training Institute. After three years, we implemented assessments and built tools for Walmart as part of its program aimed at reducing energy 20 percent among its top 200 Chinese supplier factories by 2012. We shared the lessons we learned from this work with suppliers in a guide on GHG reductions called "Unlocking Energy Efficiency in China: A Guide to Partnering with Suppliers" and founded a collaborative initiative with 14 companies called the Energy Efficiency Partnership that saved 12 million kilowatt-hours (kWh) of energy across more than 400 suppliers. In this current report, we share with our members and stakeholders our latest findings about the opportunities for consumer products and manufacturing industries to help identify opportunities for aggressive emissions reductions.

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[9] BSR, "Value Chain Is Top Climate Priority and Challenge: BSR/GlobeScan Poll."
[10] BSR, "Finding Your Supply Chain Carbon Lever: Lessons from a BSR-WRI Workshop."
[11] Ibid.
[12] IPCC, "Climate Change 2007: Synthesis Report." At the Fifteenth Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) meeting in Copenhagen, Denmark, in December 2009, countries agreed to hold the increase in the global mean temperature below 2°C above preindustrial levels in accordance with the findings of the "IPCC Fourth Assessment Report."

"Energy efficiency…initiatives in our own factories are key components of our CSR strategy. However, similar initiatives with suppliers are still at an early stage."

Source: Interview with China-based employee of a Global 500 company, May 2014.

Purpose and Methodology

This research aims to understand the factors that limit emissions reductions with suppliers in China and to identify opportunities to release the potential for ambitious reductions. Specifically, we seek to answer the following:

1. What are the key organizational, market, and other limiting factors to reducing GHG emissions among suppliers in China?
2. What opportunities do multinational company buyers have to help their suppliers make aggressive reductions in China?

In order to answer these questions, we collected information across several data sources, with a focus on gaining perspectives from multinational company buyers and their suppliers in China. Sources of information include:

» **Roundtable discussions—**A roundtable in Washington, D.C., with 40 participants, including 15 from multinational companies.[13] Another roundtable in Guangzhou, China, with 33 participants, including 10 from multinational companies and 17 from China-based suppliers.[14]

» **Interviews—**Interviews with multinational buyer companies, including Dell, Electrolux, HP, IKEA, Lenovo, Philips, Sony, and Starbucks.[15]

» **Literature review—**Published government studies, industry reports, peer-reviewed journal articles, and trade articles.

» **Previous projects—**Work since 2005 with 14 multinational companies and more than 1,000 suppliers in China on projects that saved an estimated total of 12 million kWh of energy.[16]

The companies that participated in this research are listed in full in the Appendix.

We present our results as opportunities for multinational companies focused on reducing GHG emissions with Chinese suppliers.[17] This paper aims to assist sustainability and supply chain managers at companies in consumer products and manufacturing industries seeking to reduce GHG emissions where a significant portion of their manufacturing base of suppliers is located in China.

The ideas should be considered as working concepts for multinational companies to discuss, test, and further refine. Results will vary from company to company and change as the marketplace evolves; what we present here is a portfolio of

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[13] Summary blog entry of Washington, D.C., roundtable discussion and full notes: www.bsr.org/en/our-insights/blog-view/finding-your-supply-chain-carbon-lever-lessons-from-a-bsr-wri-workshop.

[14] Summary blog entry of Guangzhou, China, roundtable discussion and full notes: www.bsr.org/en/our-insights/blog-view/new-insights-on-supplier-carbon-performance-in-china.

[15] Participants in the roundtables and interviews were selected based on their experience with and goals for supply chain GHG emissions reductions. Interviewees represent companies with active GHG emissions reductions programs in various stages of maturity. Most roundtable participants have programs and experience, though a few participants started only recently. Interviews and the Guangzhou roundtable included only companies or suppliers with activities in China. BSR's previous projects worked mostly with companies and their China-based suppliers.

[16] BSR works one-on-one with companies and through a collaborative cross-industry initiative called the Supplier Carbon Performance Initiative. Learn more at: www.bsr.org/en/our-work/working-groups/supplier-carbon-performance.

[17] Suppliers participated in the research but are not the audience for our findings. We developed case studies separately to demonstrate to suppliers how emissions reductions can benefit their business. Browse the case studies at: www.bsr.org/en/our-projects/energy-management-china/emc-case-studies.

"Over the past [few] years, we have been focusing on suppliers in China, driving emissions reduction[s] in our supply chains through coaching suppliers on best practices and new technologies."

Source: Interview with China-based employee of a Global 500 company, May 2014.

opportunities for companies that are seeking ways to release the potential in their own GHG reductions with suppliers in China.[18]

Summary of Findings

We identify four limiting factors that represent obstacles standing in the way of progress in emissions reductions through supply chain management. In turn, we highlight opportunities for companies to make progress. They can be implemented individually or collectively, in parallel or selectively. Rather than a process, we present a portfolio of options that companies can build into their programs to reduce supply chain emissions.

