



**CEMENT
INDUSTRY**

**RESPONSIBLE INVESTMENT IN THE CEMENT INDUSTRY:
STILL A LONG WAY TO GO**



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06-18-2013

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Many thanks to the SEE Foundation, Energy Foundation and other foundations for their continued support.

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1. Foreword

Over the past few years China's air pollution problems have become increasingly serious and many regions have experienced smog on a large scale that has persisted for long periods of time. This has had a huge impact on residents' quality of life and health, and has attracted a huge amount of attention from the general public. The key to this problem remains to be that emissions discharge is still well in exceedance of environmental capacity. Energy intensive industries like thermal power production and steel and cement production are the largest sources of pollution emissions. For these capital-intensive enterprises, Green investment can be used to push for pollution control.

A number of environmental NGOs have spent two years in cooperation with specialized institutions to develop a tool for Green Investment. During the press release for the report, the IPE officially launched the "Green Stocks Database" on the IPE website (<http://www.ipe.org.cn/shangshi1/page1.aspx>). Simply by typing in the name or ticker symbol of a listed company, investors can find the environmental supervision records of its subsidiaries and affiliates.

Due to its significant impact on the environment, the cement industry has been chosen as the first industry to be tackled under the Green Stocks project. China produces more than half of the world's cement, the manufacturing of which consumes a large amount of fuel and electricity. This is required for processes such as grinding and high temperature calcinations. During these processes pollutants such as particle matter (PM) are also released. Dust emissions from the cement industry account for approximately 30% of total national industrial dust emissions, and NOx emissions account for 10-12% of total national NOx emissions. These contribute directly to the formation of hazy conditions. Furthermore, the cement industry is also a source of greenhouse gasses and mercury.

The investigation found that many cement companies have pollution issues. Cement companies with pollution problems included industry leading listed companies that have violation records for frequently exceeding discharge limits. A search on the Green Stocks website found more than 170 environmental supervision records for 17 listed cement companies. A more in-depth on-site investigation by Lvse Jiangnan, Green Hunan and IPE, uncovered some pollution issues affecting the environment and residents near to affiliates of Tianshan Cement Company and Nanfang (South) Cement Company.

The environmental NGOs contacted 17 listed companies to inform them of the aforementioned pollution problems. However, it was regretful that out of the 17 companies, 16 of them took an evasive stance towards their environmental violation problems. China National Building Materials Group Corporation (CNBM,3323.HK), in holding of CUCC and South Cement, stated that, "If you (NGOs) have not received a reply to the letter it is probably because the company felt the contents of the letter was of no interest." Jilin Yatai Group (600881.SH) claimed that, "It was not

clear how a reply should be given.” BBMG Corporation (601992.SH, 2009.HK) replied saying, “If we feel it’s necessary we will follow up and contact you.”

To date, the only company that has responded showing a willingness to follow up has been Lafarge SA (FR0000120537). Other listed companies such as Tangshan Jidong Cement Co., Ltd. (000401.SZ), Anhui Conch Cement Company Limited (600585.SH, 914.HK) and Huaxin Cement Co., Ltd. (600801.SH) did not respond at all to inquiries about their records for emissions discharge in breach of regulatory standards.

The environmental NGOs also attempted to contact domestic and foreign investors in these companies, but the results have been disappointing. Amongst those large scale mutual fund companies in China, Borsera Funds, which invests heavily in Anhui Conch Cement and Huaxin Cement, replied stating that **the investment services provided by the fund to its client has only one goal and that is to make a profit for the client.** Harvest Funds confirmed that they had received the letter but made no follow up. Franklin Templeton Sealand Fund Management Co., Ltd. did not give any kind of response.

Amongst the investors there was no shortage of big name foreign cement companies and well known international investment institutions. Their responses can be split into different groups. JP Morgan and Merrill Lynch International, as well as Germany’s Heidelberg Cement and Switzerland’s Holcim did not respond at all.

A number of other foreign investors responded proactively. Both T. Rowe Price and KKR & Co.LP provided a positive response saying that they would conduct a follow up investigation into the environmental performance of listed cement companies that they are invested in. CRH Group, which is located in Ireland, contacted the environmental NGOs just two days after the letter was sent to them and provided a proactive response. On June 3rd, CRH Group’s global Sustainable Development Manager gave an official response. The response stated that they would push Yatai Building Material, a company in which they hold shares in, to investigate the environmental supervision records and then, within one month, provide an explanation detailing rectification measures.

