Corporate
Information
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CITI Index and the Initial Assessment of 147 Brands

Greening the Global Supply Chain

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Institute of Public & Environmental Affairs

The Institute of Public & Environmental Affairs (IPE) is a registered non-profit organization based in Beijing. Since its establishment in May 2006, IPE has developed the China Pollution Map Database to monitor corporate environmental performance and to facilitate public participation in environmental governance. (www.ipe.org.cn)

Natural Resources Defense Council (NRDC)

The Natural Resources Defense Council (NRDC) is a non-profit environmental organization with more than 1.3 million members. Since 1970, NRDC lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and environment. NRDC has offices in New York, Washington, D.C., Los Angles, San Francisco, Chicago, Montana, and Beijing. (www.nrdc.cn)

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Abstract

The Corporate Information Transparency Index (CITI) is a new quantitative evaluation system designed to measure a company's performance in managing the environmental impacts of factories in their supply chains in China. The index has been jointly developed by the Institute of Public and Environmental Affairs (IPE) and the Natural Resources Defense Council (NRDC).

The CITI has been developed to help address the environmental challenges brought forth by global production and procurement. As the workshop of the world, China's industrial production and processes have brought about severe pollution to its air, water and soil. Given the complexity of global supply chains, many existing Chinese and international standards and assessment regimes have been ineffective in covering environmental aspects of supply chain management.

Despite the central importance of supply chains in globalized business core function, and despite the heavy impact of pollution from manufacturing in this way, company corporate social responsibility programs generally focus very inadequate attention on pollution from their supply chain.

Over the past few years there has been progress made in environmental information disclosure in China and also developments in levels of public participation. In order to increase stakeholder participation in environmental management of supply chains, since 2010, IPE and partner NGOs have pushed dozens of brands from the IT and textile industries to use IPE's Pollution Map database to identify and address their supply chain pollution problems. They have then conducted qualitative assessments of these brands. In August 2013, IPE began partnering with NRDC to refine its supply chain evaluation methods, and based on the input from multiple sources, developed the CITI.

It is already apparent from this inaugural CITI evaluation that green procurement policies are reducing energy use and emissions. As of June 2014, Chinese and foreign brands had collectively pushed more than 1600 suppliers to issue statements on their specific pollution problems or to disclose their emissions data, and several hundred of these companies have taken corrective actions.

Another goal of the CITI is to create a roadmap that brands can follow to green their supply chains in China. The CITI evaluation is built upon five main themes: Communication and Follow-up, Compliance and Corrective Actions, Extending Green Supply Chains Practices, Target Setting and Data Disclosure, and Recycling and Reuse. These five themes are split into the 10 criteria the CITI uses for evaluating companies. Each of the evaluation criteria is split into five levels, from ones that are easy to implement, to more challenging ones that require a deeper level of supply chain

management. The final aim is to reach a level of green supply chain best practice. So overall the CITI is also designed to be a green supply chain roadmap.

We therefore believe that the CITI can reflect whether or not a brand has the will, the capabilities and the necessary systems in place to be able to resolve environmental pollution problems in their supply chains. It can also help brands forge a path from environmental compliance, to continuous improvements, and finally to best practice.

This inaugural CITI assessment looks at eight industrial sectors with significant environmental impacts: IT, textiles, food and beverage, household and personal care, automobile, breweries, and leather. Apple, H&M, Unilever, Coca Cola, Stora Enso, and Puma were top performers in their respective sectors. However, 47 of the brands were unable to provide any sort of response to questions about their supply chains, demonstrating that there's a long road ahead before the goal of green supply chains can be attained.

The CITI evaluation is based on data platforms and information disclosure. We believe that those brands that lack transparency cannot demonstrate the effectiveness of their environmental protection work, and cannot carry out meaningful communications with stakeholders, and therefore face difficulties in ensuring supply chains can meet environmental standards given the complex social conditions in which they operate.

Notably, this CITI evaluation includes numerous Chinese brands. While Chinese brands have lots of room for improvement, Huawei, Lenovo, Lining, Youngor Group, and Toread have already started to enact green procurement policies.

The inaugural CITI evaluation incorporates brands that have hundreds of millions of customers across the world. Our hope is that consumers from both China and abroad will pay close attention to the CITI scores and rankings and use their purchasing power to make green choices, thus being a force for pollution and emissions reduction in China and across the world.

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1 Introduction

The last few years have brought difficult pollution problems to many cities in China, particularly in the Beijing-Tianjin-Hebei region. According to the China Meteorological Administration, 2013 saw the highest number of smoggy days in China for the last 52 years.[1] China's Ministry of Environmental Protection also stated that in 2013, only three out of 74 cities had pollution concentration levels within the "Level 2" concentration threshold, with the rest exceeding pollution thresholds.[2]

In addition to air pollution problems, water pollution and soil pollution are also major challenges that the country faces. Official sources showed that nearly 60% of groundwater monitor readings showed water quality to be "poor" or "very poor"[3], and nearly 20% of croplands are were identified as polluted[4].

Most of the main air pollution sources in China are urban coal fired power plants. Over the past ten years, following the massive expansion in China's manufacturing industries, the amount of electricity being used has also shot up, causing increased air pollution problems. China not only satisfies its own production needs, but also, as the workshop of the world, acts as a manufacturer for other regions. China now manufactures an estimated 50% of the whole world's cement, steel, and textiles, 60% of its buttons, 70% of its shoes, 80% of its color TV's, 90% of its toys, and more than 95% of the world's compact fluorescent lights and batteries.[5] And, though China is aggressively seeking to increase its energy efficiency and reliance on renewable energy sources, the number of coal fired power plants necessary to power these factories in China is huge and continuing to grow very quickly. The climate change impacts of these developments are thus every bit as serious as the environmental health consequences.

Thus, as many scholars have noted, China is a victim of its own economic success. The country's ability to attract the business of global multinational corporations has been stellar, but its capacity to control the environmental consequences has been far less so.

Chinese government authorities have rightfully developed a great sense of urgency to better address its industrial pollution problems. In particular, the government has recently taken some very

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[1] The average number of smoggy days across the country this year was 47, the most in 52 years. *Hunan Channel, iFeng.com*. 2013. Available at: http://hunan.ifeng.com/news/detail_2013_12/02/1535247_0.shtml. Accessed June 26, 2014.

[2] Publication by Environmental Protection Departments of 74 Air Quality Monitoring Stations in Key Areas. 2014. Available at: http://www.zhb.gov.cn/gkml/hbb/qt/201403/t20140325_269648.htm. Accessed June 26, 2014.

[3] Ministry of Land Resources: 60% of Ground Water Sources Tested had "Poor" Water Quality. 2014. Available at: http://politics.people.com.cn/n/2014/0423/c1001-24930230.html. Accessed June 26, 2014.

[4] Quality of 16% of China's Arable Land already a Worry. 2014. Available at: http://www.chinanews.com/gn/2014/04-18/6077917.shtml. Accessed June 26, 2014.

[5] *International Trade Statistics 2013*. WTO. Available at: http://www.wto.org/english/res_e/statis_e/its2013_e/its13_toc_e.htm. Accessed June 26, 2014.

important and innovative steps in environmental information disclosure as well as announced some air pollution initiatives with great promise to expedite pollution reductions.[6] For example, China's newly amended Environmental Protection Law included a chapter stipulating data disclosure and public accessibility requirements, and the public's right to know and participate. It also required government agencies and businesses to release pollution monitoring data, and to establish a blacklist of environmental violators. For example, the recent Environmental Information Disclosure Measures from the Ministry of Environmental protection[7] require tens of thousands of large water or air polluters and waste water treatment facilities to publicly disclose their pollution monitoring data online in real time.

Unlike domestic Chinese manufacturing companies, many consumer product multinationals outsource much of the production to contract manufacturers. This means that multinational corporations have become a major contributor to China's environmental pollution load but their participation in solving environmental problems is still far from sufficient.

Casual observers might think that corporations in the 21st century, particularly multinational corporations with global reputations, already have active programs in place to oversee and limit the environmental consequences of their manufacturing abroad. Indeed, there has been talk of the need for, and value of "sustainable" global business practices – particularly limiting pollution as well as energy and water use -- since the Bruntland report in 1987 and the landmark Earth Summit in Rio in 1992. And, in fact, nearly thirty years after Bruntland, there is a proliferation of glossy annual Corporate Social Responsibility reports from multinational corporations, touting their concern about environmental and social impacts and more than 100 codes and certification schemes on the booked developed to promote reductions in environmental impacts of industrial production. Annual environmental conferences abound around the world brainstorming green initiatives, and there is a growing market demand for products that have reduced energy needs or can be recycled.

Yet, on the ground, there is much less effective corporate engagement where it matters the most for China and other countries in the developing world. For example, only one-third of 600 of the largest publicly-traded companies in the U.S. have evidence of activities in place to engage suppliers on sustainability performance issues, and less than half demonstrated any inclusion of environmental and/or social standards in the procurement decision-making process.[8]

Even the most engaged multinational companies today still focus their sustainability efforts primarily or exclusively on their environmental impact at home, such as on the carbon footprint of their corporate offices or retail shops or the chemical composition of the products they sell. As we describe in Chapter 2, indices ranking these efforts, such as the Global Reporting Initiative (GRI)

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[6] *Blue Sky Roadmap Report II: Real-time Disclosure Begins*. Available at: http://www.ipe.org.cn/upload/ipe-reports/report-blue-sky-roadmap-ii-en.pdf. Accessed June 30, 2014.

[7] 2013 Report on Information Disclosure Work by Environmental Protection Departments. Available at: http://www.zhb.gov.cn/gkml/hbb/bgg/201403/t20140328_269812.htm. Accessed June 26, 2014.

[8] Lang, K, Sabour, A et al. *Gaining Ground: Corporate Progress on the Ceres Roadmap for Sustainability*.; 49:59 Available at: http://www.ceres.org/resources/reports/gaining-ground-corporate-progress-on-the-ceres-roadmap-for-sustainability/view. Accessed June 12, 2014.

and Carbon Disclosure Project perpetuate this status quo because supply chain activities count for too small of a component of the overall sustainability score. Thus even a failing "grade" in supply chain oversight/management/disclosure will impact a company's total sustainability score by 5%.

This very narrow focus of corporate social responsibility programs has contributed substantially to the crisis we face from air and water pollution in China; despite the unquestionable contribution that factories manufacturing for the rest of the world have made to China's unbearable pollution today, there is almost nothing underway in the private sector to curtail pollution problems there or in other countries where they source their production.

Given the pressing environmental health impacts of China's pollution load, as well as the urgent time line for irreversible global climate change, it is clearly past time for corporations -- particularly the many large, globalized multinational corporations heavily investing in sourcing abroad -- to step up and address the environmental problems stemming from their businesses practices. These corporations urgently need to identify which processes are their dirtiest, locate their key suppliers in these parts of their supply chain, track and assess the discharges and emissions from these key suppliers, as well as energy and water use, and require minimum environmental performance as a condition for doing business. Where they find problems, these companies need programs in place to require corrective actions and follow through to ensure that the problems have been resolved.

Furthermore, these corporations need to promote transparency in information disclosure from their suppliers to enable the interested/affected public to better watch-dog pollution problems that arise in their own backyards during day to day operations of these factories.

In this report, the Institute for Public and Environmental Affairs (IPE), based in Beijing, China, and the Natural Resources Defense Council (NRDC), headquartered in the United States, present a new tool for evaluating multinational corporation sustainability performance, one uniquely designed to address China's most urgent environmental problems. The tool, named the Corporate Information Transparency Index (CITI), can serve as an important supplement to existing tools, because it focuses exclusively on supply chain impact. It is constructed in a way that shapes and directs the development of sorely needed, effective policies that will help China reduce its pollution load; actions taken to increase scores over time will mature company supply chain matters in a way that increases impact on the ground and decreases the footprint of manufacturing. We hope that through the introduction and utilization of this supplementary tool, companies will be more motivated to address their supply chain impacts and that they will find the framework that we propose to be a useful guide to the maturation of their corporate environmental sustainability work.

2 Corporate Supply Chain Responsibility: The Need for Expansion

As world populations face the ever-intensifying challenges of climate change and industrial pollution, many look to the private sector –particularly multi-national corporations -- to deliver improvements through building the more environmentally responsible, sustainable global economy that we need. Policy makers and citizens alike admire the private sector for its nimbleness in responding to changing market conditions and for its ability to operate effectively around the world. They believe that the very capabilities and talents that that have allowed businesses to thrive so enormously across developing economies over the past two decades are similarly well suited to tame the environmental impacts of that growth. "What the buyer wants, the buyer gets", we hear over and over again. Thus it is logical for stakeholders to think that if a "buyer", in this case an important global corporation, required environmental responsibility from his suppliers, he would likely get it, along with the more conventional requirements on product quality, price, and delivery that are typically the focus of a business contract or purchasing agreement.

Nowhere is the hope that corporate responsibility could drive environmental improvement larger than for China, where manufacturing for export to populations living outside its borders is causing so much pollution within.

The large number of sustainability initiatives, reports, certifications, and scoring systems published each year certainly indicate that there is a "market" for environmental responsibility, and that the private sector is aware of high public expectations. Nonetheless, today, fewer than 10% of the more than 45,000 publicly-traded companies worldwide report on their sustainability performance[9], which suggests that a small minority are taking meaningful steps on environmental matters. In fact, the intensifying environmental challenges we face globally – the heating of the planet, intermittent severe water shortages, ever-increasing air and water pollution loads, and more – provide the most compelling evidence one would need of the insufficiency of sustainability efforts by the private sector to date.

What are the shortcomings in corporate social responsibility programs that may lead to their insufficiency in curbing the environmental impacts of their business operations around the world? From China's perspective, the most obvious, and to the uninitiated, the most surprising, is that **these programs seldom address the environmental impacts of their global manufacturing supply chain**. Given that success in globalized manufacturing often requires exquisite coordination across

[9] *Sustainability reporting policies worldwide–today's best practice, tomorrow's trends*. UNEP, Global Reporting Initiative, KPMG, Center for Corporate Governance in Africa, 2013. Available at: https://www.globalreporting.org/resourcelibrary/carrots-and-sticks.pdf. Accessed June 12, 2014.

many factories, which taps some of the most valuable talent in a multinational corporation, it is difficult to explain how sustainability efforts could miss the target here and fall so far from the mark.

As a business matter, companies certainly recognize the very central importance of supply chain function and the risk posed to the business if problems occur along this chain. Many companies have a sharp eye out for external factors that could disrupt their manufacturing pipeline: natural disasters such as floods or earthquakes, conflict and political unrest, sudden demand shocks, import/export restrictions, terrorism, and more.

Similarly, as an environmental matter, there is little dispute that supply chain emissions is where a manufacturing company's real footprint lies. The U.S. Environmental Protection Agency weighed in authoritatively on the crucial contribution of the supply chain in its Climate Leaders program, for example, reporting that more than three-fourths of the GHG emissions associated with many industry sectors come from their supply chain[10]. This estimate has been confirmed by academic researchers as well[11]. This pattern is not unique to carbon; apparel companies have their greatest pollution impacts in textile dyeing and finishing, electronics in manufacturing printed circuit boards and enclosures, and battery manufacturers emits nearly all of their lead during smelting. Importantly, as these examples illustrate, supply chain impacts are usually beyond a company's Tier One suppliers, where products are assembled and packaged for final sale. They concentrate instead in Tier 2 or Tier 3 suppliers that manufacture the components of the final product.

Thus, despite the central importance of supply chain in globalized business core function, and despite the heavy impact of pollution from manufacturing in this way, Corporate Social Responsibility programs generally focus very little attention on pollution from their supply chain To the contrary, as described more fully below, they focus on ***where it is easiest to start***, rather than ***where it is the most important to fix***.

Further exacerbating this problem, as more fully described below, the tools the CSR programs rely upon, generally lack the details, specificity, or enforcement mechanisms necessary to deliver necessary improvements in even basic environmental performance –such as compliance with environmental emissions/discharge standards. These shortcomings are severe from the standpoint of reducing China's pollution load.

[10]*Managing Supply Chain Greenhouse Gas Emissions: Lessons Learned for the Road Ahead*.; 2010:4-4. Available at: http://www.epa.gov/climateleadership/documents/resources/managing-supplychain-emis2010.pdf. Accessed June 23, 2014.
[11]*Managing Supply Chain Greenhouse Gas Emissions: Lessons Learned for the Road Ahead*.; 2010. Available at: http://www.epa.gov/climateleadership/documents/resources/managing-supplychain-emis2010.pdf. Accessed June 23, 2014.

Codes of Conduct and Voluntary Standards: The need to supplement to address China's pollution problem

The 1990's heralded the rise of voluntary, self-regulation in the private sector, primarily in response to a strong public outcry regarding labor abuses in the apparel and shoe industry abroad; these efforts were undertaken to fill the regulatory voids in government programs in developing economies. Because of these origins, corporate social responsibility initiatives did not initially address environmental concerns at all, and even today, most "sustainability" activity in supply chain matters emphasizes social issues rather than environmental matters.

Those sustainability activities that do target environmental problems rely primarily on codes of conduct, voluntary standards, and various certification and labeling systems to achieve their goals. As described below, none of these tools has been designed or implemented in a way that adequately addresses the pollution problems caused by manufacturing in China; companies need more targeted, pro-active supplemental activities to effective reduce their manufacturing footprint.

- Limitations in Codes of Conduct

Codes of conduct identify the minimum expectations that a company has for its suppliers. Although they are the private sector's first and easiest step to address environmental risk in its supply chain, many companies (42%) still do not have them[12].

The impact of those codes on environmental performance that do exist - i.e., the likelihood of achieving compliance with a code – depends upon both what the code says and what a company does if suppliers do not follow it. Codes also need to engage "indirect" (Tier 2 and 3) suppliers beyond the first tier suppliers of a company, in order to cover "hot spots" of environmental impact of material suppliers further up the manufacturing chain.[13]

A recent review of corporate supply chain efforts provides excellent insight into the limitations of codes of conduct. [13]As these authors note, codes are often comprised of a very general statement of principles that, on their own, clearly will not be able to effect change. For example, the apparel company Liz Claiborne's code notes: "We favor suppliers who practice environmental protection".[14] Somewhat better are codes that require suppliers to comply with environmental rules and regulations. Colgate-Palmolive, for example, states: "Suppliers shall comply strictly with the letter and spirit of applicable environmental laws and regulations and the public policies they represent."[14] However, pragmatically speaking, government agencies in emerging economies such

[12]Lang, K, Sabour, A. *Gaining Ground: Corporate Progress on the Ceres Roadmap for Sustainability*. : 8-8. Available at: http://www.ceres.org/resources/reports/gaining-ground-corporate-progress-on-the-ceres-roadmap-for-sustainability/view. Accessed June 12, 2014.