We summarize these limiting factors and corresponding opportunities to make further progress as follows:

LIMITING FACTORS Challenges that stand in the way of GHG reduction with suppliers in China	KEY OPPORTUNITIES Activities companies can pursue to overcome challenges to GHG reduction with suppliers in China
» Collaboration among buyers and suppliers may be inhibited by a focus on short-term concerns and competing priorities.	» **Demonstrate commitment** to long-term engagement on climate sustainability with suppliers.
» Suppliers' needs and objectives related to GHG emissions management vary.	» **Provide direction** toward practical business opportunities for suppliers that are receptive.
» Suppliers may lack incentives to reduce emissions due to insufficient economic and policy drivers.	» **Reward suppliers** for investment and performance in GHG reduction.
» Efficiency services and finance are still nascent in many regions.	» **Build the market** for energy information, efficiency services, and finance.

The limiting factors represent a combination of market, technical, and organizational challenges that create barriers to progress for companies that seek to drive GHG emissions reductions in China. Key opportunities outline areas where companies could play a more active, strategic role in driving GHG reduction with suppliers, both in the short and long term. These approaches are designed to increase supplier willingness and experience to reduce GHG emissions in factories, align and enhance multinational company efforts to engage with suppliers effectively on GHG emissions reductions, and build a market for emissions reductions in China. The following sections provide detail about these opportunities.

[18] Policy engagement via lobbying and industry associations is an essential piece of most climate change and emissions reduction work by business. However, our research focuses on opportunities for companies committed to supply chain emissions reductions in China within the current policy environment. There is immense opportunity for new policies in China that accelerate emissions reductions.

Demonstrate Commitment

Companies in many industries see the supply chain as their greatest lever to reduce GHG emissions and meet climate goals, but competing priorities and existing supply chain practices can get in the way. Therefore, companies must demonstrate their commitment to long-term engagement on climate sustainability with suppliers.

Limiting Factor

Collaboration among buyers and suppliers may be inhibited by a focus on short-term concerns and competing priorities.

Companies must balance a number of business and sustainability priorities. Many companies make bold supply chain commitments as part of their climate strategy, then face difficulty following-through, according to CDP.[19] Other corporate or supply chain priorities can take precedence and limit progress. Energy management requires data about energy use that inherently links to operations expenses, and suppliers are often wary that buyer companies will try to "seize" costs savings.[20] Other obstacles are due to confusion or lack of clarity around objectives, targets, and relevant key performance indicators (KPIs). Given these challenges, companies often underestimate the resources required to build internal capacity for supplier engagement on GHG reduction.

Our research finds that companies can overcome this limiting factor when they demonstrate their commitment to work with suppliers on emissions reductions through these opportunities:

» **Ensure internal alignment and capability** that reinforces the commitment to move forward in emissions reductions with suppliers.

» **Signal long-term engagement on climate** to make progress over time with suppliers on climate sustainability and emissions reductions.

Ensure Internal Alignment and Capability

"We take a long time to engage [and] build relationships that are long term. [Suppliers] want to see the forecast. For any initiative we've done, [suppliers'] first question is, 'How will this help bring us more business?'"

Source: Global 500 electronic products manufacturer, Guangzhou roundtable discussion.

Companies must recognize the most important internal obstacles and then work internally to build alignment and capability. HP aligned its supplier sustainability team with the company's broader supply chain program to ensure cooperation with business units. Some companies that participated in our roundtable discussions started by integrating GHG emissions considerations into purchasing decisions as a way to build momentum before working with research and development (R&D) and marketing teams.

Buyer companies may need to reorganize existing staff or hire new staff in their own organizations to increase the company's technical capability to manage energy and emissions reduction among diverse suppliers. Strategies can include consultations with buyer energy experts, third-party trainings, and assistance developing GHG reduction plans with suppliers. Companies such as Walmart, HP, and IKEA already dedicate staff to and provide training, assessment, and planning for modern energy management to suppliers.

Gaps in alignment and capability can also cross global operations. We find that many companies do not have clear objectives for supply chain GHG

[19] CDP and Accenture, "Reducing Risk and Driving Business Value: CDP Supply Chain Report 2012–2013."

[20] Wu et al., "Understanding the Role of Government and Buyers in Supplier Energy Efficiency Initiatives"; BSR roundtable discussions.

management in China that connect to their broader program objectives. It is useful to prioritize suppliers and categories in China, develop China-specific goals with local teams, and use Chinese language tools for measurement. The proliferation of training partners in China is an opportunity for connections between local teams and training providers (see list in Appendix). Companies that ensure internal alignment and capability across multiple functions reinforce their commitment to move forward in emissions reductions with suppliers.