Over the past four years, the Green Choice Alliance, which was formed by a number of Chinese environmental NGOs, has used the Green Supply Chain tools on the GCA website to successfully push more than 950 companies to provide explanations detailing environmental violations they have, and information on corrective actions taken. The progress that has been made stems from public pressure pushing brands to take action.

At the heart of the 10 new measures to control air pollution issued by the State Council is a desire to reduce emissions. Companies in the cement, steel and thermal electricity production sectors, especially those leading listed companies, have a responsibility to reduce emissions but often fall short of fulfilling their responsibilities to the general public.

We call on the general public, with the help of greater levels of information transparency, to

identify serious pollution problems that exist with listed companies, and push them and their domestic and foreign investors to take responsibility for these problems in order to control serious air pollution caused by the cement industry.

2. Background

2.1 Massive Industrial Emissions

2.1.1 Hazy Conditions Intensifying

Over the past few years China's air pollution problems have become increasingly serious and many regions have experienced smog on a large scale that has persisted for long periods of time. According to statistics from the National Climate Center, in just the first month of 2013, China's central and eastern regions experienced four separate relatively large scale air pollution instances with each one lasting continuously for at least one day, and some as long as one week. In the cities that were worst affected - Beijing, Tianjin and cities in Hebei province – the AQI almost reached the maximum possible value and the air quality actually reached grade six, indicating very serious pollution. Beijing municipality also released the first ever amber air pollution alert.

This unprecedented level of air pollution has not only challenged people's tolerance thresholds but also had a huge and detrimental effect on people's lives, and their health, which has triggered strong public concern. In analyzing the reason for this haze, the key point is that emissions discharge is still well in exceedance of environmental capacity. For example, Wang Yuansi, a researcher at the Institute of Atmospheric Physics at the Chinese Academy of Sciences stated that, "The pollution discharge from human activities is still too large, and so under particular meteorological conditions this is clearly shown as PM_{2.5} levels increase dramatically."

In order to control this haze there must be a reduction in emissions.

2.1.2 Massive Volume of Industrial Emissions

The biggest source of atmospheric pollutants is industrial emissions, which are discharged in massive volumes.

For example, figure 1, 2 and 3 show that, during the period of the Twelfth Five-year Plan, industrial emissions of sulfur dioxide accounted for 85.7% of total national sulfur dioxide emissions, industrial soot emissions accounted for 75.5%¹ of total national soot emissions and between 2006 and 2009, industrial emissions of nitrogen oxide accounted for 76.1%² of total national nitrogen oxide emissions.

¹ 2010 Report on the State of the Environment in China

² 2009 China Environmental Statistical Yearbook

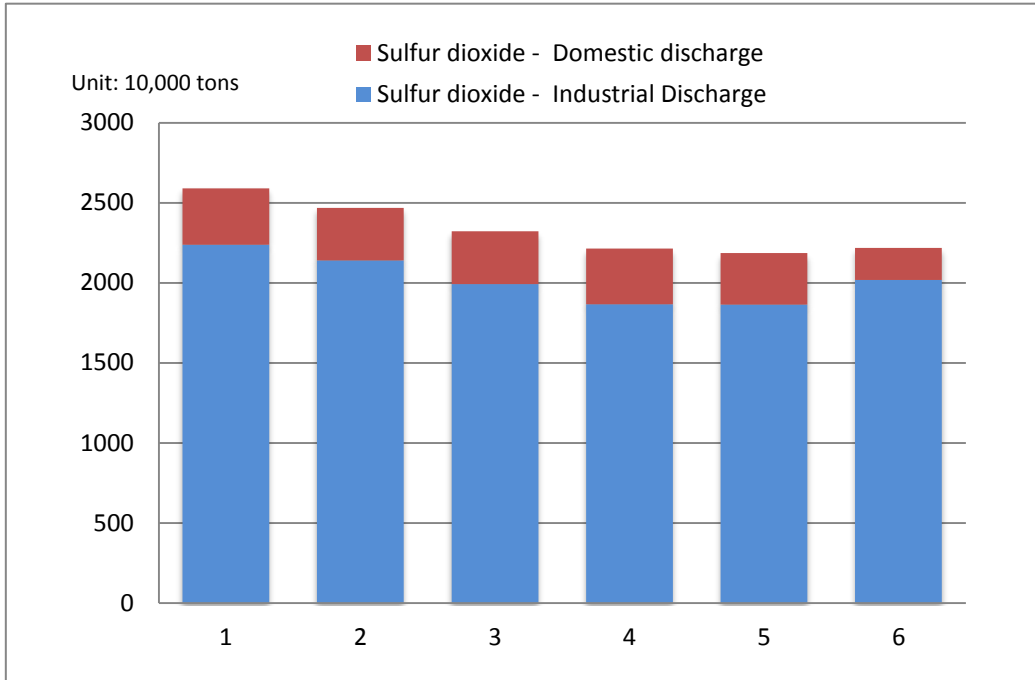


Figure 1. National industrial and domestic sulfur dioxide emissions for 2006-2010³