[13] Lee, T, Kashmanian, RM. *Supply Chain Sustainability: Compliance- and Performance-Based Tools*. Wiley Periodicals: 23.

[14]Lee, T, Kashmanian, RM. *Supply Chain Sustainability: Compliance- and Performance-Based Tools*. Wiley Periodicals; :5.

as China are often under capacity to effectively enforce implementation of their environmental laws; legal requirements at this point become voluntary. With weak environmental enforcement and buyer interest in low cost, suppliers will often be motivated to cut corners to win contracts. Without acknowledging or in any way addressing these core problems, simply asking suppliers to pledge to "practice environmental protection" or follow the law will likely be an empty gesture.

To effectively engage and change behavior, supplier codes of conduct need to be combined with oversight, audits, and business consequences for bad behavior. Perhaps most importantly, code requirements should be incorporated into supplier contracts or purchase orders as a business requirement to effectively engage. Such elaborate programs are extremely rare, used today by only a very small handful of companies[15].

- Limitations in Voluntary Standards

Voluntary environmental management systems such as ISO 14001 comprise another popular tool to effect supplier behavior; by the end of 2008, nearly 200,000 factories around the world had been certified to ISO environmental management standards. However, the Achilles heel of the ISO program is that it is based on management by objective; companies are asked to set their own objectives and make progress toward those goals at their own pace and discretion. The emphasis on management systems (the "how") instead of performance (the "what") is another serious limitation.[16]

ISO and similar tools are thus best suited to factories operating at the top. They cannot be relied upon to turn around poor performing factories – and it is the poor performing factories that are disproportionately responsible for China's pollution problem. Wayne Visser, a vocal critic of the limitations of codes and management tools, notes that environmental management systems are often in place when "things spectacularly implode" environmentally, which should teach a lesson about the serious limitations in their effectiveness.[17] Consistent with this viewpoint, many factories with violation records in the IPE data base, some with repeated records, have ISO certifications.

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[15] Lang, K, Sabour, A et al. *Gaining Ground: Corporate Progress on the Ceres Roadmap for Sustainability*.; 55:55 Available at: http://www.ceres.org/resources/reports/gaining-ground-corporate-progress-on-the-ceres-roadmap-for-sustainability/view. Accessed June 12, 2014.

[16] Visser, W. The age of responsibility: CSR 20. In *The age of responsibility: CSR 2.0*. Hoboken, NJ: Wiley; 2011: 116-116.

[17] Visser, W. The age of responsibility: CSR 20. In *The age of responsibility: CSR 2.0*. Hoboken, NJ: Wiley; 2011: 116-112.

Shortcomings of corporate sustainability reporting frameworks to address the China pollution problem

A key component of any corporate sustainability initiative is the development of a program that first identifies and then manages key goals and activities that will deliver the environmental performance that a company seeks. Because "what gets measured, gets done", many companies value these frameworks for their role in driving management attention and channeling internal resources.

Although companies are certainly free to develop their own priorities for action and diagnostic frameworks, three sustainability indices[18] have come to dominate the world stage on this front: The Global Reporting Index (GRI), the CDP (from the Carbon Disclosure Project), and the Dow Jones Sustainability Index (DJSI). Companies participate in these indices as much for the public validation as for the direction they offer for their programs; they are used to communicate important details to stakeholders such as the general public or "green" investors about the company's behavior. Unfortunately, a close look reveals that these tools may not be able to effectively address industrial pollution problems in China on their own; they would greatly benefit from a supply chain supplement to their framework.

The GRI, CDP, and Dow Jones indices have both substantial overlapping content as well as some important differences. The GRI is the best known[19], having been applied to more than 1000 companies world-wide. [20]Its roots lie in the US non-profit organizations Ceres and the Tellus Institute. Now in its fourth generation the GRI assesses corporate sustainability behavior based on 58 standard disclosure questions and an additional 91 specific aspect questions, of which 34 relate to environmental matters. Most notably, ***only two of the 149 GRI questions concern supply chain*** environmental impact: EN32, which asks companies to report the percentage of new suppliers that have been screened using environmental criteria and EN33, which asks companies to report on the percentage of suppliers they have identified as having significant impacts, and of those, the percentage where improvements were agreed upon or relationships were terminated. Given that these two questions, which are highly important to manage environmental impact but harder to implement, comprise only 1/17th of GRI's environmental weighting, multinationals may be insufficiently motivated to develop programs in this critical area.

The Dow Jones Sustainability Index asks a few more detailed environmentally oriented questions in a supply chain management section of a very long and complex questionnaire similar to the GRI form. It goes a bit further than GRI, asking companies to report the specific measures they have

[18] Davies, J. Why CDP, GRI, DJSI stand out among sustainability frameworks. *GreenBizcom*. 2013. Available at: http://www.greenbiz.com/blog/2013/08/19/why-cdp-gri-djsi-stand-out-among-sustainability-frameworks. Accessed June 12, 2014.

[19] Searcy, C. Corporate Sustainability Performance Measurement Systems: A Review and Research Agenda. *Journal of Business Ethics*. 2012;107(3):242-242. doi:10.1007/s10551-011-1038-z.

[20] Searcy, C. Corporate Sustainability Performance Measurement Systems: A Review and Research Agenda. *Journal of Business Ethics*. 2012;107(3):239-253. doi:10.1007/s10551-011-1038-z.

undertaken to set standards for their suppliers, monitor them, and require corrective action.[21] Unfortunately, the DJSI focuses these supply chain questions only on Tier One suppliers, such as assembly plants and cut and sew facilities, which – as previously noted, are the easiest places to contact but also tend to have the least significant environmental impacts compared to material suppliers further up corporate supply chains (Tier 2 and above). A separate environmental section of the DJSI questionnaire queries the status of a company's environmental reporting, environmental policies and management systems, greenhouse gas emissions, water use, and waste generation but excludes supply chain nearly completely. (It does contain one question on how the company considers greenhouse gas emissions upstream in supply chain and downstream (customer use) in its climate strategy)These problems substantially reduce the effectiveness the index can have in China without further supplement.

Similar to GRI and DJSI, the CDP also provides a long, multiple question-based survey for firms to measure their sustainability performance. CDP has a very large reach, with more than 5000 companies disclosing to it on behalf of 767 investors with 92 trillion in assets.[22] The organization has put more and more emphasis on *GHG emissions* from supply chain (i.e. "Scope 3" reporting) recently, repeatedly flagging the lack of understanding and/or management or risk in supply chains and creating a specific supply chain program to drive more action among both purchasing companies and their suppliers.[23] However, CDP is much narrower in focus than others and asks only about greenhouse gas emissions and water risk (resource scarcity). The organization's narrow focus precludes the CDP from addressing China's most egregious air and water pollution problems.

In these ways, the most prominent global frameworks for corporate responsibility give insufficient emphasis on the impact of supply chain footprint on the evaluation of their sustainability efforts. There is therefore a need for a supply chain-focused supplement.

Recognition is certainly dawning in some specific industrial sectors about the critical importance of supply chain impacts of multinational corporations sourcing around the globe. The apparel industry, for example, has established the Sustainable Apparel Coalition which now represents nearly 40% of the global apparel industry.[24] The organization has developed a comprehensive facility index designed to benchmark the environmental performance of Tier One and Tier Two suppliers; the Tier Two emphasis is important, since that is where environmental impacts predominantly lie in that sector. In a somewhat similar vein, the Electronics Industry Citizenship Coalition (EEIC), a coalition of electronics firms, has created an industry code of conduct and set standards for social and environmental performance in the supply chain.[25] In general, however, the effectiveness of

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[21] RobecoSAM Corporate Sustainability Assessment Form 2014, Section 1.5 Supply Chain Management.
[22] https://www.cdp.net/en-US/WhatWeDo/Pages/investors.aspx. Accessed June 2014.
[23] *Collaborative Action on Climate Risk: Supply Chain Report 2013-14*. Available at: https://www.cdp.net/cdpresults/cdp-supply-chain-report-2014.pdf. Accessed June 24, 2014.
[24] Sustainable Apparel Coalition. *Sustainable Apparel Coalition*. 2014. Available at: http://www.apparelcoalition.org/. Accessed June 24, 2014.
[25] *A Practical Approach to Greening the Electronics Supply Chain*. Available at: http://eicc.info/documents/eicc_2011carbonreportingsystem_summaryreport_final.pdf. Accessed June 24, 2014.

these tools and the extent to which members of either coalition are actually using these tools to evaluate factories in their supply chain is not yet publicly known.

In 2010, CERES released a very helpful report *The 21st Century Corporation: a Roadmap for Sustainability*, with twenty expectations in the areas of governance, stakeholder engagement, disclosure, and performance that, if met, would ensure companies were integrating sustainability into their business systems and decision-making. The Roadmap tool raises supply chain as a priority concern to a greater extent than previous indices, noting explicitly that companies should demand the same standards they set for themselves with their suppliers, integrate sustainability criteria into their procurement decisions, and engage with suppliers to improve their sustainability performance and disclosure.[26] Four years after the release of the *Roadmap*, Ceres and Sustainalytics partnered to release the second evaluation of how over 600 of the largest publicly-traded companies in the U.S. performed on the *Ceres Roadmap*. *Gaining Ground: Corporate Progress on the Ceres Roadmap for Sustainability* demonstrates that while there is progress being made by an increasing number of companies and sectors, we are still not seeing the speed of change that is required – or the scale of innovation that is possible – particularly in areas such as supply chain. Though fifty-eight percent of companies have set clear social and environmental standards for suppliers (up from forty-three percent in 2012), only one-third have evidence of activities in place to engage suppliers on sustainability performance issues (up from 27 percent in 2012). And less than half demonstrated any inclusion of environmental and/or social standards in the procurement decision-making process. Thirty-four percent reported monitoring supplier sustainability performance (up from twenty-five percent in 2012), though only eighteen percent had implemented robust monitoring systems to measure and respond to supplier performance on key environmental and social factors.[27] This incremental progress is far from the improvement needed to address the urgency of the challenges we face in pollution problems in China.

As this review makes clear, companies have been judged for their sustainability efforts for more than a decade with activities and indices that inadequately concern themselves with pollution impacts from factories in their supply chains around the world. The limitations and inapplicability of these existing efforts undermine efforts in the private sector to address China's air and water pollution problems, which become more serious every day.

This mismatch between global pollution problems and corporate sustainability tools has motivated the Institute of Public and Environmental Affairs (IPE) and the Natural Resources Defense Council (NRDC) to develop an index specifically designed to address the problems in China - the Corporate Information Transparency Index (CITI). As described in greater detail in the next chapter, our index focuses exclusively on five very basic but critical components for an effective and publicly accountable corporate supply chain program:

[26]Moffat, A. *The 21st Century Corporation: The CERES Roadmap for Sustainability*. CERES; 2010.
[27]Lang, K, Sabour, A et al. *Gaining Ground: Corporate Progress on the Ceres Roadmap for Sustainability*; 49:59. Available at: http://www.ceres.org/resources/reports/gaining-ground-corporate-progress-on-the-ceres-roadmap-for-sustainability/view. Accessed June 12, 2014.

- Does the company respond to information provided to it on problems with factories in their supply chain?
- Does the company screen suppliers to make sure they are in compliance with discharge and emission standards? Does it require corrective actions when they are not?
- Does the company extend up its supply chain to address the environmental impacts of the suppliers of its suppliers?
- Does the company require its suppliers to publicly disclose its pollution discharge and energy/water use data? And
- Does the company track the global recycling of its product to guard against pollution from recycle?

We hope that through its supply chain focus, the CITI will expand corporate programs and policies to address expeditiously the problems they are causing that matter the most, and that public reporting of the CITI results will provide corporate leaders with the positive recognition they deserve while creating a much greater sense of urgency to corporate laggards to begin. When CITI is combined with frameworks such as the GRI, companies should have better direction to improve the focus of their sustainability work.

CITI Evaluation System

The CITI is a quantitative evaluation system that measures the level of competence companies have in managing the environmental impacts of their supply chains. One of the main aims of the index is to help the general public, and especially consumers, learn about how environmentally sound a brand's production and procurement processes are. We believe that the choices that consumers make will push brands into greening their supply chains and will help to reduce energy use and emissions.

At the same time, the CITI can also aid companies in impartially looking at the state of their environmental and supply chain management systems, which can help them to improve their management systems and increase their ability to be able to communicate with various different stakeholders.

3.1 The Development of the CITI Evaluation Guidelines

Since 2010, IPE and other Green Choice Alliance NGO partners[28] have been reaching out to companies from the IT and textile sectors about the environmental impact of their supply chains, and also began a process to evaluate the supply chain management of around 70 different brands.

IPE's prior supply chain analyses were mainly qualitative evaluations, but with the support of the SEE Foundation, IPE in 2013 began developing a score-based evaluation system to more objectively grade the environmental impact of business supply chains.

Amidst ongoing improvements in China's environmental information disclosure practices, IPE partnered with NRDC[29], a large U.S. - based NGO with an office in Beijing, in August 2013 to develop the Corporate Information Transparency Index (CITI).

Throughout the CITI development process, IPE and NRDC have worked with more than 20 international and domestic Chinese brands, industry associations, and suppliers to build the CITI evaluation guidelines, and we look forward to receiving more feedback on how to refine and improve the guidelines in the future.

[28] The Green Choice Alliance (GCA) integrates disclosed environmental information and public participation into existing supply chain management systems, and promotes China's manufacturing industry to improve its environmental performance and achieve energy and emissions reductions. In March 2007, GCA was initiated by 21 environmental organizations to promote and galvanize stakeholders to establish a new model of global supply chain environmental management. Since then it has become a national cooperative network that spans 51 environmental organizations.
http://www.ipe.org.cn/alliance/ngo.aspx. Accessed June 2014.

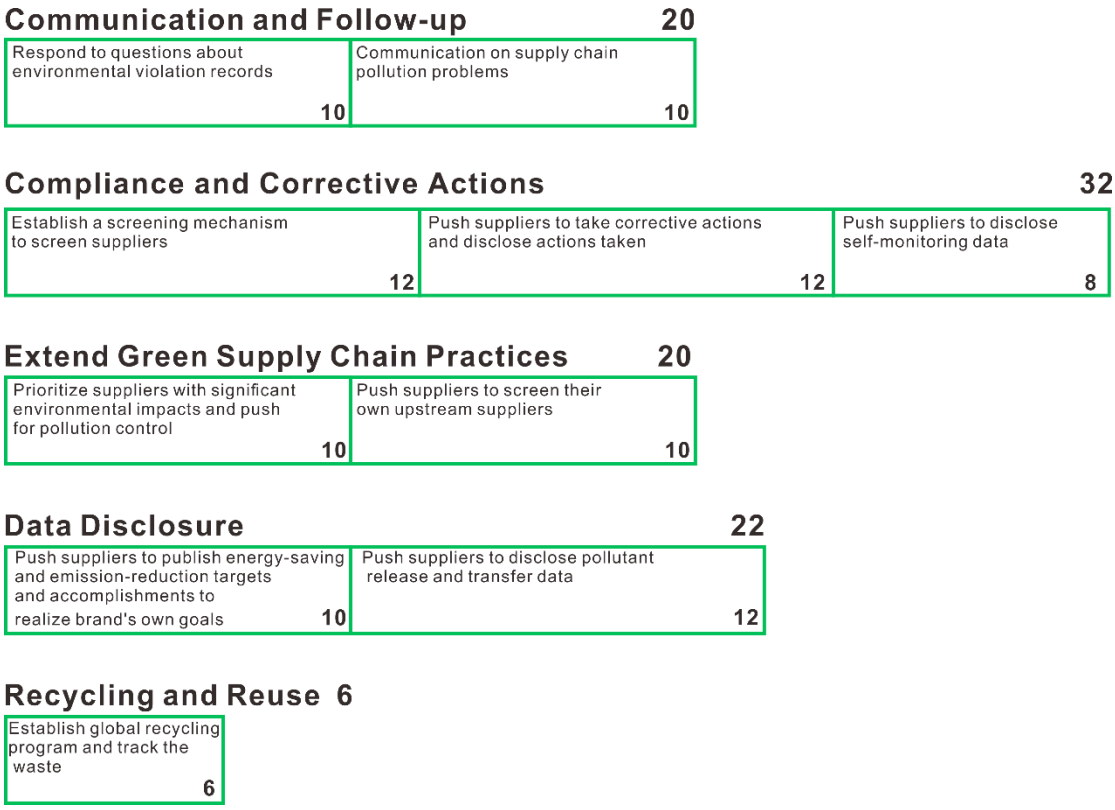
[29] NRDC has also developed a green supply chain initiative called Clean by Design to address the very large and rapidly increasing impact of industrial pollution from manufacturing in China and other developing economies abroad.

3.2 An Index and a Roadmap

The CITI is first of all a quantitative system used for evaluating the environmental performance of a company's supply chain.

Index

The CITI is built upon five main themes: Communication and Follow-up, Compliance and Corrective Actions, Extending Green Supply Chains Practices, Target Setting and Data Disclosure, and Recycling and Reuse. These five themes are split into the 10 criteria the CITI uses for evaluating companies, the respective weights of each criteria are shown in the diagram below:



Each of the evaluation criteria is split into five levels, A-E, and each of these is given a score depending on the weighting for the criteria. Please see criteria 2.1 for an example of how the five levels are broken down and scored.