Signal Long-Term Engagement on Climate

Suppliers are strongly influenced by the commitment demonstrated by buyers. Although there are quick-win opportunities for companies and suppliers, integrating GHG reduction activities into supply management is largely a long-term proposition. HP, Walmart, IKEA, Lenovo, and others have all made public multiyear commitments to reduce GHG emissions in their supply chains.

Many of the biggest emissions reductions investments in manufacturing take years to design, finance, implement, and generate a payback.[21] Many companies that have been part of BSR's supply chain GHG work since we began in 2005 are just now beginning to implement large, supply chain–wide reductions. Companies should expect to make progress over time with suppliers on climate and emissions reductions.

Most multinational companies have established goals related to climate change. However, they may have difficulty translating those goals into commitments to long-term engagement with suppliers. We find that companies making progress on supplier emissions reduction show their commitment through actions that support most or all of the following views:

- Climate is both an urgent and long-term issue for the company that it takes seriously.
- The company is making its own progress toward integrating energy and climate considerations into its business.
- Actions are connected and reinforced through functions and business units to reach business goals.
- Corporate and regional offices are aligned and offer the same, organized, and clear message.

These are the commitments that Walmart, HP, Starbucks, and other Global 1,000 companies have demonstrated. Starbucks devotes resources to building sustainability understanding within its procurement team to reinforce supplier GHG reduction goals. At IKEA, product category leaders design programs in collaboration with the company's supply chain sustainability team for specific suppliers. Companies like HP work through their China sourcing and sustainability teams to identify qualified energy auditing and training partners. Such actions strengthen the company's commitment to long-term engagement with suppliers.

Demonstrating Commitment: Lenovo Example

Lenovo began product GHG assessments across multiple functions including product design, supply chain, and environmental standards in 2008. By 2010, supply chain GHG reductions became one of five pillars of the company's climate strategy. Lenovo aims to build supplier capacity for energy management and accounting to meet this goal.

When it first meets with suppliers, a cross-functional team introduces them to the company's GHG emissions reduction strategies and explains its goals. The company provides training in GHG accounting and data collection tools to suppliers. Procurement ratings of suppliers include environmental performance indicators alongside cost and quality metrics.

Source: *Interview with Chinese Lenovo Environmental Standards and Regulation employee.*

[21] United Nations Industrial Development Organization (UNIDO), "Industrial Development Report."

Provide Direction

Energy efficiency improvements offer an immediate opportunity to reduce GHG emissions in China. In practice, suppliers' needs and objectives with respect to energy and GHG management vary. Companies can direct receptive suppliers toward business opportunities in energy management and GHG accounting.

Limiting Factor

Suppliers' needs and objectives related to GHG emissions management vary.

Emissions can theoretically be reduced through modern energy management supported by GHG accounting and disclosure. In reality, China-based suppliers commonly lack experience with standard approaches to energy management or GHG accounting and disclosure because their energy and GHG management and policies are still catching up to those of the European Union and United States.[22] Additionally, data collection and management of energy may not be common practice, or managers may not even trust the data.[23]

While some suppliers are large, most of them tend to be smaller companies with fewer resources to invest in GHG emissions and energy management.[24] Even when factories collect and report energy or GHG data, companies and their suppliers that BSR works with frequently state that they are not entirely sure how to translate data requests directly into emissions reductions. As such, buyers often realize they need to set aside resources that direct supplier progress in emissions reduction.

Our research shows that companies have overcome this limiting factor by providing direction to suppliers with these opportunities:

» **Focus on making progress with the most promising suppliers** who are willing to reduce emissions with information that matters.

» **Modernize energy management** to realize real GHG emissions reductions opportunities with suppliers.

» **Promote GHG accounting and disclosure** to enable suppliers to better understand their energy use and GHG emissions.

"We ask suppliers: Do you report to CDP? Do you report and allocate emissions to us? Do you set targets? Are you willing to partner with us?"

Source: Global 500 consumer packaged goods company, Washington, D.C., roundtable discussion.

Focus on Making Progress with Promising Suppliers

Buyers will go further by working with the most promising suppliers: those who are willing to reduce emissions with information that matters. BSR has identified a "Three A's" framework to cost effectively work with a large number of suppliers to make practical emissions reductions. The framework helps companies assess ambition, actionable information, and ability (see sidebar).[25] Specifically, buyers can make more progress with suppliers that have the potential to reduce GHG emissions, management and organizational systems to support action, and the willingness to implement reduction projects.

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[22] Crossley, "Energy Efficiency in China."
[23] Based on a BSR roundtable discussion in Guangzhou, China, with 33 participants from multinational companies, China-based suppliers, and energy service providers.
[24] BSR, "Unlocking Energy Efficiency in China: A Guide to Partnering with Suppliers."
[25] BSR, "Getting to Know Your Suppliers: The Three 'A's' for Improving Climate Performance."