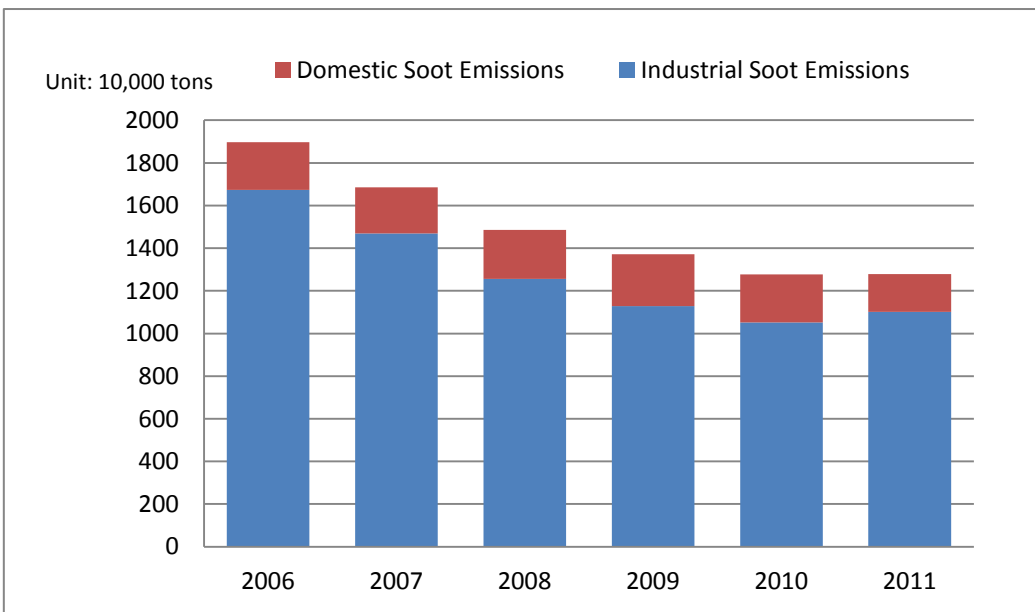


Figure 2. National industrial and domestic soot emissions for 2006-2010⁴

³ 2010 Report on the State of the Environment in China, June 2011.

⁴ 2010 Report on the State of the Environment in China, June 2011.

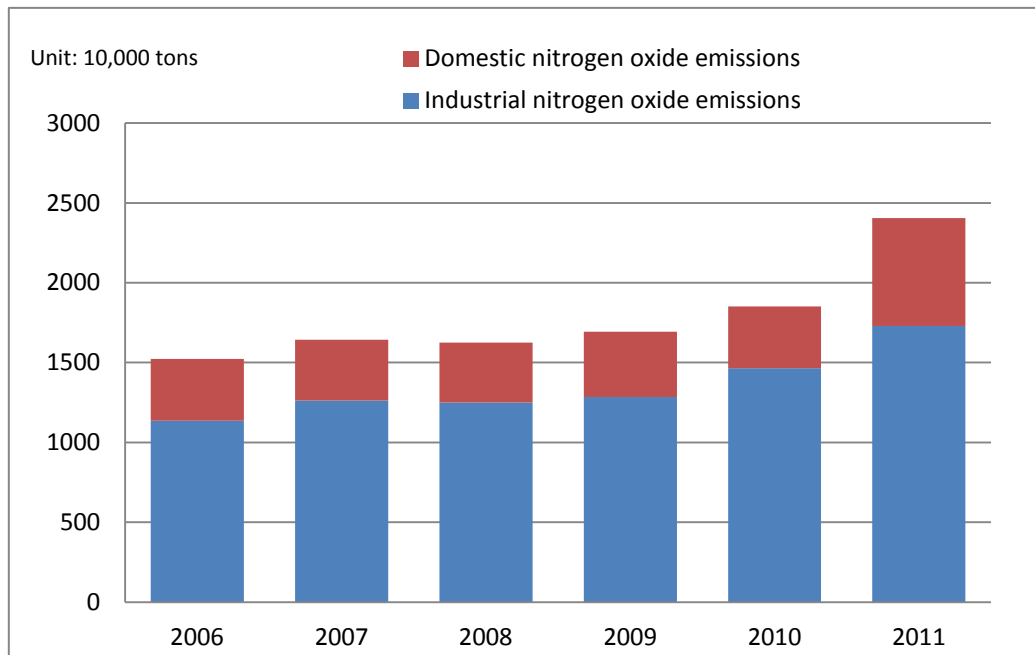


Figure 3. National industrial and domestic nitrogen oxide emissions for 2006-2009⁵