Criteria		Score
Compliance and Corrective Actions	**2.1 Establish a mechanism to screen suppliers for**	A Not established screening mechanism (0 Points)
		B Publically required supplier environmental compliance and have started screening a small number of suppliers (3 Points)
		C Publically required supplier environmental compliance; established a screening mechanism, and have screened preferred suppliers and potential suppliers (6 Points)

violations (12 Points)	D Publically required supplier environmental compliance; established a screening mechanism and screen preferred suppliers and potential suppliers at least (9 Points)
	E Publically required supplier environmental compliance; established a screening mechanism and have routinely screened all suppliers and potential suppliers at least quarterly and also provided breakdown of screening results (such as number of suppliers out of compliance, etc.) (12 Points)

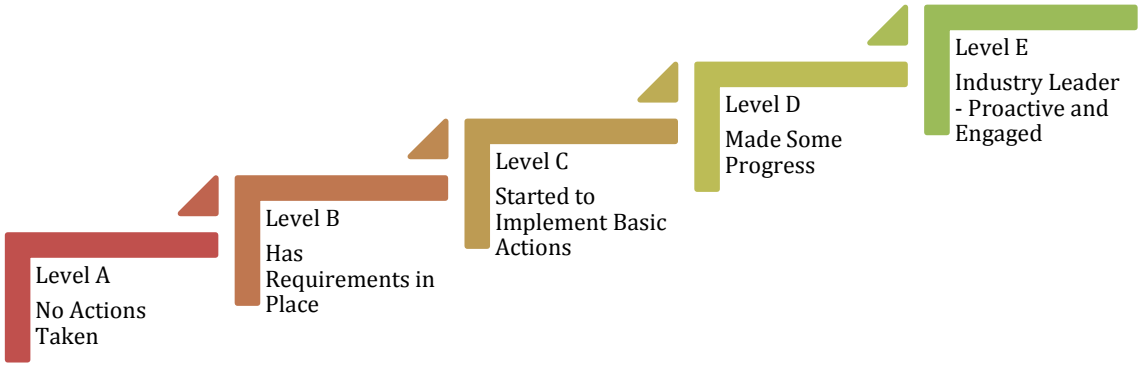
See Appendix I for more details of the CITI Evaluation System.

Roadmap

The CITI is not merely an index, it also a roadmap – a roadmap for greening supply chain in China.

The CITI was developed to assess the state of a company's supply chain management in China and sets out a roadmap using a series of criteria, from ones that are easy to implement, to more challenging ones that require a deeper level of supply chain management. The final aim is to reach a level of green supply chain best practice.

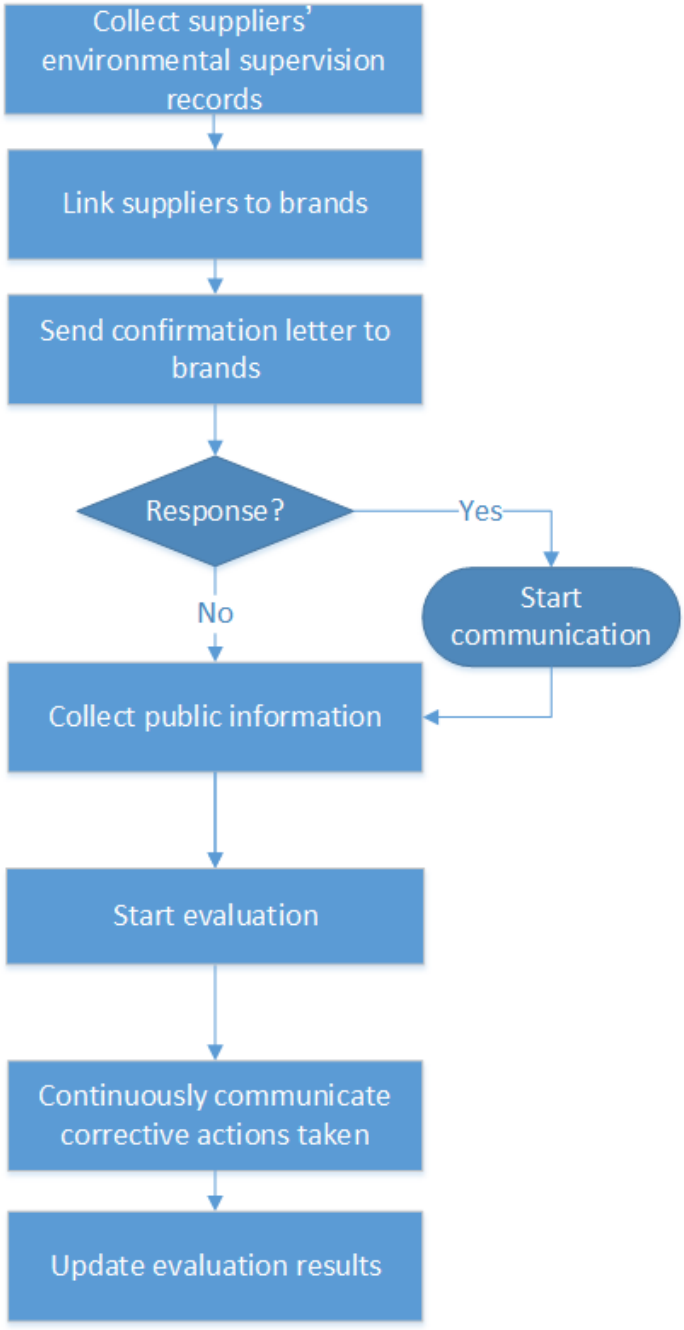
There are five sub-criteria within each criteria. These sub-criteria grade a company's environmental performance on a specific aspect of its supply chain management (A means no action has been taken; E means a company is proactive and engaged). That is then converted into an evaluation score using the assigned weight of the criteria.



We hope that the CITI will become a force that pushes companies to more actively establish environmental management systems for their supply chains.

3.3 Evaluation Process

The CITI evaluation is designed to follow a dynamic process based on environmental information disclosure and subsequent stakeholder engagement. The flow diagram below illustrates the IPE's procedure for evaluating companies.



3.4 Scope of the Evaluation

The CITI focuses mainly on consumer brands, which have the power to exert considerable influence on vendors within their supply chain to disclose environmental performance data and to require or encourage necessary corrective actions. This first CITI covers 147 brands from 8 industrial sectors: IT, textiles, food & beverages, Household and personal care, automobiles, brewery, paper products, and leather industries. With time, the scope of the CITI will expand to cover many more brands and sectors.

3.5 Basis of Evaluation and Method

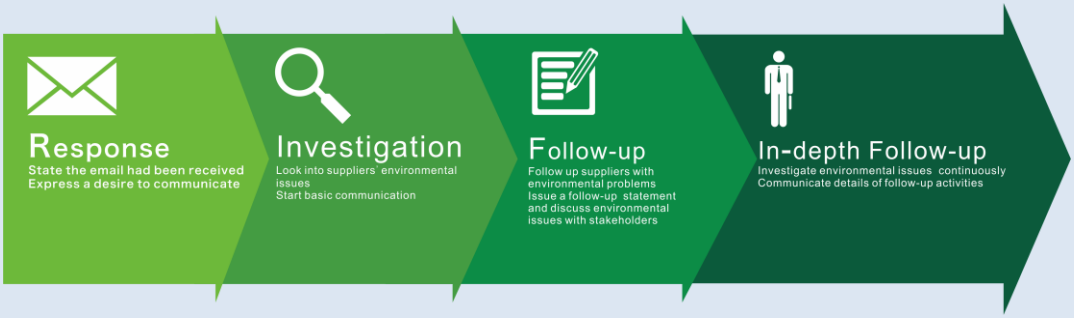
We are able to quantitatively evaluate the level of environmental management in the supply chain of different brands in different industry sectors because of long-term research and investigations into supplier environmental performance data, an established data platform, and records of continuous communications with brands and suppliers.

Communication and Follow-up

Basis of evaluation: Through data collection and field work, the Green Choice Alliance NGOs identify main pollution problems in the supply chain, then contact brands to alert them to these issues and keep records of all communications.

Evaluation method:

- Discover pollution problem through the Pollution Map Database records or through field investigations.
- Establish a connection between a brand and its supplier.
- Reach out to the brand to verify the supply chain connection, and assess the company's follow-up procedures.



Compliance and Corrective Action

Basis of evaluation:

- Since 2006, IPE has collected over 150,000 environmental compliance violations in its searchable Pollution Map Database.

Pollution Map Database

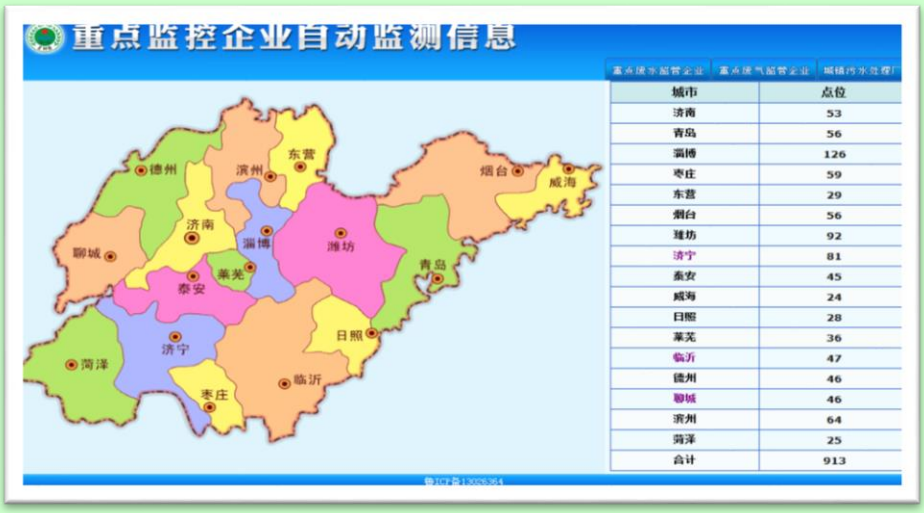
- Pollution Map Database web portal: searchable using keywords.

- "The Ferret" Automated Batch Search Tool: a search-tool jointly developed by NRDC and IPE that can help brands automatically compare lists of suppliers against the Pollution Map Database list of suppliers with environmental violation records.

- IPE is pushing for the establishment of a national online monitoring platform that can disclose company monitoring data. Brands can then use this for reference.

Disclosure of Automatic Monitoring Data

- According to the *Work Notice on Strengthening the Disclosure of Pollution Monitoring Data*, and the (*Pilot) Measures on the Disclosure of Self-Monitoring Data of Companies under Special Supervision,* companies under special supervision need to disclose their monitoring data in real time, and also promptly disclose data that's been monitored manually. At the moment, many provinces have established platforms that help companies disclose their self-monitoring data. Below are examples of real-time information platforms in Zhejiang and Shandong.



IPE has already begun collecting records of self-monitoring data from companies across China, and has developed a mobile app of the Pollution Map Database to help the public access public emission data. IPE plans to soon integrate the self-monitoring data records with the Pollution Map Database to provide more convenient search options.

Since 2010, many brands have used the Pollution Map Database to conduct regular screenings of their suppliers in China. They've collectively pushed 1600 suppliers to address their pollution problems and disclose the progress of their corrective actions, and to disclose their discharge data.

Company Environmental Supervision Records

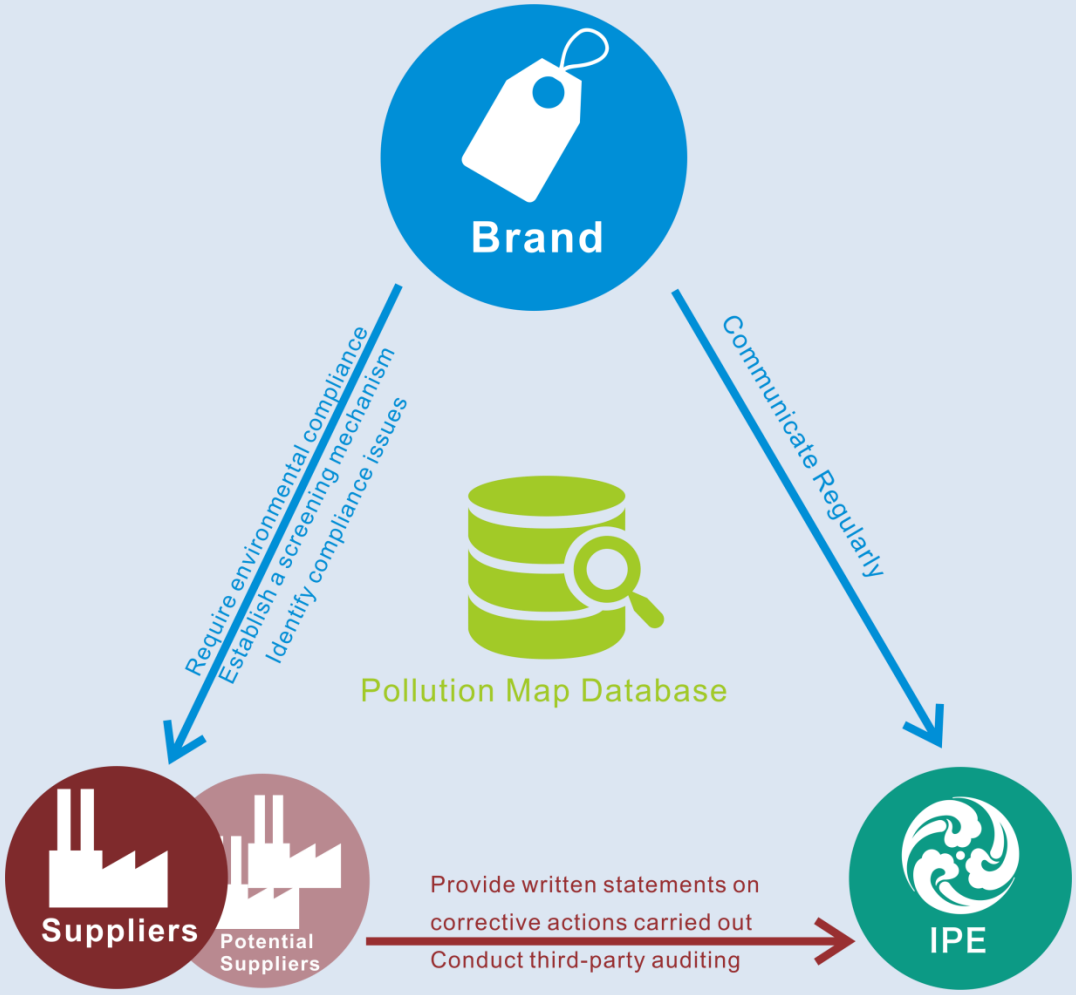
Company Name	常州老三集团有限公司
Address	Changzhou, Jiangsu
Year	2013 View emissions data
Basin	Lake Taihu Water Basin
Environmental Supervision Records	
Environmental Supervision Records Source	
Online Monitoring Results	

地区	市、县	企业名称	监控点位	监控因子	异常问题描述无数据	超标	异常发生时间	备注	数据起始时间
常州市	天宁区	常州老三集团有限公司	污水排放口	COD		√	2013-3-12 15:00:00	共超标1次	2013-3-12 8:00:00到2013-3-13 8:00:00
常州市	天宁区	常州老三集团有限公司	污水排放口	COD		√	2013-3-23 19:00:00	共超标1次	2013-3-23 8:00:00到2013-3-24 8:00:00
常州市	天宁区	常州老三集团有限公司	污水排放口	COD		√	2013-3-24 9:00:00	共超标1次	2013-3-24 8:00:00到2013-3-25 8:00:00
常州市	天宁区	常州老三集团有限公司	污水排放口	COD		√	2013-3-26 15:00:00	共超标1次	2013-3-26 8:00:00到2013-3-27 8:00:00

Source of Online Monitoring Results	全省重点污染源自动监控系统运行异常情况明细表，江苏省环保厅
Company Feedback	情况说明.pdf 2013年11月-2014年1月废水COD排放量.pdf
Company Feedback Source	常州老三集团有限公司提供，2014年1月22日
Environmental Protection Department Follow-Up Supervision	
Source	
Third Party Audit Status	无
Third-party audit report	
Photo	

Evaluation Method:

- Verify if the brand has established a screening mechanism for suppliers, and used publicly available information to identify problematic suppliers;
- Verify if the brand has encouraged suppliers to disclose self-monitoring data, and accept public supervision of their compliance performance;
- Verify if the brand can push problematic suppliers to implement corrective actions and statements of explanation for the pollution problems.

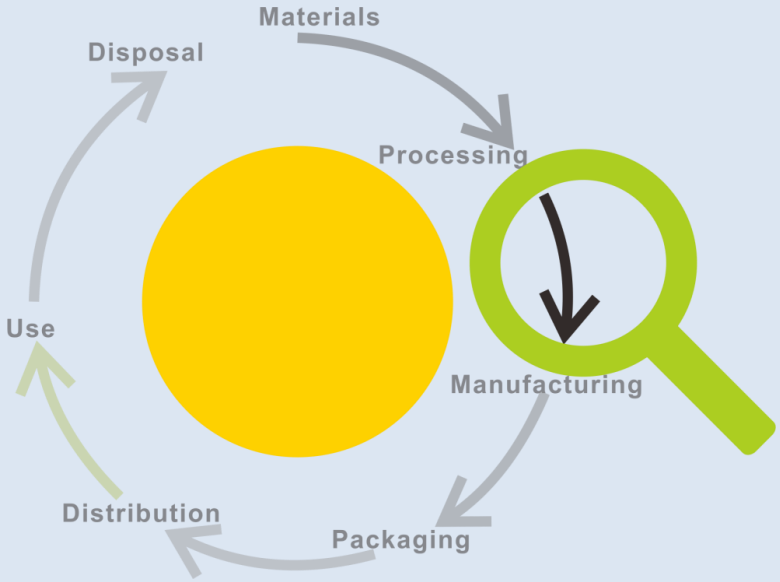


Extend Green Supply Chain Practices

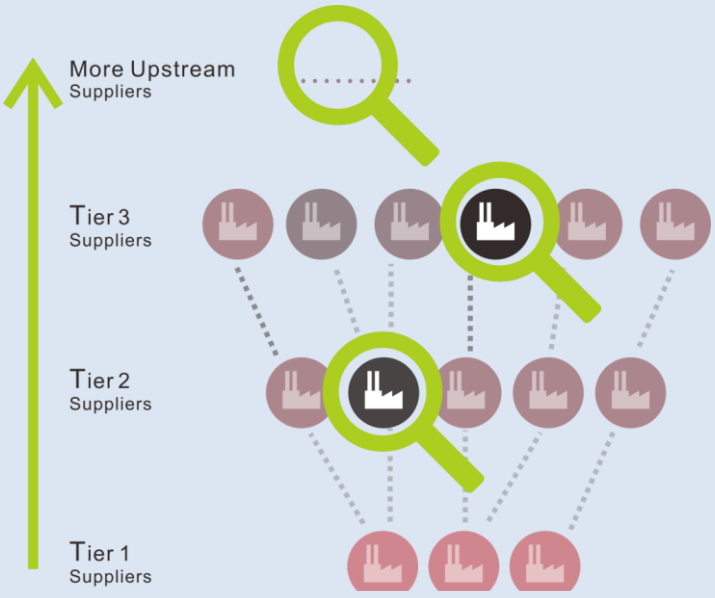
Basis of evaluation: IPE has collected tens of thousands of violation records for main materials, energy, raw materials, hazardous waste, and wastewater treatment companies. This can provide companies with data on potential environmental pollution problems in highly polluting sectors upstream in their supply chain.