Companies can gauge supplier ambition by assessing concrete documented actions that specific suppliers have taken around GHG reductions, management commitment, and dedicated resources of time, staff, and budget for energy management. Companies can make information actionable by first identifying a set of measures that suppliers should take, and then asking questions designed to reveal whether suppliers have either completed those actions or plan to. Supplier engagement designed to reveal supplier ability enables buyers to structure cost-effective programs that help deliver the coaching, assessments, planning, technical resources, or discussion needed to drive performance improvement.

Existing questions on the CDP Supply Chain Initiative can support this assessment. Emissions targets and management oversight questions assess *ambition*. Questions on previous emissions initiatives and investments assess *ability*. Supplier responses to progress toward goals provide *actionable information*.[26]

Companies such as IKEA, HP, and Starbucks are integrating these types of assessments into their supplier engagement approach to prioritize where to invest the resources they are devoting to GHG emissions reductions. Therefore, buyers can achieve results more readily by directing willing suppliers to increase their ability and focus resources on actionable GHG emissions reductions.

From Measurement to Impact: BSR's Three "A's" of Supplier Carbon Management

We use the following framework to design supplier assessments around each of the following:

1. Ambition

» Management commitment

» Previous energy work

» Willingness to collaborate

2. Actionable information

» Desired potential actions

» Progress on potential actions

» Sector-specific energy priorities

3. Ability

» Energy management experience

» Data collection capability

» Energy management team

Source: *BSR, "Getting to Know Your Suppliers: The Three 'A's' for Improving Climate Performance," March 2013.*

Modernize Energy Management

Energy efficiency improvements offer many of the most promising immediate opportunities for reducing GHG emissions in Chinese factories. Energy production and consumption is one of the major sources of GHG emissions that cause climate change, and energy efficiency is one of the primary opportunities to reduce emissions.[27] Estimates suggest that the potential in China is 20–25 percent of the total cost-effective global opportunity for energy efficiency.[28] Manufacturing in China accounts for about 70 percent of the country's energy use and 72 percent of its emissions.[29]

Energy efficiency opportunities are available for manufacturers, especially those new to energy management. One study on global resource efficiency opportunities for business found that energy efficiency technologies account for most of the highest return waste and cost reduction opportunities.[30] In BSR's work with our energy efficiency partners and China-based suppliers, we discovered that the average small- to medium-enterprise manufacturer in China can find numerous savings from investments with a 1- to 5-year payback when they start out in energy management.[31]

BSR's own analysis working with Chinese manufacturers suggests that the average factory could reduce energy by at least 10 percent and save US$50,000 annually. We have already saved more than 400 factories an average of 120,000 kWh of energy each year. These opportunities, the so-called low-hanging fruit,

[26] CDP, "Supply Chain Initiative."
[27] U.S. EPA, "Overview of Greenhouse Gases."
[28] McKinsey & Company, "Energy Efficiency: A Compelling Global Resource."
[29] Hasanbeigi, Ali. "Analysis of Chinese Manufacturing Growth and Energy Use up to 2020," International Energy Workshop.
[30] McKinsey & Company, "Impact of the Financial Crisis on Carbon Economics: Version 2.1 of the Global Greenhouse Gas Abatement Cost Curve."
[31] BSR, "Unlocking Energy Efficiency in China: A Guide to Partnering with Suppliers."

"Many factories are aware of sustainability but don't know how to put that into practice. Specifically, they don't have the management skills and technical competency."

Source: Interview with China-based employee of a Global 500 company, May 2014.

provide low-cost and short financial payback periods for energy efficiency improvement investments that reduce GHG emissions. We detail several in our 2010 report "Unlocking Energy Efficiency in China."[32]

Promote GHG Accounting and Disclosure

Best practices in GHG reduction focus on standards for energy management, accounting, and disclosure by suppliers. The assessment process per the Greenhouse Gas Protocol's (GHG Protocol) Scope 3 Standard helps multinational companies inventory supply chain emissions. Specifically, it guides companies though a framework to prioritize emissions by procurement category and types of suppliers as a needed step to meet supplier emissions reduction goals.[33] Most companies who use the Scope 3 Standard already perform their own emissions accounting and disclosure using the GHG Protocol Corporate Accounting and Reporting Standard.[34] The Scope 3 Standard can be a starting point to engage suppliers, who may then choose to adopt the Corporate Accounting and Reporting Standard themselves.

The CDP Supply Chain Initiative provides a framework for climate risk disclosure. The program builds on the successful CDP climate change program that requests corporate climate change risk measurement and disclosure from companies on behalf of 767 institutional investors with US$92 trillion in assets. The Supply Chain Initiative involves 64 multinational companies who engage their suppliers in disclosure on management of climate risks, including emissions. By identifying priority suppliers and promoting standard approaches, such as GHG Protocol and CDP, multinational buyers can enable suppliers to better understand their energy use and greenhouse gas emissions.

[32] Ibid.
[33] GHG Protocol, "Corporate Value Chain (Scope 3) Accounting and Reporting Standard."
[34] GHG Protocol, "A Corporate Accounting and Reporting Standard."