Then there is the case of PM_{2.5}, which has recently attracted so much attention from the public. According to research carried out by Cao Guoliang et al., in 2007, national PM_{2.5} emissions from industrial sources was 9,059,000 tons, almost 70% of the national total, and well in excess of PM_{2.5} emissions from domestic sources, transportation and the burning of biomass.⁶

Atmospheric pollution caused by heavy metal particles and fluoride almost all comes from industrial sources. Furthermore, the formation of secondary pollutants like ozone is related to the discharge of nitrogen oxide and hydrocarbons from industrial sources. Main atmospheric pollutant concentrations and industrial pollutant discharge volumes are often related.

2.1.3 Responsibility for the Management of Industrial Emissions is clearly defined

China has established a number of laws, regulations and standards to control industrial emissions. These touch on wastewater, air emissions, noise, solid waste and radiation. Appendix 1 lists 26 standards related to the discharge of industrial atmospheric pollutants.

These clear regulations, laws and standards mean that the responsibility for the control of industrial pollution sources is much more clearly defined than that for other pollution sources. Furthermore, they are defined in law. Industrial pollution sources often have obvious and static discharge outlets making government supervision, and oversight from the general public,

⁵ 2009 China Environmental Statistical Yearbook, MEP, China Environmental Sciences Press, December, 2012.

⁶ Cao G L, Zhang X Y, Gong S L, et al. Emission inventories of primary particles and pollutant gases for China. Chinese Sci Bull, 2011, 56

relatively easy to develop.

For these reasons, industrial pollution sources should be the first target in the push to reduce emissions.

2.2 Large Air Emission Volumes from the Cement Industry have had a big Impact on the Environment

During this investigation into air emissions from major industries, the cement industry became a target due to its significant impact on the environment.

2.2.1 Production in the Cement Industry is on a Massive Scale

Rapid economic development and increasing needs for cement products over the past ten years has meant that China has become the world's largest cement producer, growing at an average annual rate of over 10%. In 2012, China produced more than half of the world's cement, 8.5 times more than the world's second largest producer (India), and 29 times more than the world's third largest producer (USA).