Evaluation Method:

- Verify if the brand can identify the process with significant environmental impact and regulate these priority suppliers;



- Verify if the company can identify highly polluting sectors in their supply chain that need priority management, and work with suppliers to address those issues.



Data Disclosure

Basis of evaluation:

Since 2009, IPE has been collecting government and company-reported data on energy use, water use, and pollution emissions. This information is published on the Pollution Map Database website. In 2009, IPE and NRDC jointly called for the establishment of a Chinese version of the Pollution Release and Transfer Register (PRTR), and in 2013 created a prototype PRTR system for companies to self-report their environmental data.

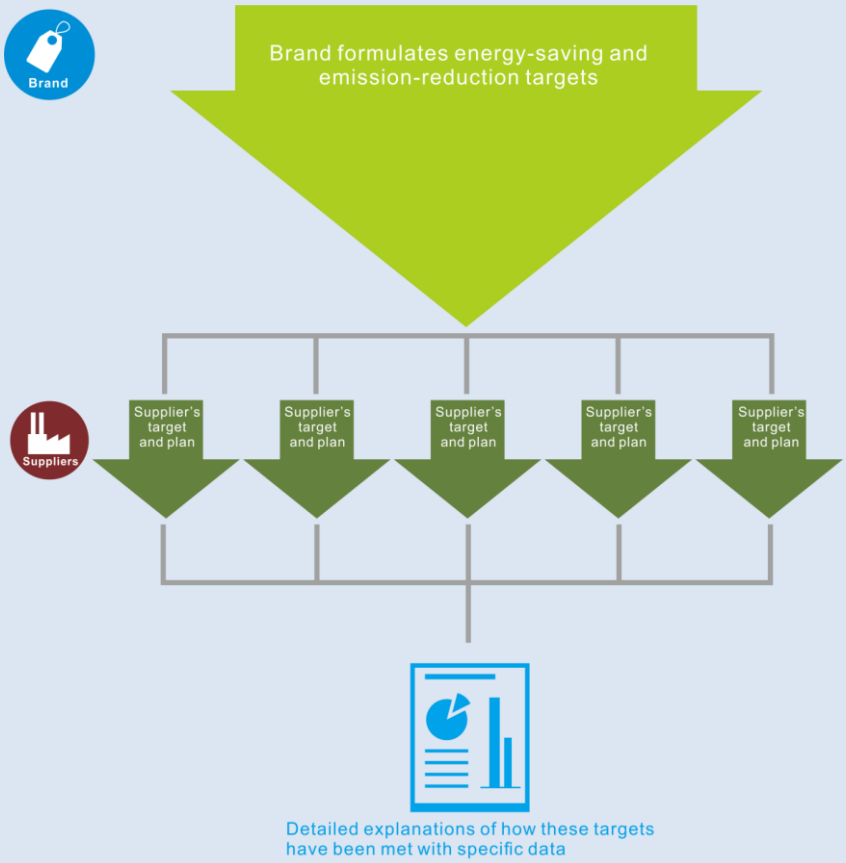
- IPE Pollution Map: Company yearly emissions data (Annual changes COD)

- IPE Pollution Map's Self-Reporting PRTR System

Evaluation Method:

Verify that the brand can push suppliers to disclose their emissions-reduction targets and progress made in meeting those targets, and examine the brand's ability to understand the environmental impact of its supply chain, and incorporate the supply chain energy-reduction, water-reduction, and pollution-reduction goals into its own environmental management practices.

- Push suppliers to disclose energy- and pollution-reduction targets and progress on meeting those targets.



- Publicly require suppliers to disclose PRTR data.

Responsible Recycling

Basis of evaluation: Collect publicly available information and action plans on how companies carry out recycle and reuse of their used products.

Evaluation method:

- Establish or participate in a product recycling regime in China, and promote global recyclability of discarded products and materials within the industry.
- Trace discarded products and materials to the final recycling vendor, and ensure the environmental compliance of those vendors.

From the above evaluation rationale and methodologies, it is apparent that:

1. The CITI is based on public disclosure of environmental data. We believe that those brands that lack transparency cannot effectively demonstrate the effectiveness of their environmental protection work, and cannot really carry out substantive communications with stakeholders. Without stakeholder participation, it is difficult to tackle the massive and complex global supply chain challenges that we face.
2. The purpose of the CITI is not merely to evaluate a brand's performance in disclosing information and communicating to stakeholders; it also reflects the brand's will, capability, and institutional backing to solve pollution problems in its supply chain. It reflects a company's performance in many aspects of supply chain management, and covers compliance, corrective action, the shaping of best practices, and extending green procurement choices to help address pollution challenges in China and beyond.

4 CITI Evaluation Results

4.1 Brand Rankings

Brand Rankings

No.	Brand		Total (100)	No.	Brand		Total (100)
1	苹果	Apple	65.5	34	安 泰勒	Ann Taylor	32
2	H&M	H&M	61.5	36	索尼	Sony	31.5
3	溢达	Esquel	61	36	佳能	Canon	31.5
4	盖璞	GAP	55.5	38	斯道拉恩索	Stora Enso	30
4	C&A	C&A	55.5	39	北面	The North Face	28.5
6	惠普	HP	55	39	添柏岚	Timberland	28.5
7	微软	Microsoft	53.5	39	Lee Jeans	Lee Jeans	28.5
7	彪马	Puma	53.5	42	阿尔卡特	Alcatel	26
9	松下	Panasonic	52.5	42	沃达丰	Vodafone	26
10	玛莎百货	M&S	50.5	44	丰田汽车	Toyota	22.5
11	阿迪达斯	Adidas	49	45	花王	KAO	22
12	巴宝莉	Burberry	48.5	45	王子制纸	Oji Paper	22
12	西门子	Siemens	48.5	47	美津浓	Mizuno	21
14	可口可乐	Coca-Cola	47	47	福特汽车	Ford	21
15	三星	Samsung	46.5	47	本田汽车	Honda	21
16	沃尔玛	Walmart	45.5	50	迪斯尼	Disney	20.5
16	耐克	Nike	45.5	50	爱生雅	SCA	20.5
18	Target	Target	45	52	奔驰	Mercedes-Benz	19.5
18	华为	Huawei	45	53	探路者	Toread	19
20	优衣库	Uniqlo	43	54	三洋	Sanyo	18
20	Esprit	Esprit	43	55	LG	LG	17.5
22	联合利华	Unilever	41	56	思科	Cisco	16.5
23	日立	Hitachi	40	56	戴尔	Dell	16.5
23	ZARA	ZARA	40	58	通用汽车	GM	16
25	富士康	Foxconn	39.5	58	百事可乐	Pepsi	16
26	李宁	Li-Ning	37.5	60	英特尔	Intel	15
26	李维斯	Levi's	37.5	61	宝洁	P&G	13.5
28	诺基亚	Nokia	37	61	青岛啤酒	Tsingtao	13.5
29	东芝	Toshiba	36.5	61	立白	Liby	13.5
30	通用电气	GE	35.5	64	大众汽车	Volkswagen	13
31	联想	Lenovo	34.5	65	Lafuma	Lafuma	12.5
31	飞利浦	Philips	34.5	65	Tommy Hilfiger	Tommy Hilfiger	12.5
33	宜家	IKEA	33.5	65	CK	Calvin Klein	12.5
34	雅戈尔	Youngor	32	65	玛氏	Mars	12.5

No.	Brand		Total (100)
65	夏普	Sharp	12.5
70	百威英博	ABinBev	11.5
70	国际纸业	International Paper	11.5
72	嘉士伯	Carlsberg	11
73	乐购	Tesco	10
73	长城汽车	Great Wall	10
73	新加坡电信	Singtel	10
73	贝纳通	Benetton	10
73	家乐福	Carrefour	10
73	爱立信	Ericsson	10
73	摩托罗拉	Motorola	10
73	英国电信	BT	10
73	比亚迪	BYD	10
73	TCL	TCL	10
73	宝马	BMW	10
84	中兴	ZTE	9.5
84	伊利	Yili	9.5
86	强生	Johnson&Johnson	8
86	雀巢	Nestl é	8
88	喜力	Heineken	7.5
88	欧莱雅	L'Or éal	7.5
88	庄臣	SC Johnson	7.5
91	精工爱普生	Seiko Epson	6.5
92	统一	Uni-president	5.5
92	康师傅	Master Kong	5.5
92	中粮	COFCO	5.5
92	高露洁-棕榄	Colgate-Palmolive	5.5
96	现代	Hyundai	5
96	SABMiller	SABMiller	5
96	IBM	IBM	5
96	黑莓	RIM-Blackberry	5
96	海尔	Haier	5
96	芬欧汇川	UPM	5
96	Sears	Sears	5
103	麦当劳	McDonald's	3
104	阿玛尼	Armani	2.5
104	Fifth and Pacific	Fifth and Pacific	2.5
104	Next	Next	2.5
104	古驰	GUCCI	2.5
104	雅芳	AVON	2.5

No.	Brand		Total (100)
104	肯德基	KFC	2.5
104	蒂芙尼	Tiffany	2.5
111	光明	Brightdairy	2
111	双汇	Shuanghui	2
111	蒙牛	Mengniu	2
114	理文造纸	Lee & Man Paper	1.5
115	长安汽车	Changan	0
115	小米	Xiaomi	0
115	HTC	HTC	0
115	白猫	Whitecat	0
115	两面针	LMZ	0
115	纳爱斯	Nice	0
115	上海家化	Jahwa	0
115	燕京啤酒	Yanjing Beer	0
115	奇瑞	Chery	0
115	茅台啤酒	Maotai Beer	0
115	香奈儿	CHANEL	0
115	蔻驰	COACH	0
115	新秀丽	SAMSONITE	0
115	百丽	Belle	0
115	奥康	Aokang	0
115	农夫山泉	Nongfu Spring	0
115	正大	CP	0
115	HUGO BOSS	HUGO BOSS	0
115	Abercrombie & Fitch	Abercrombie & Fitch	0
115	361 度	361 º	0
115	卡帕	Kappa	0
115	Guess	Guess	0
115	安踏	ANTA	0
115	Cortefiel	Cortefiel	0
115	DKNY	DKNY	0
115	维多利亚的秘密	Victoria's Secret	0
115	Macy's	Macy's	0
115	Kmart	Kmart	0
115	J.C. Penney	J.C. Penney	0
115	佐丹奴	Giordano	0
115	美特斯邦威	Meters/bonwe	0
115	玖龙造纸	Nine Dragons Paper	0
115	Polo Ralph Lauren	Polo Ralph Lauren	0

In order to evaluate the extent to which brands push their suppliers to improve their environmental performance, and to encourage brands to implement more thorough environmental data disclosure, we used the CITI Evaluation Criteria to evaluate 147 Chinese and foreign brands from eight industry sectors. Based on our evaluation results (see Appendix II for more details), a large number of brands have already started to use a supplier screening mechanism that makes use of open environmental information. Using this data, these companies can proactively identify pollution problems in the supply chain, and some have pushed suppliers to implement corrective actions. Apple, H&M, Esquel Group, GAP, C&A, HP, Microsoft, Puma, Panasonic, M&S and etc. are all leading brands that have begun to extend green supply chain practices to their main materials suppliers. They have demonstrated diligent efforts in getting suppliers to publicly disclose their pollution data, and have begun establishing and refining their environmental supply chain management systems to realize the ultimate goal of greening their supply chains.

As of June 2014, 740 supplier companies had been collectively pushed to provide a statement clarifying their pollution problems and what corrective actions had been taken. Of those companies, 260 have gone through third-party audits overseen by NGOs from the Green Choice Alliance.[30]

[30] http://www.ipe.org.cn/alliance/consulting.aspx (Accessed June, 2014).

4.2 Industry analysis

IT Industry

State of the Industry in China

China is the undisputed "workshop of the world" for IT products; half of the world's computers, cell phones, and digital cameras are made in the country. However, as China has become the world's IT product processing center, the environment has also been subject to immense strain, with heavy metal discharges drawing particular concern.

Environmental Challenges in China

The Pearl River Delta and Yangtze River Delta regions have many companies that manufacture printed circuit boards (PCB). Many of these companies exceed their allowed discharge limits, and have caused severe pollution to nearby rivers, soil, and coastal waters, with heavy metal pollution being the most apparent. The PCB industry is indispensable to the IT sector but uses manufacturing processes that involve electroplating and etching, and these processes can produce heavy metal discharges like copper, nickel, and chromium. Of major lead pollution sources, the manufacturing of lead acid batteries for use in the IT industry, and particularly the telecom sector, is an obvious one.[31] At the same time, products like cell phones are being more frequently updated and replaced so the problem of secondary pollution from electronic waste and that generated from recycling has also become very apparent.

Pollution Map Records

As of June 2014, using variations of the keywords for "electronics", and "printed circuit board", 2501 corporate environmental violation records were found in the Pollution Map Database.

Evaluated brands

See Table 1 for detailed scoring of 37 related brands.

Brand Best Practice

Apple: Received points in every category, with exceptional performance in establishing a mechanism for screening suppliers, pushing suppliers to take corrective actions, and identifying main polluting sectors in the supply chain.

HP: Publicly stated a supply chain emission reduction goal in 2009 to reduce emissions by 20% by 2020. In 2012 89% of its production suppliers had emission reduction targets in place. For product recycling HP has carried out waste recovery and recycling procedures according to the Basel Convention.

Microsoft: Pushed suppliers to implement corrective actions and have also identified main polluting sectors of the supply chain.

Panasonic: Funded the establishment of a recycling processing factory in China for used electrical household appliance products, and strictly requires factories in China to implement corrective measures on environmental violations.

Siemens: Pushed problematic suppliers to implement corrective actions and have their

[31] 2010 Study of Heavy Metal Pollution by IT Brand Supply Chain, IPE, http://www.ipe.org.cn/En/about/notice_de_1.aspx?id=6239. Accessed June 2014.

records removed from the pollution map database.

Samsung: Has made commendable progress in pushing suppliers to disclose Pollutant Release and Transfer Register (PRTR) emissions data.

Performance of companies in mainland China, Hong Kong, and Taiwan

Huawei, Lenovo, and **Foxconn** performed decently; **BYD, ZTE** performed average; **Haier, HTC,** and **Xiaomi** performed below average.

Table 1 IT Brand Rankings

CITI Criteria		Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score
		Basic Communication	Discuss Industry Pollution Problems	Establish Screening Mechanism	Corrective Actions	Self-Monitoring Data	Identify Main Polluting Sectors	Extend Management Upstream	Energy and Emissions Targets	PRTR	Recycling Used Products	
No.	Brand	10	10	12	12	8	10	10	10	12	6	100
1	Apple	10	10	12	12	2	7.5	5	2.5	3	1.5	65.5
2	HP	10	10	6	6	0	5	5	10	0	3	55
3	Microsoft	10	10	6	12	0	7.5	5	0	3	0	53.5
4	Panasonic	10	10	6	12	0	5	0	5	0	4.5	52.5
5	Siemens	10	10	9	12	0	5	2.5	0	0	0	48.5
6	Samsung	10	10	9	9	0	2.5	0	0	6	0	46.5
7	Huawei	10	10	9	6	0	5	5	0	0	0	45
8	Hitachi	10	10	6	9	0	2.5	0	2.5	0	0	40
9	Foxconn	10	7.5	6	6	0	5	0	5	0	0	39.5
10	Nokia	10	10	3	9	0	5	0	0	0	0	37
11	Toshiba	7.5	7.5	6	9	0	0	0	5	0	1.5	36.5
12	GE	10	7.5	9	9	0	0	0	0	0	0	35.5
13	Lenovo	10	10	6	3	0	2.5	0	0	0	3	34.5
13	Philips	10	7.5	9	3	0	2.5	0	2.5	0	0	34.5
15	Sony	10	10	3	6	0	2.5	0	0	0	0	31.5
15	Canon	10	10	3	6	0	0	2.5	0	0	0	31.5
17	Alcatel	10	10	3	3	0	0	0	0	0	0	26
17	Vodafone	10	10	3	3	0	0	0	0	0	0	26
19	Sanyo	7.5	7.5	3	0	0	0	0	0	0	0	18
20	LG	7.5	10	0	0	0	0	0	0	0	0	17.5
21	Cisco	7.5	7.5	0	0	0	0	0	0	0	1.5	16.5
21	Dell	7.5	7.5	0	0	0	0	0	0	0	1.5	16.5
23	Intel	7.5	7.5	0	0	0	0	0	0	0	0	15
24	Sharp	7.5	5	0	0	0	0	0	0	0	0	12.5
25	Singtel	5	5	0	0	0	0	0	0	0	0	10
25	Ericsson	5	5	0	0	0	0	0	0	0	0	10
25	Motorola	5	5	0	0	0	0	0	0	0	0	10
25	BT	5	5	0	0	0	0	0	0	0	0	10
25	BYD	5	5	0	0	0	0	0	0	0	0	10

CITI Criteria		Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score
		Basic Communication	Discuss Industry Pollution Problems	Establish Screening Mechanism	Corrective Actions	Self-Monitoring Data	Identify Main Polluting Sectors	Extend Management Upstream	Energy and Emissions Targets	PRTR	Recycling Used Products	
No.	Brand	10	10	12	12	8	10	10	10	12	6	100
25	TCL	5	5	0	0	0	0	0	0	0	0	10
31	ZTE	5	0	3	0	0	0	0	0	0	1.5	9.5
32	Seiko Epson	2.5	2.5	0	0	0	0	0	0	0	1.5	6.5
33	IBM	2.5	2.5	0	0	0	0	0	0	0	0	5
33	RIM-Blackberry	2.5	2.5	0	0	0	0	0	0	0	0	5
33	Haier	2.5	2.5	0	0	0	0	0	0	0	0	5
36	Xiaomi	0	0	0	0	0	0	0	0	0	0	0
36	HTC	0	0	0	0	0	0	0	0	0	0	0

Textile Industry

State of the industry in China

China is the world's main textile producer, with over 50,000 textile factories. The textile industry is one of the worst water polluters in China, with the dyeing and finishing sectors responsible for the most discharge. According to the *2012 Annual Statistical Report on Environment in China* the textile industry discharged 2.37 billion tons of waste water in 2012, accounting for 11.7% of the country's waste water discharge, the third biggest source.[32]

Environmental challenges in China

In recent years, in the dyeing-industry-concentrated Hangzhou Bay, Taihu Basin, Pearl River Delta estuary and Pearl River Delta region, water pollution has become a an extremely serious problem, which shows that total pollutant discharge is well in excess of the environmental carrying capacity.[33]

The enormous impact that the textile industry has on the surface waters in China motivated the government to implement more stringent discharge standards. The recently implemented *Discharge standards of water pollutants for dyeing and finishing of textile industry* (GB 4287-2012) greatly restricted the discharge limits for general pollutant indicators like COD, BOD, and aniline, and for the first time established limits on phosphorous, nitrogen, adsorbable organically bound halogens and similar pollutants. These, new standards, which are enormously important to delivering improved water quality to the nation, bring new challenges to the industry, and many factories will need to improve their wastewater treatment systems to maintain compliance. This translates into a large risk that suppliers to textile brands will have environmental compliance issues.