Reward Suppliers

Incentives exert a significant influence on the momentum of energy and GHG emissions reductions. Yet, factories in China are often unaware of or cannot realize many benefits due to inconsistent financial and policy incentives. Buyer rewards can fill this gap and motivate supplier investment and performance in reductions.

Limiting Factor

Suppliers may lack incentives to reduce emissions due to insufficient economic and policy drivers.

Energy reduction efforts are significantly impacted by incentives that reward reduced energy use.[35] Unfortunately, energy costs for businesses in China, around the equivalent of US$0.10–0.17 per kWh, are not always a sufficiently intrinsic motivator.[36] Research suggests that factories do not bear the full cost of energy prices due to local idiosyncrasies in pricing and market failures.[37] Local governments will go so far as to offer subsidies for electricity to attract investment in manufacturing, as is the case in the eastern province of Jiangsu.[38]

Furthermore, factory management may not understand the potential for energy cost savings—or they may not believe it.[39] Equally important, policy incentives that increase costs for energy waste and enhance benefits for savings are a significant determinant of energy reduction. In California and the U.K., for instance, the policy environment has resulted in more energy-efficient economies.[40] However, government incentives and regulations that support GHG reductions through energy efficiency vary widely in China by city and province.[41] Multinational buyers facing this reality of inconsistent incentives find that they must play a more active role in building supplier motivation.

Examples of Supplier and Energy Cost Savings

- BSR Energy Management in China case studies
- United Nations "Industrial Development Report" 2011
- Walmart "Improving Energy Efficiency" case study

Our research shows that companies can address this limiting factor when they reward suppliers by applying these opportunities:

- **Connect suppliers to benefits** from GHG reductions of cost savings and government incentives to increase motivation and the uptake of buyer programs.
- **Recognize good performance** with deliberate business relationships, procurement decisions, and public acknowledgment benefits.

Connect Suppliers to Benefits

Connecting suppliers with the benefits of cost savings and incentives in certain provinces will reward them for energy efficiency. The cost savings from energy efficiency is a tangible benefit of most emissions reductions programs. Buyers

[35] International Energy Agency, "25 Energy Efficiency Policy Recommendations: 2011 Update."
[36] Rosen and Houser, "China Energy: A Guide for the Perplexed."
[37] Ibid.
[38] Sucheng Economic Development Zone of Jiangsu, "Incentives for Business."
[39] United Nations Industrial Development Organization (UNIDO), "Industrial Development Report"; BSR roundtable discussion in Guangzhou.
[40] Places with the most energy-efficient economies have comprehensive policies in place that support efficiency. Policies include "decoupling" energy sales from revenue for utilities, tiered electricity pricing that makes energy use more expensive at higher levels of use, requirements that utilities subsidize efficiency consulting services, rebates and tax incentives for high-efficiency equipment, and information systems that make energy easier to track and manage. These policies lead to incentives that make it more valuable to use less energy and more costly to waste it.
[41] UNIDO, "Industrial Development Report"; BSR roundtable discussion in Guangzhou.

Possible Ways to Reward Suppliers

» Several buyers sponsor energy efficiency audits, training, and project planning for suppliers willing to commit to reporting.

» Others initiate a pilot project with a leading supplier and provide support during the project. Some will share results and lessons as an example with other suppliers.

» One buyer used its public relations team to generate publicity through news articles to make the supplier more visible to other potential customers.

» Several companies have begun to integrate energy metrics in procurement conversations and even scorecards with suppliers.

Source: *BSR interviews, projects, and workshops, 2008–2013.*

"If whoever is buying the product doesn't care about these initiatives, then all that's left is reducing cost and increasing efficiency in the future. It has to go right up the chain."

Source: *Supplier to Global 500 electronics product companies, Guangzhou roundtable discussion.*

can provide or subsidize energy audits and training to help suppliers understand efficiency and convince factory managers of the cost savings potential.[42] Another option is to support pilot projects that demonstrate the energy savings from emissions reductions projects as IKEA, Dell, and Electrolux do. One tip from suppliers and energy services providers that surfaced at our Guangzhou roundtable is to start with smaller projects because factory managers may believe they will look bad when they propose large savings as the first step. Factories that begin with small reductions will offset those measures' direct and overhead costs while building support for greater reductions.

Meanwhile, multinational company teams based in China can connect suppliers to provincial and city incentives that exist in some manufacturing centers. These government incentives range from energy efficiency training materials to free audits, subsidies, and GHG trading benefits.[43] A new program in Shandong province provides assistance for certain factories to adopt a modern energy management system.[44] The appendix provides a list of resources where companies can identify some of these incentives. Companies who connect suppliers to the benefits of GHG reductions will find greater motivation, understanding, and uptake of their emissions reductions programs.

Recognize Good Performance by Suppliers

Buyers who consider additional incentives beyond efficiency benefits achieve even greater success. They provide these incentives in a variety of ways that demonstrate the benefit to suppliers in their business relationships. Since buyers exert a financial influence on suppliers through their purchasing and contracting decisions, they can reward suppliers in business decisions that include energy and GHG emissions considerations.[45] Specifically, they may convey to suppliers that future orders depend on or will be influenced by energy performance. IKEA, Walmart, Lenovo, and HP already use energy and GHG performance considerations in their purchasing decisions through supplier qualifications, GHG discussions during supplier meetings, reporting requirements, or procurement scorecards.

Companies can also recognize good performance in nonfinancial ways. Communication from the procurement function that reinforces messages from the sustainability function on the importance of company climate change goals to suppliers provides an incentive for suppliers to help buyers meet their business needs. Some companies have identified more innovative ways to recognize good performance, such as through acknowledgment during supplier summits and case studies that showcase leading suppliers to the broader supply chain (see sidebar). These deliberate, clearly communicated benefits can help suppliers overcome limitations in their motivation.

[42] U.S. EPA, "Managing Supply Chain Greenhouse Gas Emissions: Lessons Learned for the Road Ahead."
[43] BSR, "Unlocking Energy Efficiency in China: A Guide to Partnering with Suppliers."
[44] Arthur, "China's Factory Owners Look for Energy Savings."
[45] Wu et al., "Understanding the Role of Government and Buyers in Supplier Energy Efficiency Initiatives."

Build the Market

The market for GHG emissions reduction is growing in China. Unfortunately, large, long-term GHG reductions face daunting financial and technical barriers. Partnerships that build the market for knowledge, services, and financing are needed to secure the biggest GHG reductions.

Limiting Factor

Efficiency services and finance are still nascent in many regions.

Since we began our work, BSR has seen many indicators of growth in the market for emissions reductions globally and in China. Around 100 global companies report on GHG emissions in their supply chain, and nearly 3,000 suppliers report using the CDP Supply Chain Initiative.[46] Within China, we have seen a proliferation of energy service providers, NGOs, and industry associations related to emissions reductions (see list in Appendix). Plans by the Chinese government to cut GHG emissions 17 percent by 2015, reduce GHG intensity 40–45 percent from 2005 levels by 2050, and respond to pressure by the public to address pollution from manufacturing indicate continued growth.[47]

While these are promising signs, companies need more to establish a market for significant GHG emissions reductions in China. We see three enabling conditions where multinational companies can engage: *efficiency expertise*, *information systems*, and *financing*.[48] Efficiency expertise includes technical service providers, auditors, trainers, and in-factory expertise. Information systems are reliable, timely, and detailed data on energy use, markets, and technologies. Financing includes a combination of investment vehicles that allow structured deals for energy efficiency. Companies will achieve bigger reductions by supporting some or all of these market-building activities.[49]

"We support development of a data platform for GHG emissions by the Chinese Institute of Electronics. Components manufacturers can use this online platform to calculate GHG emissions of their products and processes."

Source: *Interview with China-based employee of a Global 500 company, May 2014.*

With an eye toward supporting these enabling conditions, companies can build the market for emissions reductions in China with these opportunities:

» **Make the most of existing opportunities** for efficiency expertise, information systems, and financing in particular regions.

» **Engage in industry collaborations** to standardize communications, share tools, and increase understanding of best practices.

Make the Most of Existing Opportunities

Provinces with one or more enabling condition provide opportunities for immediate emissions reductions. Hong Kong and Shanghai are two of the major trade regions with policies that provide incentives for GHG reductions where efficiency expertise and financing are available. Technical energy efficiency

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[46] Based on BSR analysis and CDP reporting on participation in its Supply Chain Initiative.

[47] Government of the People's Republic of China, "Key Targets of China's 12th Five-Year Plan"; *The Economist,* "The East Is Grey."

[48] Shi, Perera, and Dressen, "Communicating the 'Financeability' of Energy Efficiency Projects: Guide to Data Needs for Financing EEPs in China."

[49] Market building to address climate change typically includes policy. However, given the complexity of China's committee system and national-local interactions, we instead focus on near- and midterm actions companies can make within the current policy framework. Changes to China's policy system that increase demand for energy reduction will accelerate even greater emissions reductions.

services also cluster around manufacturing centers, such as Guangzhou and Shenzhen. There are fewer examples of financing, but the GHG trading that exists in seven regions around China is a promising example of a credible financing mechanism.[50] Multinational buyer companies that utilize existing opportunities from energy service providers, information systems, and financing will build demand for and improve the quality of these tools.

Building the market may require focused effort in a particular region. Companies can draw on services in specific regions to build training programs and information systems for priority industries. Companies such as HP, Walmart, and IKEA work with energy service providers in regions where supplier factories are located or bring providers to the factories in other regions to audit, train, and support implementation of energy reduction projects. These efforts reduce the barriers to implementing GHG reduction strategies in China by building the market for efficiency expertise, information systems, and financing.