Pollution Map Records

Among companies that have environmental compliance violations because their discharge was in breach of the regulatory standards, those within the textile industry made up a fairly large portion, with more than 6000. As of June 2014, using Chinese keyword searches for "textiles", "dyeing", "washing", and "dyeing and finishing" returned as many as 6900 environmental violation records.

Evaluated brands

See Table 2 for detailed assessments of the 50 brands.

Brand Best Practice

H&M: Demonstrated outstanding effort in pushing suppliers to release PRTR emissions data

Esquel Group: Demonstrated outstanding effort in pushing problematic suppliers to disclose corrective actions taken.

C&A: Demonstrated outstanding effort in extending green supply chain practices. They actively tracked chemical suppliers and actively pushed them to develop corrective actions for their pollution problems.

[32] 2012 Annual Statistical Report on Environment in China, China Environmental Science Press, December 2013.

[33] Green Choice Alliance Phase 3 Textile Industry Report，IPE，2013，http://www.ipe.org.cn/about/notice_de_1.aspx?id=11363. Accessed June 2014.

GAP: At the forefront of actively pushing suppliers to disclose self-monitoring data.

Performance of companies in mainland China, Hong Kong, and Taiwan

Esquel Group, **Esprit** and **Li-Ning** performed decently; **Youngor Group** and **Toread** performed average; **361°, ANTA, Giordano** and **Meters/bonwe** performed below average.

Table 2 Textile Brand Rankings

CITI Criteria		Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score
		Basic Communication	Discuss Industry Pollution Problems	Establish Screening Mechanism	Corrective Actions	Self-Monitoring Data	Identify Main Polluting Sectors	Extend Management Upstream	Energy and Emissions Targets	PRTR	Recycling Used Products	
No.	Brand	10	10	12	12	8	10	10	10	12	6	100
1	H&M	10	10	12	9	0	5	5	0	9	1.5	61.5
2	Esquel	10	10	12	12	0	7.5	2.5	2.5	3	1.5	61
3	GAP	10	10	12	9	2	5	5	2.5	0	0	55.5
3	C&A	10	10	12	6	0	10	5	2.5	0	0	55.5
5	Puma	10	10	9	6	0	7.5	0	5	6	0	53.5
6	M&S	10	10	12	6	0	5	0	0	6	1.5	50.5
7	Adidas	10	10	9	9	0	5	0	0	6	0	49
8	Burberry	10	10	9	9	0	2.5	2.5	2.5	3	0	48.5
9	Walmart	10	10	9	9	0	2.5	5	0	0	0	45.5
9	Nike	10	10	9	9	0	5	2.5	0	0	0	45.5
11	Target	10	10	12	3	0	5	5	0	0	0	45
12	Uniqlo	10	10	12	6	0	5	0	0	0	0	43
12	Esprit	10	10	9	9	0	5	0	0	0	0	43
14	ZARA	10	10	9	6	0	2.5	2.5	0	0	0	40
15	Li-Ning	10	7.5	9	6	0	5	0	0	0	0	37.5
15	Levi's	10	10	9	6	0	2.5	0	0	0	0	37.5
17	IKEA	7.5	7.5	9	3	0	2.5	0	2.5	0	1.5	33.5
18	Youngor	10	10	3	3	0	0	0	0	6	0	32
18	Ann Taylor	7.5	7.5	6	6	0	2.5	0	2.5	0	0	32
20	The North Face	10	10	6	0	0	2.5	0	0	0	0	28.5
20	Timberland	10	10	6	0	0	2.5	0	0	0	0	28.5
20	Lee Jeans	10	10	6	0	0	2.5	0	0	0	0	28.5
23	Mizuno	7.5	7.5	3	3	0	0	0	0	0	0	21
24	Disney	10	7.5	3	0	0	0	0	0	0	0	20.5
25	Toread	7.5	2.5	3	6	0	0	0	0	0	0	19
26	Lafuma	7.5	5	0	0	0	0	0	0	0	0	12.5
26	Tommy Hilfiger	5	7.5	0	0	0	0	0	0	0	0	12.5

26	Calvin Klein	5	7.5	0	0	0	0	0	0	0	0	12.5
29	Tesco	5	5	0	0	0	0	0	0	0	0	10
29	Benetton	5	5	0	0	0	0	0	0	0	0	10
29	Carrefour	5	5	0	0	0	0	0	0	0	0	10
32	Sears	2.5	2.5	0	0	0	0	0	0	0	0	5
33	Armani	2.5	0	0	0	0	0	0	0	0	0	2.5
33	Fifth and Pacific	2.5	0	0	0	0	0	0	0	0	0	2.5
33	Next	2.5	0	0	0	0	0	0	0	0	0	2.5
36	HUGO BOSS	0	0	0	0	0	0	0	0	0	0	0
36	Abercrombie & Fitch	0	0	0	0	0	0	0	0	0	0	0
36	361 °	0	0	0	0	0	0	0	0	0	0	0
36	Kappa	0	0	0	0	0	0	0	0	0	0	0
36	Guess	0	0	0	0	0	0	0	0	0	0	0
36	ANTA	0	0	0	0	0	0	0	0	0	0	0
36	Cortefiel	0	0	0	0	0	0	0	0	0	0	0
36	DKNY	0	0	0	0	0	0	0	0	0	0	0
36	Victoria's Secret	0	0	0	0	0	0	0	0	0	0	0
36	Macy's	0	0	0	0	0	0	0	0	0	0	0
36	Kmart	0	0	0	0	0	0	0	0	0	0	0
36	J.C. Penney	0	0	0	0	0	0	0	0	0	0	0
36	Giordano	0	0	0	0	0	0	0	0	0	0	0
36	Meters/bonwe	0	0	0	0	0	0	0	0	0	0	0
36	Polo Ralph Lauren	0	0	0	0	0	0	0	0	0	0	0

Food & Beverage Industry

State of the Industry in China

The food manufacturing industry is an important sector in the Chinese economy, and its development has implications for the people's livelihoods, agriculture, and other industries. Over the past few years China's food industry has grown rapidly; the industry's sales revenue reached 1.57 trillion RMB in 2012, registering an annual growth rate of 12.2%. The 12th Five-year Plan for the food production industry stated that the industry's gross output is expected to rise to 12.7 trillion RMB by 2015, a growth of 101.1%, with an average annual growth rate of around 15%. More than 50 companies in this sector have sales revenues of more than 10 billion RMB.

Environmental Challenges in China

As with food manufacturing, the closely related beverage industry has also seen a lot of growth. Even so, the food industry faces the dual tasks of dealing with growing competition and managing worsening pollution problems from manufacturing processes. Food manufacturing involves a wide variety of raw materials and generates a lot of wastewater with varying amounts of pollution. . The main source of wastewater discharge in the food manufacturing industry is from the processing of raw materials, washing, dehydrating, filtering, separating, de-acidifying, deodorizing, boiling and cooking, and other similar processing techniques.[34] The wastewater has a high organic matter and suspended solids content, which creates a high oxygen demand for degradation when it enters surface water bodies. If such wastewater is poorly treated before discharge, eutrophication and oxygen depletion occurs, which leads to the death of marine and aquatic life. Anaerobic conditions also degrade the benthic zone, producing malodorous gasses and further reducing water quality.

The dairy industry has developed rapidly over the last few years, and the total amount of pollution discharged has risen with it. The main environmental problem from the dairy industry is wastewater discharge, mostly in the form of COD, BOD, nitrogen, suspended solids, pH, and in particular for this industry, total phosphorus.[35]

Further upstream in the food industry, the production of raw materials is usually also accompanied by large amounts of wastewater pollution. The pollution discharge arising from upstream livestock companies in the meat, poultry, and dairy operations is alarming. According to the *First National Census of Pollution Sources*, agricultural COD and nitrogen discharges are 13,240,900 tons and 2,704,600 tons respectively.[36] Livestock and poultry contributed 12,682,600 tons and 1,024,800 tons of COD and nitrogen, making up 95.8% and 37.9% of the agricultural sector's COD and nitrogen emissions.

According to the *Discharge Standard of Water Pollutants for Livestock and Poultry Breeding -*

[34] Analysis of Wastewater Treatment Techniques in the Food Industry, CHEN Jun, 2010. Accessed June, 2014.

[35] Description of the Public Comment Document on the Dairy Industry's Wastewater Discharge Standards, http://www.es.org.cn/download/2011/2107-2.pdf. Accessed June 2014.

[36] First National Census of Pollution Sources, National Bureau of Statistics, 2010.

Explanations[37], of all livestock farms that sell more than 50 pigs per annum, 20% - 30% of the farms discharge their wastewater directly to surface water. Overall, the internal environmental management of China's livestock farms is insufficient and is weak, with 60% of livestock farms lacking wet-dry separation. Furthermore, investment in environmental pollution control is not sufficient, with 80% of large-scale livestock farms lacking necessary pollution control facilities and investments. To boost the efficiency of fodder utilization, and increase disease resistance amongst animals, feedstuffs often contain minerals and heavy metals such as copper and zinc. However, only a small portion of these minerals are actually absorbed in the process, and the majority gets released to the environment in manure. The trace elements of pollutants that reach a water body can thereafter reduce a water body's self-purification capacity, causing water quality to drop, and harming aquatic life. [38]

The sugar producing industry that supplies the food and beverages industry is also a big source of pollution. Sugar manufacturing involves boilers, and the heating plants emit sulfur dioxide, nitrogen oxides and other pollutants in the form of soot. At the same time, beet sugar manufacturing involves sulfur bleaching processes, and cane sugar processing releases bagasse smoke/soot, and both produce sulfur dioxide. In addition, the production of starches and gourmet powders such as monosodium glutamate also create high pollution discharges.[39]

In addition to food processing, food packaging and the food chemical additives industry also produce a lot of wastewater; chemical additives use different chemicals in their manufacture so its wastewater thus has different levels of toxicity. The food packaging industry also generates exhaust gases, where the main pollutants are: sulfur dioxide, chlorine, phosgene, formaldehyde, hydrogen fluoride gases, phenol, benzene, styrene; metal materials production sites can also generate dust particles.

Pollution Map Records

As of June 2014, using Chinese keywords of "food", "food additives", "cultivation" , "sugar industry", "meat", "starches", "dairy industry" the database returned as many as 525 environmental violation records.

Evaluated brands

Out of 16 brands, eight are Chinese. **Coca-Cola** has been a leader in establishing a screening mechanism for its suppliers to proactively identify supply chain pollution problems, and to push suppliers to implement corrective actions. See Table 3 for detailed assessments of each brand.

[37] Discharge Standard of Water Pollutants for Livestock and Poultry Breeding – Explanations, http://www.es.org.cn/download/2011/1-6/2172-2.pdf. Accessed June 2014.

[38] Discharge Standard of Water Pollutants for Livestock and Poultry Breeding – Explanations, http://www.es.org.cn/download/2011/1-6/2172-2.pdf. Accessed June 2014.

[39] Public Comment Document for the Waste Discharge Standards in the Sugar Industry – Explanations, http://www.es.org.cn/download/1411-4.pdf. Accessed June 2014.

Table 3 Food & Beverage Brand Rankings

CITI Criteria		Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score
		Basic Communication	Discuss Industry Pollution Problems	Establish Screening Mechanism	Corrective Actions	Self-Monitoring Data	Identify Main Polluting Sectors	Extend Management Upstream	Energy and Emissions Targets	PRTR	Recycling Used Products	
No.	Brand	10	10	12	12	8	10	10	10	12	6	100
1	CocaCola	10	7.5	9	9	0	5	2.5	2.5	0	1.5	47
2	Unilever	10	7.5	6	6	0	5	2.5	2.5	0	1.5	41
3	Pepsi	7.5	0	0	6	0	0	0	2.5	0	0	16
4	Mars	5	5	0	0	0	0	0	2.5	0	0	12.5
5	Yili	5	2.5	0	0	2	0	0	0	0	0	9.5
6	Nestl é	2.5	0	0	3	0	0	0	2.5	0	0	8
7	Uni-president	2.5	0	0	3	0	0	0	0	0	0	5.5
7	Master Kong	2.5	0	0	3	0	0	0	0	0	0	5.5
7	COFCO	0	0	0	3	0	0	0	2.5	0	0	5.5
10	McDonald's	0	0	0	3	0	0	0	0	0	0	3
11	KFC	0	0	0	0	0	0	0	2.5	0	0	2.5
12	Brightdairy	0	0	0	0	2	0	0	0	0	0	2
12	Shuanghui	0	0	0	0	2	0	0	0	0	0	2
12	Mengniu	0	0	0	0	2	0	0	0	0	0	2
15	Nongfu Spring	0	0	0	0	0	0	0	0	0	0	0
15	CP	0	0	0	0	0	0	0	0	0	0	0

Household & Personal Care Industry

State of the Industry in China

The household and personal care industry is one of the fastest growing industries in China. This has brought about environmental pressures, many of which can be attributed to the manufacturing of raw materials, surfactants, and also packaging processes.

Environmental Challenges in China

Since the cosmetic industry uses a wide variety of raw materials, it can be difficult to analyze the composition of its wastewater. Key pollutants of concern that get released include oils, anionic surfactants, and anilines. Aside from conventionally controlled pollutants such as COD, BOD, suspended solids, and ammonia nitrogen, priority pollutants from the cosmetic industry include surfactants from cosmetic cleaning agents, oils from skin-care products, and anilines from hair-care products. If these byproducts are not treated properly and get carried into water, they can cause great harm to aquatic life.[40]

Further up the industry's supply chain, the production of certain raw materials can bring about the release of potent wastewater, waste gas, and solid waste pollutants into the environment. For example, phosphorous is used in the production of toothpastes and generates phosphorous wastewater discharges and gases. Just one kg of yellow phosphorous released into a water body can pollute 3000m^3 of surface water. A ton of leaked yellow phosphorous, if it were to be exposed to the open air and self-combust, could create 2.29 tons of phosphorus pentoxide, and cause 500,000 m^3 of air to reach the maximum allowed concentration. Within the vicinity of an incident, the phosphorus pentoxide could, for a short time, reach concentration levels of 1000mg/m^3, and seriously pollute 5000m^3 of air. It could then become phosphoric acid and enter the soil, causing the soil to become polluted.[41]

Another example is sodium carbonate (soda ash), which is widely used in the manufacture of detergents. The manufacturing process can have a serious impact on the environment, mainly from ammonia based wastewater and waste liquids.[42] In 2012, China produced more than 24 million tons of sodium carbonate. 13.9 million tons was produced using the combined soda process. This process generates 1.9 kg of ammonia nitrogen per ton, so in China, in 2012, 26,400 tons of ammonia nitrogen was produced using this process.[43] 10.32 million tons of sodium carbonate was made using the ammonia-soda process, which generates 1.38 kg of ammonia nitrogen per ton, so a total of 14,200 tons of ammonia nitrogen was produced using this process. Industrial ammonia nitrogen emissions from the sodium carbonate industry accounted for about 15% of total industrial

[40] Explanation of Formulating Water Discharge Standards in the Cosmetics Industry, http://www.zhb.gov.cn/gkml/hbb/bgth/201002/W020100210562871635669.pdf. Accessed June 2014.

[41] Public Comment Document on Evaluation Index System for Cleaner Production of Yellow Phosphorous – Explanations http://www.cisia.org/Html/7/2014219159811847.html . Accessed June 2014.

[42] Explanation of formulating effluent standard of pollutants for Soda Ash industry, (Second Draft for Comments), http://www.zhb.gov.cn/info/bgw/bbgth/200810/W020081006585198174402.pdf. Accessed June 2014.

[43] http://www.cpcia.org.cn/html/13/20141/133500.html. Accessed June 2014.

ammonia nitrogen wastewater emissions in 2012.[44]

Pollution Map Records

As of June 2014, using keywords searches for "daily use", "personal care", "detergent", and "fine chemicals" the database returned 1174 environmental violation records.

Evaluated brands

Out of 13 brands, five were Chinese. **Unilever** notably established dialogue early with IPE, and used external informational sources in their supply chain management to mitigate supply chain environmental risks. See Table 4 for detailed evaluation of companies.

[44] Annual statistic Report on Environment in China (2012) shows that the industrial discharge of ammonia nitrogen in 2012 was 264,000 tons.

Table 4 Household & Personal Care Brand Rankings

CITI Criteria		Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score
		Basic Communication	Discuss Industry Pollution Problems	Establish Screening Mechanism	Corrective Actions	Self-Monitoring Data	Identify Main Polluting Sectors	Extend Management Upstream	Energy and Emissions Targets	PRTR	Recycling Used Products	
No.	Brand	10	10	12	12	8	10	10	10	12	6	100
1	Unilever	10	7.5	6	6	0	5	2.5	2.5	0	1.5	41
2	KAO	5	0	3	6	0	0	0	5	3	0	22
3	P&G	0	0	3	0	0	2.5	0	5	3	0	13.5
3	Liby	7.5	0	6	0	0	0	0	0	0	0	13.5
5	Johnson & Johnson	2.5	0	0	0	0	0	0	2.5	3	0	8
6	L'Oréal	2.5	2.5	0	0	0	0	0	2.5	0	0	7.5
6	SC Johnson	5	0	0	0	0	0	0	2.5	0	0	7.5
8	Colgate-Palmolive	0	0	3	0	0	0	0	2.5	0	0	5.5
9	AVON	0	0	0	0	0	0	0	2.5	0	0	2.5
10	Whitecat	0	0	0	0	0	0	0	0	0	0	0
10	LMZ	0	0	0	0	0	0	0	0	0	0	0
10	Nice	0	0	0	0	0	0	0	0	0	0	0
10	Jahwa	0	0	0	0	0	0	0	0	0	0	0

Automobile Industry

State of the Industry in China

According to statistics from the China Auto Industry Association, in 2013, 22,116,800 cars were produced, and 21,984,100 cars were sold in China, registering a year-on-year growth of 14.76% and 13.87% respectively, making China the largest car producer in the world. The manufacturing process for cars is extremely complex, and many different suppliers will manufacture different components. The manufacture of steel, glass, tires, and batteries used in cars can all cause pollution in the form of wastewater, solid waste, and atmospheric pollution in particular.