Engage in Industry Collaborations

Devoting resources to collaborative initiatives will produce greater results than companies acting alone. Numerous industry collaborations are advancing the foothold established by individual companies to reduce emissions in the supply chain. Our own Supplier Carbon Performance (SCP) Initiative uses a common training, auditing, and emissions reduction implementation approach across multiple industries (see sidebar). The Electronic Industry Citizenship Coalition (EICC) develops tools and facilitates best practice sharing for GHG emissions reduction among its members. These initiatives can save time that might otherwise duplicate efforts, require additional supplier prodding, or yield lackluster results from individual company efforts.

The most effective industry collaborations standardize approaches, share tools, and increase understanding of best practices. The EICC developed a tool to standardize data collection that improves the understanding and capacity of suppliers to meet common customer needs.[51] The CDP is collaborating with companies and the University of Minnesota to develop a tool that identifies the suppliers most likely to reduce emissions when encouraged to do so by buyers.[52] The GHG Protocol shares best practices and updates its guidance on Scope 3 emissions reporting periodically. Company partners are essential to the success of these industry collaborations.

Companies play a critical role in building the market for even greater emission reductions by making the most of existing opportunities and engaging in industry collaborations.

BSR's SCP Initiative

BSR's Supplier Carbon Performance (SCP) Initiative brings together companies and suppliers in China to drive real, visible emissions reductions. It achieves this mission by identifying energy-saving opportunities in factories, coaching suppliers to develop energy management programs, resolving barriers that stand in the way of taking further action, and driving senior support by suppliers.

Our model has four components:

» Supplier readiness assessment and training
» On-site energy audit and opportunity evaluation
» Plan development, analysis, and reporting
» Buyer forums to share best practices

Learn more at: *www.bsr.org/en/our-work/working-groups/supplier-carbon-performance*.

[50] Government of the People's Republic of China, "China Climate Change Info-Net."
[51] EICC, "Environmental Reporting Initiative."
[52] NorthStar Initiative for Sustainable Enterprise, "New Pilot Program Takes Aim at Supply Chain GHG."

Ways Forward

Multinational companies are rightfully looking to their suppliers in China as a source of cost-effective emissions reductions. Yet, companies that have pursued this source have found that measurable progress can be elusive. Our research shows areas of immediate opportunity for companies even while more examples, research, and partnerships are needed.

"Saying you're going to reduce energy [in your supply chain] without understanding how you'll get there is a dangerous approach. First thing is to make sure you have your business case before setting targets."

Source: *Supplier to Global 500 retailers, Guangzhou roundtable discussion, October 2014.*

Supply Chain Remains a Promising, Unfulfilled Opportunity for Climate Progress

Lessons learned to date point to four key opportunities to make progress: demonstrate commitment, provide direction, reward suppliers, and build the market. By implementing activities within these four key opportunities, companies can achieve greater climate results from supply chain GHG management. More examples, research, and partnerships are needed to demonstrate the strategies that work for each industry and company.

More Examples, Research, and Partnerships Are Needed

Companies cannot drive GHG reductions alone, especially in China. A number of institutional barriers from government actions to market disincentives delay progress. Future research and cross-sector collaboration with NGOs and government will slowly erode barriers to the biggest reduction opportunities. We see three priorities:

» **Future research will shed light on targeted opportunities.** There is a need to focus research on the opportunities with the greatest potential. We applaud efforts by the CDP and University of Minnesota to identify the companies most likely to reduce emissions when pushed to do so. More research will reveal GHG reduction opportunities by industry, region, and factory.

» **Continued company best practice sharing is essential.** Approaches to supply chain GHG management depend on company priorities. The approaches define how companies engage with suppliers and the types of data and supplier actions they prefer. Best practice sharing must continue through forums, such as those provided by CDP, WRI, BSR, and other organizations.

» **Cross-sector refinement to improve tools should continue.** The work of WRI and other organizations to standardize GHG measurement methodologies has unlocked some of these barriers, and further refinement at the industry level is needed. Data to benchmark energy efficiency by industry is also necessary to identify leaders, laggards, and the potential within each supply chain. Likewise, more detailed data platforms and sharing like those of the Chinese Institute of Electronics and EICC will promote additional progress.

These initiatives and ongoing work by companies engaged in supply chain GHG management will continue to identify and capitalize on opportunities to achieve greater impact in China.

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Appendix

Directory of Technical Energy Service Providers in China

Note: *The providers are listed in alphabetical order. Inclusion in this list is not an endorsement or recommendation by BSR. Multinational buyers and Chinese suppliers should qualify energy providers based on their own criteria. The ISO 50002 Energy Auditing standard that is in development provides principles for selecting energy service providers.*

Company name	China headquarters	Energy audits	Project finance and management	Energy management, coaching, and training	Energy information systems	Services in Pearl River Delta region (Guangzhou)	Services in Yangtze River Delta region (Shanghai)
BSI Management Systems Certification (Beijing)	Beijing	X	X	X	X	X	
CGN CLP Energy Services (Shenzhen)	Shenzhen	X	X	X	X	X	
Cinotech Solutions	Guangzhou	X	X	X	X	X	
Climate Bridge	Shanghai		X				
Energenz Consulting	Hong Kong	X		X	X	X	
EnergyLAB Limited	Hong Kong	X	X	X	X	X	X
Energy Resources Management	Hong Kong	X	X	X	X	X	X
Hop Shing Engineering	Dongguan	X	X			X	X
Ingersoll Rand Trane (Shanghai) Energy Service	Shanghai	X	X	X	X	X	X
Reset Carbon	Hong Kong	X		X	X	X	X
Sodexo	Shanghai	X	X	X	X		X
TÜV Rheinland (China)	Beijing	X	X	X	X	X	X
WENS China	Shenzhen		X	X	X	X	X
艾奕康环保技术顾问（广州）有限公司上海分公司	Guangzhou	X	X	X	X	X	X
北京启迪德润能源科技有限公司	Beijing			X			
北京启迪德润能源科技有限公司	Beijing			X			
东莞市大能环保科技有限公司	Dongguan	X	X	X		X	
江门旭东能效评估有限公司	Jiangmen	X	X	X	X	X	
深圳深绿建筑设计有限公司	Shenzhen	X	X	X	X	X	X
上海安纳捷节能环保技术发展有限公司	Shanghai	X	X	X	X		X
香港兆丰科技设备有限公司广州代表处	Guangzhou	X		X	X	X	X

Select Associations and Resources for GHG Reductions in China

EICC Environmental Reporting Initiative
http://eicc.info/CarbonReportingSystem.shtml

Energy Conservation for Public Institutions
http://ecpi.gqj.gov.cn/

Energy Efficiency Guide for Industry in Asia
www.energyefficiencyasia.org/index.html

Hong Kong Energy Efficiency Net
http://ee.emsd.gov.hk/eindex.html

Institute for Industrial Productivity Industrial Efficiency Technology Database (IETD)
http://ietd.iipnetwork.org/

Greenhouse Gas Protocol Third Party Databases
www.ghgprotocol.org/Third-Party-Databases

Lawrence Berkeley Laboratory China Energy Group
http://china.lbl.gov/

Companies and Partners That Participated in the Research

Guangzhou Roundtable Discussion (October 17, 2013)

AVC Corp.	IKEA	RESET Carbon
Eastek International Corporation	Institute for Sustainable Communities China	SGS S.A.
Efficiency Exchange	Lite-on (Silitech 旭麗電子)	Starbucks Corporation
Energenz	MiTAC International Corp.	TÜV Rheinland Group
Far East Cup	Mothercare Plc.	Wal-Mart Stores, Inc.
Fortune Oriental Holdings, Ltd. 东润发	Koninklijke Philips N.V.	World Resources Institute (WRI)
Hennes & Mauritz AB (H&M)	Pacific Market International (PMI)	World Wildlife Fund (WWF)
Hewlett-Packard Company (HP)		

Washington, D.C., Roundtable Discussion (May 13, 2013)

AT&T, Inc.	Ford Motor Company	PRé Sustainability
Alcoa, Inc.	GHG Management Institute	Ricardo-AEA
Bloomberg, L.P.	ibLaunch Energy	S.C. Johnson & Son
Caesars Entertainment Corporation	Institute for Sustainable Communities	Strategic Sustainability Consulting
Campbell Soup Company	Intertek Group, Plc.	The Climate Registry
Carbon Disclosure Project (CDP)	Kohl's Corporation	U.S. EPA
Cargill, Incorporated	Kuhn Associates	U.S. General Services

	Sustainability Advisors	Administration
Deloitte Consulting, LLP	Lenovo Group, Ltd.	AB Volvo
EcoSTEPS	Lockheed Martin	World Business Council for Sustainable Development (WBCSD)
Environments and Energy Publishing	Macy's, Inc.	World Resources Institute (WRI)
Environmental Defense Fund (EDF)	McCormick & Company	

Company Interviews (April–May 2013)	
AB Electrolux	Koninklijke Philips N.V.
Dell, Inc.	Lenovo Group, Ltd.
Hewlett-Packard Company (HP)	Sony Corporation
IKEA	Starbucks Corporation

BSR Company and Collaborative Initiatives (2005–2012)	
AB Electrolux	Levi Strauss & Co.
Ann, Inc.	Li & Fung Limited
Gap, Inc.	Nike, Inc.
Hennes & Mauritz AB (H&M)	Nordstrom, Inc.
Hewlett-Packard Company (HP)	Starbucks Corporation
IKEA	The Timberland Company
Kohl's Corporation	Wal-Mart Stores, Inc.