Environmental challenges in China

The steel industry emits large amounts of exhaust gases, which carry pollutants mainly in the form of particulate matter, SO_2 and NOx. Raw material production sites, sintering and ironmaking, and coking are the main sources of particulates. [45] SO_2 mainly comes from sintering systems and NOx from sintering, ironmaking, coking, and hot-rolling. Currently, China's domestic auto industry is responsible for using around 8% of the steel the country produces. With the rapid development of the auto industry, that proportion is expected to rise significantly.[46]

The tire manufacturing process generates waste in the form of wastewater and exhaust gases. Wastewater mainly comes from circulated cooling water and vulcanization processes. The main pollutants in wastewater produced during the production and cleaning processes are suspended solids and oils. Waste gases are made up of inorganic particulates produced during material handling and large amounts of material dosing, as well as VOCs from production processes. Tires are the products that use up most of the rubber produced in China, taking up over 60% of total consumption.[47]

Glass manufacturing processes create large amounts of exhaust gases. The melting of the raw materials of glass in a furnace creates volatile substances, and the exhaust fumes can also release large amounts of sulfur dioxide. Trace amounts of nitrates in the air and raw materials break down to form nitrogen oxides when combustion takes place, and chlorides and fluorides in raw materials break down to form hydrogen chloride and hydrogen fluoride.[48]

Lead smelting and acid battery production processes generate notorious air releases and well as toxic wastewater contaminated by lead. Cadmium is easily released into lead slag and wastewater when the temperature of the alloy used on positive plates gets high. Lead smelting and acid battery production also generates lead smoke and lead dust emissions.

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[45] Iron and steel industry pollution prevention technology policy (Draft for Comments), http://www.zhb.gov.cn/gkml/hbb/bgth/201106/W020111109585794487771.pdf. Accessed June 2014.

[46] http://www.cs.com.cn/xwzx/cj/201404/t20140425_4374661.html. Accessed June 2014.

[47] Explanation of formulating emission standard of pollutants for rubber products industry, (Draft for Comments), http://www.zhb.gov.cn/info/bgw/bbgth/200809/W020080919576077581889.pdf. Accessed June 2014.

[48] Explanation of formulating emission standard of air pollutants for flat glass industry, (Draft Version for Comments), http://www.zhb.gov.cn/image20010518/6428.pdf. Accessed June 2014.

Pollution Map Records

As of June 2014, 1702 automobile related environmental compliance violations were found in the Pollution Map Database. At the same time, the production of steel, glass, tires, and batteries in the automobile industry supply chains have caused tremendous environmental impact. The IPE database contains 1437 violation records for steel companies; 922 violation records for glass companies; 126 violation records for tire companies; and 576 violation records for lead-acid battery companies.

Evaluated brands

Out of 11 brands, three were domestic Chinese companies. Notably, **Great Wall Auto Corp** proactively established dialogue with IPE. See Table 5 for detailed evaluations of each company.

Table 5 Automobile Brand Rankings

CITI Criteria		Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score
		Basic Communication	Discuss Industry Pollution Problems	Establish Screening Mechanism	Corrective Actions	Self-Monitoring Data	Identify Main Polluting Sectors	Extend Management Upstream	Energy and Emissions Targets	PRTR	Recycling Used Products	
No.	Brand	10	10	12	12	8	10	10	10	12	6	100
1	Toyota	5	5	3	3	0	2.5	0	2.5	0	1.5	22.5
2	Ford	5	5	0	6	0	2.5	0	2.5	0	0	21
2	Honda	5	5	0	6	0	2.5	0	2.5	0	0	21
4	Mercedes-Benz	5	5	3	0	0	2.5	0	2.5	0	1.5	19.5
5	GM	2.5	2.5	0	6	0	2.5	0	2.5	0	0	16
6	Volkswagen	2.5	2.5	3	0	0	2.5	0	2.5	0	0	13
7	Great Wall	5	5	0	0	0	0	0	0	0	0	10
7	BMW	2.5	2.5	0	0	0	2.5	0	2.5	0	0	10
9	Hyundai	0	0	0	0	0	2.5	0	2.5	0	0	5
10	Changan	0	0	0	0	0	0	0	0	0	0	0
10	Chery	0	0	0	0	0	0	0	0	0	0	0

Brewery Industry

State of the Industry in China

China produced 50.61 million tons of beer in 2013, making it the top beer producing country in the world. Nationwide, China has 143 beer companies and over 400 beer factories. The beer industry in China is mostly represented by China Resources Snow Breweries, Tsingtao Beer, Budweiser, and Yanjing Beer. China's beer production operations are heavily concentrated in particular areas. According to government statistics from 2013, China's beer production mainly takes place in the eastern, central, and southern regions of China, and those regions respectively make up 34.2%, 15%, and 13.3% of total beer production.[49]

Environmental Challenges in China

In recent years, environmental problems have surfaced in many beer production facilities, and most of the companies are significant water and air polluters in their local areas. Wastewater comes from a variety of sources including: saccharafication and filter washing; fermentation processes that involve pipe washing and water filtration; sterilization processes for bottles; and circulating water for cooling. Most of the waste gas emissions are CO_2 produced during the fermentation process and exhaust gases from boilers.[50]

Pollution Map Database Records

As of June 2014, IPE's Pollution Map Database contained 376 environmental violations records for companies related to the beer industry. Including glass and bottling companies that are affiliated with the beer industry, there were 922 violation records in the database; there were 1086 violation records for packaging/bottling companies.

Evaluated brands

Out of 7 evaluated brands, three are Chinese domestic brands. Notably, **Tsingtao Beer** established dialogue with IPE in 2010 and pushed its non-compliant facilities to implement corrective measures. See Table 6 for detailed evaluation of each brand.

[49] http://shipin.people.com.cn/n/2014/0425/c85914-24942290.html. Accessed June 2014.

[50] Explanation of formulating cleaner production standard. – Brewery industry, http://kjs.mep.gov.cn/hjbhbz/bzwb/other/qjscbz/200610/W020111221383136685644.pdf. Accessed June 2014.

Table 6 Brewery Brand Rankings

CITI Criteria		Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score
		Basic Communication	Discuss Industry Pollution Problems	Establish Screening Mechanism	Corrective Actions	Self-Monitoring Data	Identify Main Polluting Sectors	Extend Management Upstream	Energy and Emissions Targets	PRTR	Recycling Used Products	
No.	Brand	10	10	12	12	8	10	10	10	12	6	100
1	Tsingtao	5	2.5	0	6	0	0	0	0	0	0	13.5
2	ABinBev	2.5	2.5	0	0	0	2.5	0	2.5	0	1.5	11.5
3	Carlsberg	0	0	0	6	0	2.5	0	2.5	0	0	11
4	Heineken	2.5	2.5	0	0	0	0	0	2.5	0	0	7.5
5	SABMiller	0	0	0	0	0	2.5	0	2.5	0	0	5
6	Yanjing Beer	0	0	0	0	0	0	0	0	0	0	0
6	Maotai Beer	0	0	0	0	0	0	0	0	0	0	0

Paper Industry

State of the Industry in China

Since 2009, China has been the world's largest producer of paper products. As of the end of September 2013, there were 7158 pulp and paper product companies that between January and September 2913 produced 87,663,400 tons of paper and cardboard, 12,665,000 tons of pulp, and 37,936,900 tons of paper products.[51]

Environmental Challenges in China

The main environmental problem created by the paper product industry is water pollution. Water pollutants mostly come from the wastewater from stock preparation, cleaning, bleaching, and condensates; the main pollutants in this wastewater are organic pollutants (COD and BOD), suspended solids, and colored substances. According to the 2012 China statistical Yearbook on Environment, the paper product industry generated 3.43 billion tons of wastewater, 623,000 tons of COD, and 21,000 tons of ammonia nitrogen.

Currently, the per capita use of paper in China is significantly lower than that of developed countries, but that is expected to change in the coming years and increase dramatically. [52] Internationally, the total amount of water used to manufacture one ton of integrated paper pulp using advanced methods is 35 to 50 tons of water, but it takes about 103 tons of water in China.[53] China's paper industry faces huge resource and environmental pressures, which creates a difficult pollution challenge.

Pollution Map Database Records

As of June 2014, using "paper" as a keyword, IPE's Pollution Map Database returned 7386 environmental violation records.

Evaluated brands

Out of seven brands, two are Chinese domestic brands. **Stora Enzo** has taken the lead and now started communications. See Table 7 for detailed evaluations of companies.

[51] Sales Trends in China's Paper Industry for 2013, http://www.chinappi.org/infs/20131126152453353718.html. Accessed June 2014.

[52] http://www.keyin.cn/tech/qtht/201401/06-1073727.html. Accessed June 2014.

[53] The Current State of, and Problems in, China's Paper Industry, http://www.dss.gov.cn/Article_Print.asp?ArticleID=256882. Accessed June 2014.

Table 7 Paper Brand Rankings

CITI Criteria		Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score
		Basic Communication	Discuss Industry Pollution Problems	Establish Screening Mechanism	Corrective Actions	Self-Monitoring Data	Identify Main Polluting Sectors	Extend Management Upstream	Energy and Emissions Targets	PRTR	Recycling Used Products	
No.	Brand	10	10	12	12	8	10	10	10	12	6	100
1	Stora Enso	7.5	7.5	0	3	2	2.5	2.5	5	0	0	30
2	Oji Paper	7.5	5	0	3	0	2.5	0	2.5	0	1.5	22
3	SCA	5	5	3	0	0	2.5	2.5	2.5	0	0	20.5
4	International Paper	2.5	2.5	0	0	0	2.5	0	2.5	0	1.5	11.5
5	UPM	0	0	0	0	0	2.5	0	2.5	0	0	5
6	Lee & Man Paper	0	0	0	0	0	0	0	0	0	1.5	1.5
7	Nine Dragons Paper	0	0	0	0	0	0	0	0	0	0	0

Leather Industry

State of the Industry in China

Over the past 20 years of rapid development, China has become a global center for manufacturing leather, fur and related products. China mainly produces soft leather, which makes up more than 90% of total leather production. In recent years soft leather manufacturing has become increasingly concentrated in Hebei, Zhejiang, Guangdong, Shandong, Fujian and Jiangsu. These areas accounted for 84% of total soft leather production nationally in 2009. Similar to the leather industry, the fur industry has also become concentrated in certain areas, such as Hunan, Shandong, Hebei, Zhejiang and Liaoning. These areas accounted for around 85% of fur production nationally in 2009.[54]

Environmental Challenges in China

During the processing of leather about 15% of its organic material is released in wastewater. During the manufacturing process, for each ton of raw leather, 500kg of chemicals are used, 600kg of solid waste and 15-50m^3 of wastewater is produced, and 250kg of COD and 100kg of BOD is released. From this we can see that during the manufacturing and processing of leather products, the release of organic material, the use of many chemicals, production of solid waste and wastewater, means that the development of the leather industry has brought a range of complex environmental problems. At present, the leather and fur industries in China produce 160 million tons of wastewater, 404,000 tons of COD, 16,000 tons of ammonia, and 1280 tons of trivalent chromium. After going through pollution control processes this becomes 138 million tons of wastewater, around 30,000 tons of COD, and 7300 tons of ammonia.[55]

Trivalent chromium works well for tanning and has a relatively low price, so is one of the most effective and widely used tanning agents. At the moment most enterprises, after using alkalis to precipitate chromium in spent tanning liquors, send the chromium sludge for burial, which creates a hidden threat and is also a huge waste of chromium resources. Furthermore, trivalent chromium can accumulate and under conditions where strong oxidization takes place it can form hexavalent chromium, which is more harmful. For these reasons the treatment and disposal of chromium needs to be strictly controlled. According to the *2012 China Statistical Yearbook on Environment*, total chromium discharge from the leather, fur, feather and related products industry accounted for 39.2% of the national total with a total discharge of 74 tons, making the industry the second biggest source in China.

Furthermore, during the leather manufacturing process a large number of other chemicals are used, such as dyes and pesticides. Air emissions created by the leather industry are mainly VOCs, buffing dust, total particulate matter and malodorous gasses (H_2S for example), which can all have a detrimental effect on the environment and public health.

China has also now become the largest producer of synthetic leather in the world. The

[54] Discharge standard of water pollutants for leather and fur making industry, Ministry of Environmental Protection of the People's Republic of China. http://kjs.mep.gov.cn/hjbhbz/bzwb/shjbh/swrwpfbz/201312/W020131231371216654623.pdf. Accessed June 2014.

[55] http://www.gov.cn/gzdt/2013-12/30/content_2556916.htm. Accessed June 2014.

pollution produced in the manufacture and processing of synthetic leather is difficult to ignore as the industry is one of the biggest sources of organic air emissions in the country.[56] According to a rough estimate, the total amount of VOCs emitted to the atmosphere every year from polyurethane (PU) synthetic leather manufacturing in China is more than 100,000 tons.[57] Some synthetic leather processing also produces wastewater and solid waste. The main issue with wastewater is organic pollutants, but in addition to general pollutants, wastewater can also contain toluene and dimethylformamide (DMF).

Non-compliant discharge from leather enterprises and treatment plants that treat leather wastewater has led to some areas where the leather industry is concentrated, such as Bohai Bay in Hebei, the Taihu Basin in Zhejiang, the Yellow River Basin in Henan and Shandong, having very serious levels of water pollution, which shows that the total volume of pollution discharge is well in excess of the environmental capacity of the area.

On December 27th 2013, in order to improve production processes and treatment technologies for the leather and fur industry, the MEP released the *Discharge standard of water pollutants for leather and fur making industry* (GB 30486). The new standard set out wastewater pollution discharge limits, monitoring and supervision requirements, and strengthened discharged limits on harmful pollutants such as heavy metals. New standards bring new challenges, and many leather enterprises will end up with discharge breaching regulatory standards. This means that there exists a large risk of non-compliance in the supply chains of leather brands.

Pollution Map Record

As of June 2014, using the keywords "leather", and "shoes", the IPE Pollution Map Database returned more than 3200 environmental violation records. These included leather companies, leather chemical factories, and wastewater treatment plants for leather manufacturing industrial parks. They were mainly located in Wenzhou and Jiaxing in Zhejiang province, in Chuanzhou in Fujian province, Foshan and Dongguan in Guangdong province, Shijiazhuang in Hebei province, Zhoukou and Jiaozuo in Henan province, Nantong in Jiangsu province, and Chengdu in Sichuan province.

Evaluated brands

Out of 17[58] evaluated brands, five were Chinese domestic brands. See Table 8 for detailed evaluations of brands.

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[56] *Explanations of Formulating Faux Leather Industry Pollutant Discharge Standard (Draft for Comment).* http://www.zhb.gov.cn/gkml/zj/bgth/200910/t20091022_174246.htm. Accessed June 2014.

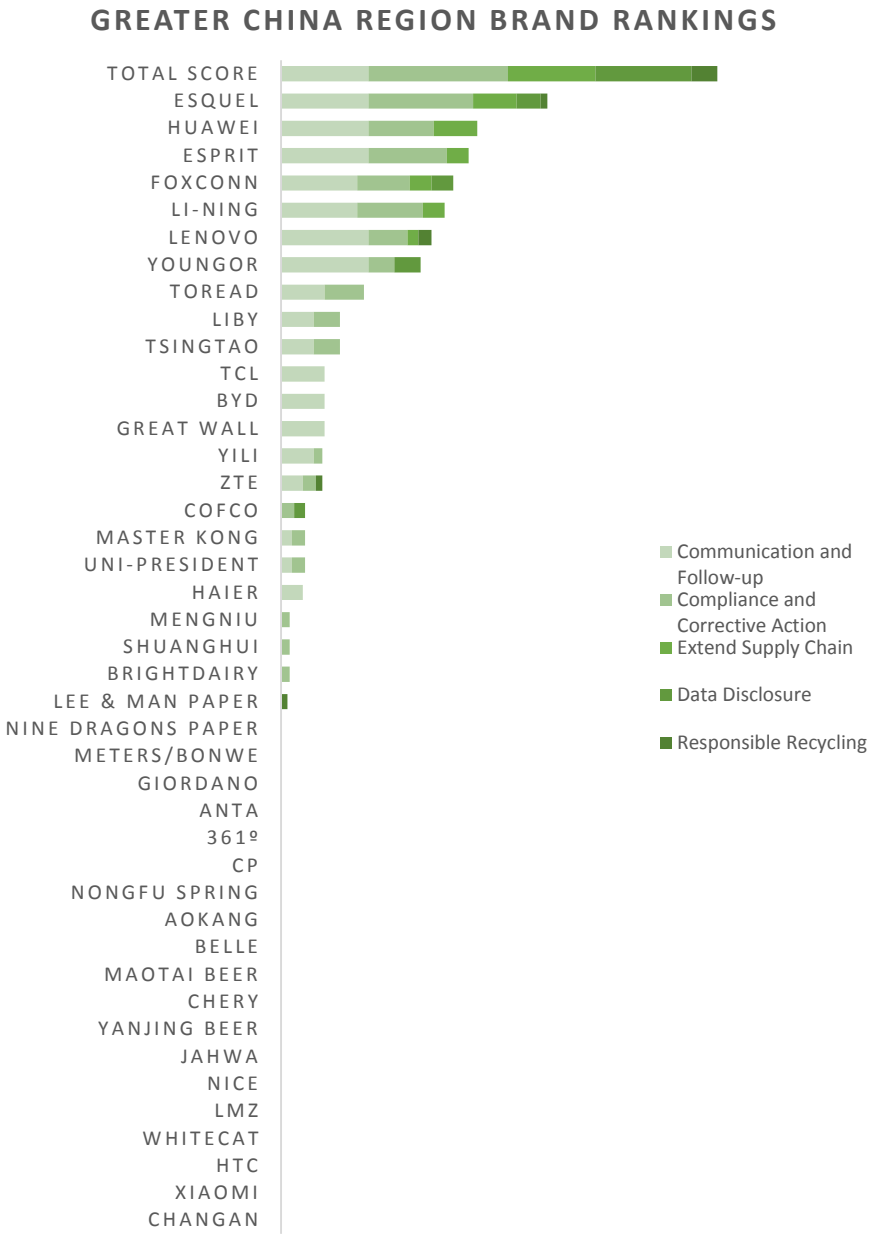
[57] *Explanations of formulating emission standard of pollutants for synthetic leather and artificial leather industry*. (Draft for Comment). http://www.zhb.gov.cn/gkml/zj/bgth/200910/t20091022_174246.htm. Accessed June 2014.

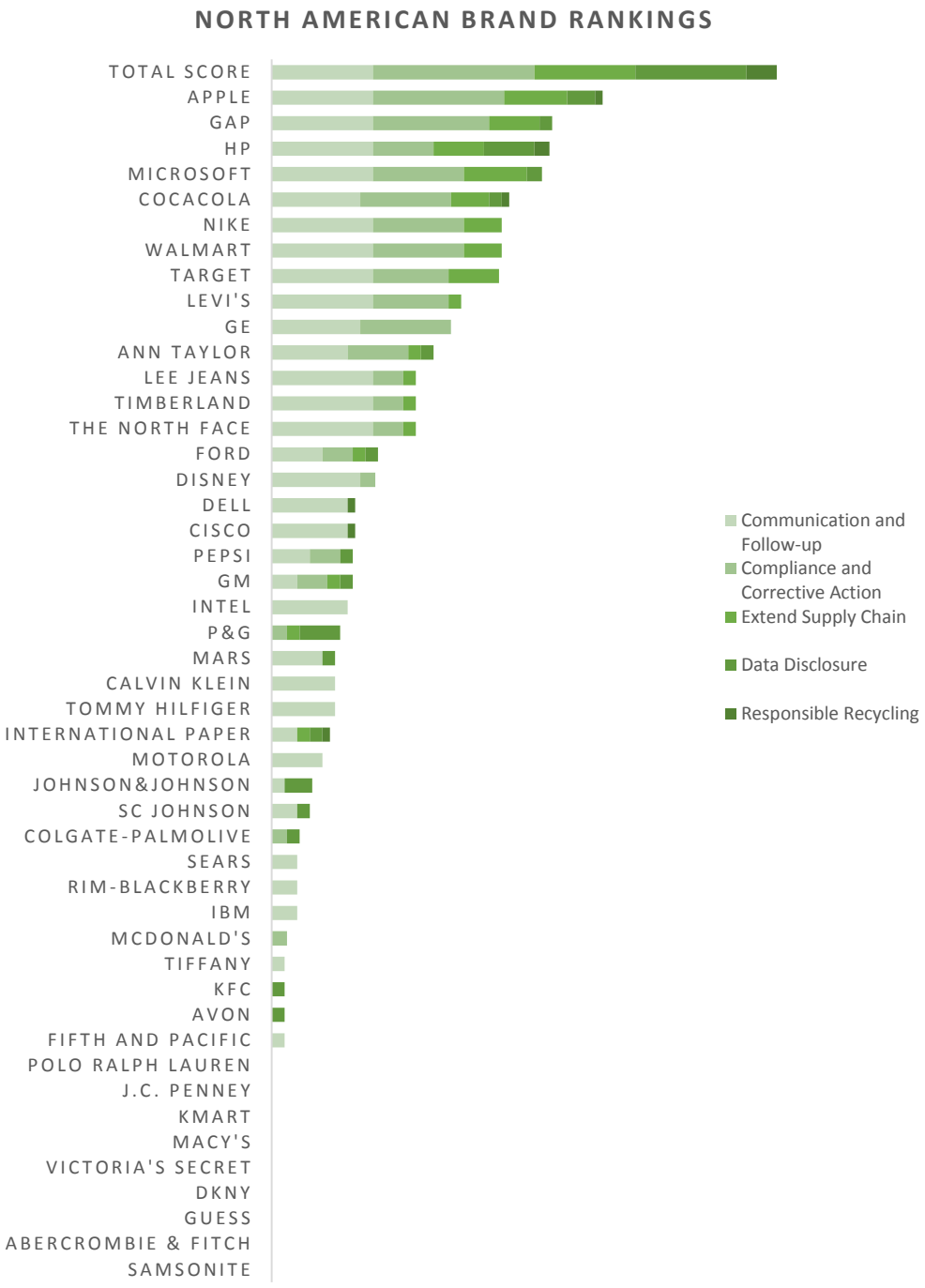
[58] Many of the leather brands are the same as those listed in the textile sector. This evaluation looks at their overall supply chain management performance. In future this will be further refined to specifically evaluate the management of their leather suppliers.

Table 8 Leather Brand Rankings

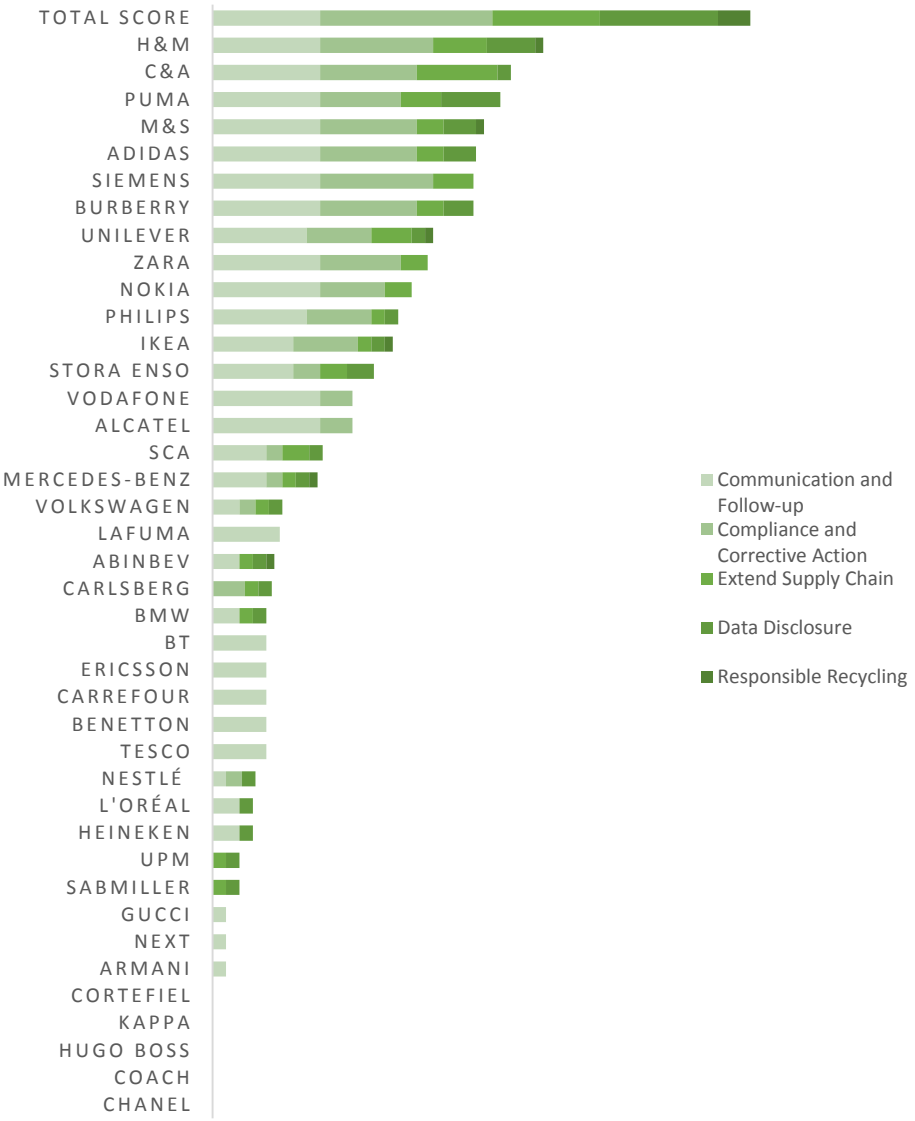
CITI Criteria		Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score
		Basic Communication	Discuss Industry Pollution Problems	Establish Screening Mechanism	Corrective Actions	Self-Monitoring Data	Identify Main Polluting Sectors	Extend Management Upstream	Energy and Emissions Targets	PRTR	Recycling Used Products	
No.	Brand	10	10	12	12	8	10	10	10	12	6	100
1	Puma	10	10	9	6	0	7.5	0	5	6	0	53.5
2	Adidas	10	10	9	9	0	5	0	0	6	0	49
3	Burberry	10	10	9	9	0	2.5	2.5	2.5	3	0	48.5
4	Nike	10	10	9	9	0	5	2.5	0	0	0	45.5
5	Li-Ning	10	7.5	9	6	0	5	0	0	0	0	37.5
6	Timberland	10	10	6	0	0	2.5	0	0	0	0	28.5
7	Armani	2.5	0	0	0	0	0	0	0	0	0	2.5
7	GUCCI	2.5	0	0	0	0	0	0	0	0	0	2.5
7	Tiffany	2.5	0	0	0	0	0	0	0	0	0	2.5
10	CHANEL	0	0	0	0	0	0	0	0	0	0	0
10	COACH	0	0	0	0	0	0	0	0	0	0	0
10	SAMSONITE	0	0	0	0	0	0	0	0	0	0	0
10	Kappa	0	0	0	0	0	0	0	0	0	0	0
10	ANTA	0	0	0	0	0	0	0	0	0	0	0
10	361 °	0	0	0	0	0	0	0	0	0	0	0
10	Belle	0	0	0	0	0	0	0	0	0	0	0
10	Aokang	0	0	0	0	0	0	0	0	0	0	0

4.3 Brand Performance Analysis by Region

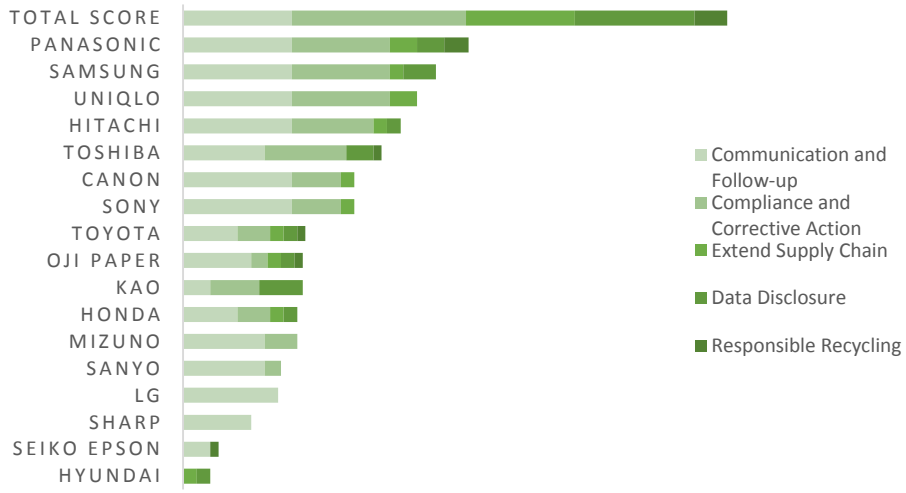



NORTH AMERICAN BRAND RANKINGS
TOTAL SCORE
APPLE
GAP
HP
MICROSOFT
COCACOLA
NIKE
WALMART
TARGET
LEVI'S
GE
ANN TAYLOR
LEE JEANS
TIMBERLAND
THE NORTH FACE
FORD
DISNEY
DELL
CISCO
PEPSI
GM
INTEL
P&G
MARS
CALVIN KLEIN
TOMMY HILFIGER
INTERNATIONAL PAPER
MOTOROLA
JOHNSON&JOHNSON
SC JOHNSON
COLGATE-PALMOLIVE
SEARS
RIM-BLACKBERRY
IBM
MCDONALD'S
TIFFANY
KFC
AVON
FIFTH AND PACIFIC
POLO RALPH LAUREN
J.C. PENNEY
KMART
MACY'S
VICTORIA'S SECRET
DKNY
GUESS
ABERCROMBIE & FITCH
SAMSONITE
Communication and Follow-up
Compliance and Corrective Action
Extend Supply Chain
Data Disclosure
Responsible Recycling

EUROPEAN BRAND RANKINGS



JAPANESE & SOUTH KOREAN BRAND RANKINGS



By looking at how brands from different regions have performed, we can see that:

- A decent proportion of European and American brands have performed particularly well and green procurement in leading industries is making good progress. However, many brands from the food and beverage, household and personal care products, and automobile industries have still failed to actively respond to questions about problems in their supply chains in China.
- The performance of Japanese and Korean brands is overall very similar. They are basically able to answer initial inquiries into supply chain problems in China but many have still yet to go much further.
- The performance of brands in the greater China region varies wildly. A few specific brands have outstanding performance but many still haven't done anything or are only just starting to take action.

5 Conclusion

- At the same time as improving people's livelihoods, global production and procurement practices also bring very serious local pollution problems to areas like China, where the factories of the world are located, as well as being a major source of global carbon emissions. A part of this problem exists because many multi-national corporations do not pay close enough attention to pollution control in their massive supply chains.
- Existing corporate environmental standards and evaluation tools have certain limitations and many do not pay close attention to the impact on the environment that global supply chains have. Although a number of evaluation systems recognize that this problem exists and would like to add more focus on supply chains, the complex conditions surrounding supply chain issues and the difficulties in identifying how well brands are performing means that many leave out a complete evaluation of supply chain management. Thanks to progress made in environmental information disclosure in China over the past few years, and also developments in public participation in environmental governance, in 2007, IPE and partner NGOs were able to launch the Green Choice Alliance - Supply Chain Management project. Using qualitative assessments tools developed as part of this project, IPE and NRDC went on to develop the CITI. The multi stakeholder approach that the CITI uses means that it can make up for some of the deficiencies that exist in the supply chain management evaluation sections of other evaluation systems.
- The CITI is not only a quantitative evaluation system, at the same time, the five levels contained in each of the 10 evaluation criteria provide a step by step process, from easy steps to more challenging ones, creating a roadmap that brands can follow to help green their supply chain management.
- This inaugural CITI assessment looks at eight industrial sectors with significant environmental impacts: IT, textiles, food and beverage, household and personal care, automobile, breweries, and leather. Apple, H&M, Unilever, Coca Cola, Stora Enso, and Puma were top performers in their respective sectors. However, 47 of the brands were unable to provide any sort of response to questions about their supply chains, demonstrating that there's a long road ahead before the goal of green supply chains can be attained.
- Looking at the brands on a regional basis, some European and American brands have outstanding performance, but there are also many laggards. Japanese and Korean brands are generally all consistent with their performance, but more progress could be made. The performance of brands from the greater China region varies wildly with some brands, like Esquel and Huawei, making good progress. However, most are just starting out or have not begun to do anything at all.

- The CITI is based on collected data and publicly disclosed information. Brands need use the power of public supervision to ensure that their supply chains can meet environmental standards, even under complex societal conditions. The government should expand information disclosure and use market oriented measures to push for environmental protection. Consumers in China and abroad can look at the CITI evaluation results and use their purchasing power to support and encourage those brands that are willing, and have systems in place, to address environmental pollution problems in their supply chains, thus helping to address some of the environmental challenges faced by China and the wider world

Appendix I

CITI Evaluation System

Criteria		Sub-criteria
Communication and Follow-up	**1.1 Respond to questions about environmental violation records**	A Not responded
		B Responded stating that the email had been received
		C Responded stating that all environmental issues raised would be looked into
		D Appointed someone to follow up on suppliers with environmental problems and have issued a follow-up statement
		E Conducted an in depth follow-up and appointed someone to investigate environmental issues at problem suppliers continuously. Also communicated details of follow-up activities to other stakeholders
	1.2 Communication on supply chain pollution problems	A No communication from the brand
		B Expressed a desire to start communications
		C Started basic communications
		D Discussed environmental issues in supply chain or related industry with stakeholders
		E Appointed person to keep on communicating with stakeholders and pro-actively discussed plans for dealing with pollution issues
Compliance and Corrective Actions	**2.1 Establish a mechanism to screen suppliers for violations**	A Not established screening mechanism
		B Publically required supplier environmental compliance and have started screening a small number of suppliers
		C Publically required supplier environmental compliance; established a screening mechanism, and have screened preferred suppliers and potential suppliers
		D Publically required supplier environmental compliance; established a screening mechanism and screen preferred suppliers and potential suppliers at least quarterly

Criteria		Sub-criteria
		E Publically required supplier environmental compliance; established a screening mechanism and have routinely screened all suppliers and potential suppliers at least quarterly and also provided breakdown of screening results (such as number of suppliers out of compliance, etc.)
	2.2 Push suppliers to take corrective actions and disclose actions taken	A Not pushed for corrective actions
		B Made a commitment to push suppliers to take corrective actions and provide simple written explanations
		C Have pushed suppliers to take corrective actions and provided full written explanations of corrective actions carried out by factories/subsidiaries (where they have them). Pushed suppliers to themselves provide written statements on corrective actions carried out
		D Pushed preferred suppliers with compliance issues to carry out corrective actions and required that at least some violators go through the relevant GCA delisting processes
		E Pushed all suppliers with compliance issues to carry out corrective actions and pushed all suppliers found to be in violation to go through the relevant GCA delisting processes. Also pushed these suppliers to follow up with stakeholders about progress made
	2.3 Push suppliers to disclose self-monitoring data	A Not pushed suppliers to disclose self-monitoring data. They may have internal pollutant data collection systems, but this data is not released to the public, or only summarized data is released in an annual report
		B Require its suppliers to publish self-monitoring data in accordance with EPB regulations and require suppliers with pollutants discharge frequently in breach of regulations to provide written explanations. (Can be required in Supplier Code of Conduct/Supplier Guidelines etc.)
		C Pushed a small number of preferred suppliers to publish self-monitoring data. Required those suppliers that are key state monitored enterprises to carry out real time online disclosure and pushed those suppliers found to be discharging in breach of discharge standard limits to provide a statement explaining the reasons for this
		D Pushed most preferred suppliers to publish self-monitoring data. Required those suppliers that are key state monitored enterprises to carry out real time online disclosure and pushed non key state monitored enterprises to disclose self-monitoring data on a daily basis. Also pushed those suppliers found to be frequently discharging in breach of discharge standard limits to provide a statement explaining the reasons for this

Criteria		Sub-criteria
		E Pushed more than just preferred suppliers to publish self-monitoring data. Also pushed those suppliers found to be frequently discharging in breach of discharge standard limits to provide a statement explaining the reasons for this and explanation of corrective actions
Extend Green Supply Chain Practices	**3.1 Prioritize suppliers with significant environmental impacts and push for pollution control**	A Not implemented any effective actions
		B The brand has created and demonstrated a mechanism to prioritize its suppliers according to their relative environmental impact (can be disclosed through Supplier Code of Conduct/Supplier Guidelines etc. or directly to IPE)
		C Have screened a small number of suppliers beyond Tier 1 with the most significant environmental impact (in accordance with their supplier priority management mechanism), and have pushed suppliers who have violation records to take corrective actions, control pollution and provide statements of what those actions were
		D Have screened most suppliers beyond Tier 1 with the most significant environmental impact (in accordance with their supplier management mechanism), and have pushed suppliers who have violation records to take corrective actions, control pollution, and provide statements of what those actions were
		E Have pushed all the other suppliers with significant environmental impacts and provided public explanations of any environmental violation records
	3.2 Push suppliers to screen their own upstream suppliers	A Not implemented any effective actions
		B Require suppliers to screen their own upstream suppliers (can be required in Supplier Code of Conduct/Supplier Guidelines or to IPE etc.)
		C A small number of suppliers screen their own upstream suppliers, identify compliance issues and communicate this with the stakeholders
		D Most preferred suppliers screen their own upstream suppliers, identify compliance issues and communicate this with the stakeholders

Criteria		Sub-criteria
		E Screening mechanism extended to all levels of suppliers and statements provided to the public on all compliance issues
Data Disclosure	**4.1 Push suppliers to publish energy-saving and emission-reduction targets and accomplishments to realize brand's own goals**	A Not yet formulated energy-saving and emission-reduction targets.
		B Formulated and published its own energy-saving and emission-reduction targets for its supply chain
		C Formulated and published its own energy-saving and emission-reduction targets and through formulating a concrete plan with suppliers have met these targets. Some suppliers have published their own targets and how they plan to reach these
		D Formulated and published its own energy-saving and emission-reduction targets and through formulating a concrete plan with suppliers have met these targets. Most preferred suppliers have published their own targets and how they plan to reach these.
		E Formulated and published its own energy-saving and emission-reduction targets and through formulating a concrete plan with suppliers have met these targets. Detailed explanations of how these targets have been met are detailed in the annual or CSR report (with specific data)
	4.2 Push suppliers to disclose pollutant release and transfer data	A Not yet requested suppliers to disclose this information. Brand may already have internal pollutant data collection system but information is not publicly available
		B Require its suppliers to fill in and provide pollutant release and transfer data (can be required in Supplier Code of Conduct/Supplier Guidelines etc.).
		C Pushed preferred suppliers to fill in the PRTR with annual data on all priority pollutants.

Criteria		Sub-criteria
		D Pushed preferred suppliers fill in the PRTR with annual data including all pollutants listed in their EIA. Ensure that suppliers continue to do this every year.
		E Pushed more than just preferred suppliers fill in the PRTR with annual data including all pollutants listed in their EIA and also hazardous waste information. Ensure that suppliers continue to do this every year.
Responsible Recycling	**5.1 Establish global recycling program and track waste**	A No recycling program for used products.
		B Has a policy to build or join a recycling program and to promote global environmentally sound recycling for its industry used products especially in China
		C Tracks the waste that is sent for recycling, and especially the used products from its industry sector that are transferred to China
		D Tracks the waste they have collected back to the final processing facility and check the compliance status of the facility.
		E Pushes final processing facilities to correct their non-compliance behavior and/or to disclose their discharge data.

Appendix II

CITI evaluation result[59]

CITI Criteria			Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score (100)
No.	Brand		Basic Communication (10)	Discuss Industry Pollution Problems(10)	Establish Screening Mechanism (12)	Corrective Actions (12)	Self-Monitoring Data (8)	Identify Main Polluting Sectors (10)	Extend Management Upstream (10)	Energy and Emissions Targets (10)	PRTR (12)	Recycling Used Products (6)	
1	苹果	Apple	10	10	12	12	2	7.5	5	2.5	3	1.5	65.5
2	H&M	H&M	10	10	12	9	0	5	5	0	9	1.5	61.5
3	溢达	Esquel	10	10	12	12	0	7.5	2.5	2.5	3	1.5	61
4	盖璞	GAP	10	10	12	9	2	5	5	2.5	0	0	55.5
4	C&A	C&A	10	10	12	6	0	10	5	2.5	0	0	55.5
6	惠普	HP	10	10	6	6	0	5	5	10	0	3	55
7	微软	Microsoft	10	10	6	12	0	7.5	5	0	3	0	53.5
7	彪马	Puma	10	10	9	6	0	7.5	0	5	6	0	53.5
9	松下	Panasonic	10	10	6	12	0	5	0	5	0	4.5	52.5
10	玛莎百货	M&S	10	10	12	6	0	5	0	0	6	1.5	50.5
11	阿迪达斯	Adidas	10	10	9	9	0	5	0	0	6	0	49
12	巴宝莉	Burberry	10	10	9	9	0	2.5	2.5	2.5	3	0	48.5
12	西门子	Siemens	10	10	9	12	0	5	2.5	0	0	0	48.5
14	可口可乐	CocaCola	10	7.5	9	9	0	5	2.5	2.5	0	1.5	47

[59] Brand's scores as of June 2014.

CITI Criteria			Communication and Follow-up		Compliance and Corrective Action			Extend Green Supply Chain Practices		Data Disclosure		Responsible Recycling	Total Score (100)
No.	Brand		Basic Communication (10)	Discuss Industry Pollution Problems(10)	Establish Screening Mechanism (12)	Corrective Actions (12)	Self-Monitoring Data (8)	Identify Main Polluting Sectors (10)	Extend Management Upstream (10)	Energy and Emissions Targets (10)	PRTR (12)	Recycling Used Products (6)	
15	三星	Samsung	10	10	9	9	0	2.5	0	0	6	0	46.5
16	沃尔玛	Walmart	10	10	9	9	0	2.5	5	0	0	0	45.5
16	耐克	Nike	10	10	9	9	0	5	2.5	0	0	0	45.5
18	Target	Target	10	10	12	3	0	5	5	0	0	0	45
18	华为	Huawei	10	10	9	6	0	5	5	0	0	0	45
20	优衣库	Uniqlo	10	10	12	6	0	5	0	0	0	0	43
20	Esprit	Esprit	10	10	9	9	0	5	0	0	0	0	43
22	联合利华	Unilever	10	7.5	6	6	0	5	2.5	2.5	0	1.5	41
23	日立	Hitachi	10	10	6	9	0	2.5	0	2.5	0	0	40
23	ZARA	ZARA	10	10	9	6	0	2.5	2.5	0	0	0	40
25	富士康	Foxconn	10	7.5	6	6	0	5	0	5	0	0	39.5
26	李宁	Li-Ning	10	7.5	9	6	0	5	0	0	0	0	37.5
26	李维斯	Levi's	10	10	9	6	0	2.5	0	0	0	0	37.5
28	诺基亚	Nokia	10	10	3	9	0	5	0	0	0	0	37
29	东芝	Toshiba	7.5	7.5	6	9	0	0	0	5	0	1.5	36.5
30	通用电气	GE	10	7.5	9	9	0	0	0	0	0	0	35.5
31	联想	Lenovo	10	10	6	3	0	2.5	0	0	0	3	34.5
31	飞利浦	Philips	10	7.5	9	3	0	2.5	0	2.5	0	0	34.5
33	宜家	IKEA	7.5	7.5	9	3	0	2.5	0	2.5	0	1.5	33.5
34	雅戈尔	Youngor	10	10	3	3	0	0	0	0	6	0	32

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34	安 泰勒	Ann Taylor	7.5	7.5	6	6	0	2.5	0	2.5	0	0	32
36	索尼	Sony	10	10	3	6	0	2.5	0	0	0	0	31.5
36	佳能	Canon	10	10	3	6	0	0	2.5	0	0	0	31.5
38	斯道拉恩索	Stora Enso	7.5	7.5	0	3	2	2.5	2.5	5	0	0	30
39	北面	The North Face	10	10	6	0	0	2.5	0	0	0	0	28.5
39	添柏岚	Timberland	10	10	6	0	0	2.5	0	0	0	0	28.5
39	Lee Jeans	Lee Jeans	10	10	6	0	0	2.5	0	0	0	0	28.5
42	阿尔卡特	Alcatel	10	10	3	3	0	0	0	0	0	0	26
42	沃达丰	Vodafone	10	10	3	3	0	0	0	0	0	0	26
44	丰田汽车	Toyota	5	5	3	3	0	2.5	0	2.5	0	1.5	22.5
45	花王	KAO	5	0	3	6	0	0	0	5	3	0	22
45	王子制纸	Oji Paper	7.5	5	0	3	0	2.5	0	2.5	0	1.5	22
47	美津浓	Mizuno	7.5	7.5	3	3	0	0	0	0	0	0	21
47	福特汽车	Ford	5	5	0	6	0	2.5	0	2.5	0	0	21
47	本田汽车	Honda	5	5	0	6	0	2.5	0	2.5	0	0	21
50	迪斯尼	Disney	10	7.5	3	0	0	0	0	0	0	0	20.5
50	爱生雅	SCA	5	5	3	0	0	2.5	2.5	2.5	0	0	20.5
52	奔驰	Mercedes-Benz	5	5	3	0	0	2.5	0	2.5	0	1.5	19.5

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53	探路者	Toread	7.5	2.5	3	6	0	0	0	0	0	0	19
54	三洋	Sanyo	7.5	7.5	3	0	0	0	0	0	0	0	18
55	LG	LG	7.5	10	0	0	0	0	0	0	0	0	17.5
56	思科	Cisco	7.5	7.5	0	0	0	0	0	0	0	1.5	16.5
56	戴尔	Dell	7.5	7.5	0	0	0	0	0	0	0	1.5	16.5
58	通用汽车	GM	2.5	2.5	0	6	0	2.5	0	2.5	0	0	16
58	百事可乐	Pepsi	7.5	0	0	6	0	0	0	2.5	0	0	16
60	英特尔	Intel	7.5	7.5	0	0	0	0	0	0	0	0	15
61	宝洁	P&G	0	0	3	0	0	2.5	0	5	3	0	13.5
61	青岛啤酒	Tsingtao	5	2.5	0	6	0	0	0	0	0	0	13.5
61	立白	Liby	7.5	0	6	0	0	0	0	0	0	0	13.5
64	大众汽车	Volkswagen	2.5	2.5	3	0	0	2.5	0	2.5	0	0	13
65	Lafuma	Lafuma	7.5	5	0	0	0	0	0	0	0	0	12.5
65	Tommy Hilfiger	Tommy Hilfiger	5	7.5	0	0	0	0	0	0	0	0	12.5
65	CK	Calvin Klein	5	7.5	0	0	0	0	0	0	0	0	12.5
65	玛氏	Mars	5	5	0	0	0	0	0	2.5	0	0	12.5
65	夏普	Sharp	7.5	5	0	0	0	0	0	0	0	0	12.5
70	百威英博	ABinBev	2.5	2.5	0	0	0	2.5	0	2.5	0	1.5	11.5

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70	国际纸业	International Paper	2.5	2.5	0	0	0	2.5	0	2.5	0	1.5	11.5
72	嘉士伯	Carlsberg	0	0	0	6	0	2.5	0	2.5	0	0	11
73	乐购	Tesco	5	5	0	0	0	0	0	0	0	0	10
73	长城汽车	Great Wall	5	5	0	0	0	0	0	0	0	0	10
73	新加坡电信	Singtel	5	5	0	0	0	0	0	0	0	0	10
73	贝纳通	Benetton	5	5	0	0	0	0	0	0	0	0	10
73	家乐福	Carrefour	5	5	0	0	0	0	0	0	0	0	10
73	爱立信	Ericsson	5	5	0	0	0	0	0	0	0	0	10
73	摩托罗拉	Motorola	5	5	0	0	0	0	0	0	0	0	10
73	英国电信	BT	5	5	0	0	0	0	0	0	0	0	10
73	比亚迪	BYD	5	5	0	0	0	0	0	0	0	0	10
73	TCL	TCL	5	5	0	0	0	0	0	0	0	0	10
73	宝马	BMW	2.5	2.5	0	0	0	2.5	0	2.5	0	0	10
84	中兴	ZTE	5	0	3	0	0	0	0	0	0	1.5	9.5
84	伊利	Yili	5	2.5	0	0	2	0	0	0	0	0	9.5
86	强生	Johnson & Johnson	2.5	0	0	0	0	0	0	2.5	3	0	8
86	雀巢	Nestlé	2.5	0	0	3	0	0	0	2.5	0	0	8
88	喜力	Heineken	2.5	2.5	0	0	0	0	0	2.5	0	0	7.5

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88	欧莱雅	L'Oréal	2.5	2.5	0	0	0	0	0	2.5	0	0	7.5
88	庄臣	SC Johnson	5	0	0	0	0	0	0	2.5	0	0	7.5
91	精工爱普生	Seiko Epson	2.5	2.5	0	0	0	0	0	0	0	1.5	6.5
92	统一	Uni-president	2.5	0	0	3	0	0	0	0	0	0	5.5
92	康师傅	Master Kong	2.5	0	0	3	0	0	0	0	0	0	5.5
92	中粮	COFCO	0	0	0	3	0	0	0	2.5	0	0	5.5
92	高露洁-棕榄	Colgate-Palmolive	0	0	3	0	0	0	0	2.5	0	0	5.5
96	现代	Hyundai	0	0	0	0	0	2.5	0	2.5	0	0	5
96	SABMiller	SABMiller	0	0	0	0	0	2.5	0	2.5	0	0	5
96	IBM	IBM	2.5	2.5	0	0	0	0	0	0	0	0	5
96	黑莓	RIM-Blackberry	2.5	2.5	0	0	0	0	0	0	0	0	5
96	海尔	Haier	2.5	2.5	0	0	0	0	0	0	0	0	5
96	芬欧汇川	UPM	0	0	0	0	0	2.5	0	2.5	0	0	5
96		Sears	2.5	2.5	0	0	0	0	0	0	0	0	5
103	麦当劳	McDonald's	0	0	0	3	0	0	0	0	0	0	3
104	阿玛尼	Armani	2.5	0	0	0	0	0	0	0	0	0	2.5

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104	Fifth and Pacific	Fifth and Pacific	2.5	0	0	0	0	0	0	0	0	0	2.5
104	Next	Next	2.5	0	0	0	0	0	0	0	0	0	2.5
104	古驰	GUCCI	2.5	0	0	0	0	0	0	0	0	0	2.5
104	雅芳	AVON	0	0	0	0	0	0	0	2.5	0	0	2.5
104	肯德基	KFC	0	0	0	0	0	0	0	2.5	0	0	2.5
104	蒂芙尼	Tiffany	2.5	0	0	0	0	0	0	0	0	0	2.5
111	光明	Brightdairy	0	0	0	0	2	0	0	0	0	0	2
111	双汇	Shuanghui	0	0	0	0	2	0	0	0	0	0	2
111	蒙牛	Mengniu	0	0	0	0	2	0	0	0	0	0	2
114	理文造纸	Lee & Man Paper	0	0	0	0	0	0	0	0	0	1.5	1.5
115	长安汽车	Changan	0	0	0	0	0	0	0	0	0	0	0
115	小米	Xiaomi	0	0	0	0	0	0	0	0	0	0	0
115	HTC	HTC	0	0	0	0	0	0	0	0	0	0	0
115	白猫	Whitecat	0	0	0	0	0	0	0	0	0	0	0
115	两面针	LMZ	0	0	0	0	0	0	0	0	0	0	0
115	纳爱斯	Nice	0	0	0	0	0	0	0	0	0	0	0
115	上海家化	Jahwa	0	0	0	0	0	0	0	0	0	0	0
115	燕京啤酒	Yanjing Beer	0	0	0	0	0	0	0	0	0	0	0

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115	奇瑞	Chery	0	0	0	0	0	0	0	0	0	0	0
115	茅台啤酒	Maotai Beer	0	0	0	0	0	0	0	0	0	0	0
115	香奈儿	CHANEL	0	0	0	0	0	0	0	0	0	0	0
115	蔻驰	COACH	0	0	0	0	0	0	0	0	0	0	0
115	新秀丽	SAMSONITE	0	0	0	0	0	0	0	0	0	0	0
115	百丽	Belle	0	0	0	0	0	0	0	0	0	0	0
115	奥康	Aokang	0	0	0	0	0	0	0	0	0	0	0
115	农夫山泉	Nongfu Spring	0	0	0	0	0	0	0	0	0	0	0
115	正大	CP	0	0	0	0	0	0	0	0	0	0	0
115	HUGO BOSS	HUGO BOSS	0	0	0	0	0	0	0	0	0	0	0
115	Abercrombie & Fitch	Abercrombie & Fitch	0	0	0	0	0	0	0	0	0	0	0
115	361°	361°	0	0	0	0	0	0	0	0	0	0	0
115	卡帕	Kappa	0	0	0	0	0	0	0	0	0	0	0
115	Guess	Guess	0	0	0	0	0	0	0	0	0	0	0
115	安踏	ANTA	0	0	0	0	0	0	0	0	0	0	0
115	Cortefiel	Cortefiel	0	0	0	0	0	0	0	0	0	0	0
115	DKNY	DKNY	0	0	0	0	0	0	0	0	0	0	0

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115	维多利亚的秘密	Victoria's Secret	0	0	0	0	0	0	0	0	0	0	0
115	Macy's	Macy's	0	0	0	0	0	0	0	0	0	0	0
115	Kmart	Kmart	0	0	0	0	0	0	0	0	0	0	0
115	J.C. Penney	J.C. Penney	0	0	0	0	0	0	0	0	0	0	0
115	佐丹奴	Giordano	0	0	0	0	0	0	0	0	0	0	0
115	美特斯邦威	Meters/bonwe	0	0	0	0	0	0	0	0	0	0	0
115	玖龙造纸	Nine Dragons Paper	0	0	0	0	0	0	0	0	0	0	0
115	Polo Ralph Lauren	Polo Ralph Lauren	0	0	0	0	0	0	0	0	0	0	0

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