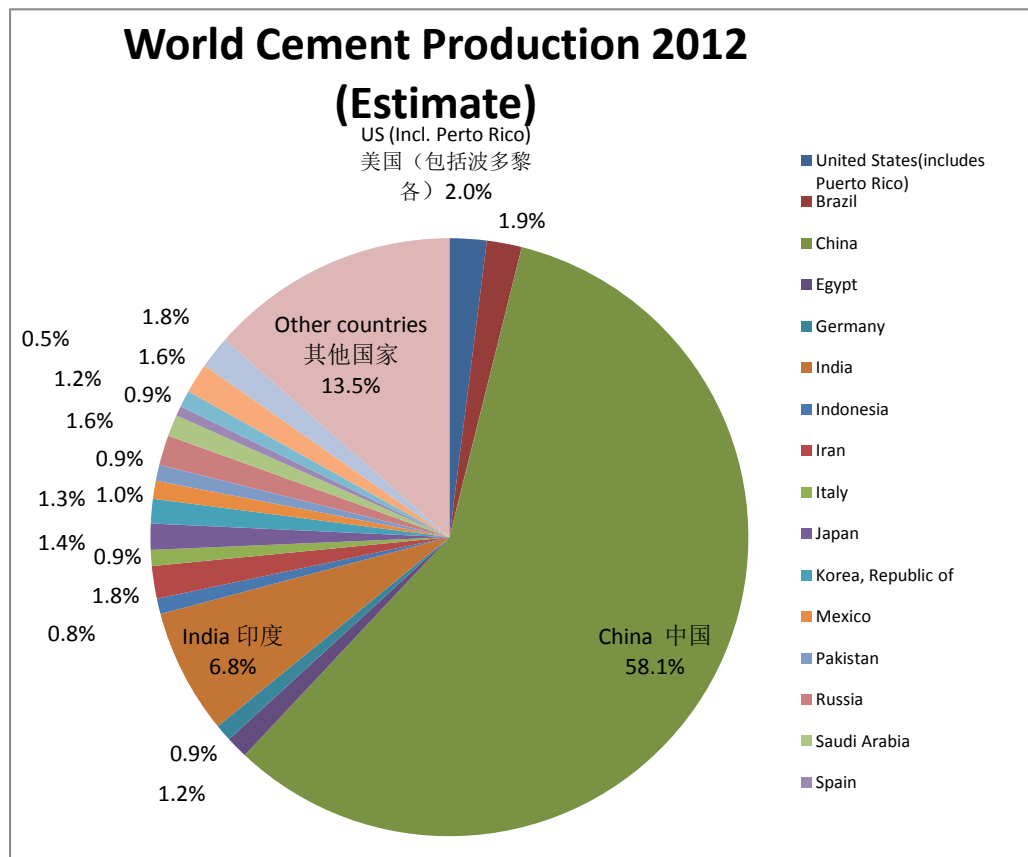


Figure 4: 2012 world cement production by country



Figure 5. 2001-2012 China cement production (total, by dry processes and the growth rate)

2.2.2 Pollutant emissions from main production steps in the cement Industry⁷

- Quarrying Phase

Process:

The collection of raw materials to produce cement. Raw materials like limestone, marlite, chalk (for the source of CaCO_3), and clay/shale etc. used to make clinker are usually obtained from open cast quarries or mud pits. Operations required to extract these materials include hole drilling, blasting, digging, transportation and crushing. Usually quarries are close to cement plants so after their initial crushing the raw materials are transported to the cement plant for storage and preparation.

Pollutant Release:

Fugitive dust emissions commonly occur during the quarrying process. Crushing machines are the major source of controlled emission. Other pieces of equipment that require ventilation to remove dust can also act as sources including loading and transportation machines.

⁷Cement Industry Atmospheric Pollutants Discharge Standards, October 2012

- **Cement Production Phase**

Process:

Rawmix preparation: After being crushed, limestone, clay and some additives are mixed according to certain proportions. They are then milled to make the appropriate and standard rawmix;

Clinker calcination: rawmix is fed through the preheater or precalciner system before entering the kiln for calcination until partially molten. During the process the rawmix turns into a material called clinker or calcium silicate - cement's primary constituent;

Cement Grinding: the clinker, together with gypsum or sometimes mixed-compounds and additives, are ground together to make cement.

Pollutant Release:

Cement production goes through multiple production line operations to turn raw materials into cement. These not only include physical crushing and milling, but also the process of heating and chemical reactions to break down raw materials.

Every process releases different amounts of PM (both fugitive and controlled), and the kiln releases 70% of the controlled PM emission and nearly all of the total air pollutants (SO₂, NO_x, Fluoride etc.).

- **Bulk Cement transfer station and the production of Cement products**

Process:

The bulk cement transfer station is where cement products are warehoused. Main equipment includes ship un-loaders, air supported conveyor belts, elevators, silos and bulk packing machines.

The production of cement products include: (1) ready-mixed concrete and mortar (2) precast concrete (excluding the on-site mixing of cement).

Pollutant Release:

Silos in the distribution center usually have dust collectors mounted on top (bottom), usually as a single bag dust collector. Discharge ports and transfer points install dust collectors to collect dust for separate or collective treatment.

Major pollution release is at the input and output of the silo, which requires dust filters and collectors (i.e. bag collectors). Other emission points include the hopper, mixer and transfer belt. Water spray is required to control the dust for the production processes.

2.2.3 Major Air Pollutants Released by the Cement Industry

2.2.3.1 Huge Discharge of Particulate Matter (PM)

It is estimated that PM emissions from the cement industry account for 15-20% of total PM emissions in China. Statistics from the MEP show that the cement industry releases 30% of China's national industrial dust emissions.⁹

An article from the Cement Guide for New Epoch states that,¹⁰ "According to a rough calculation based on the national dust emission standard of 50mg/Nm³ per kiln, one clinker production line with a capacity of 5000 t/day will release 750kg of dust per day. When this continues day after day, year after year, it can have a massive impact on the environment. In particular, microscopic dust particles cause the most serious damage to the human respiratory system." Wu Shangan, secretary of the Bag Filter Committee of China Association of Environmental Protection Industry, has stated that, "PM_{2.5} discharge from the cement industry accounts for a substantial percentage of total national PM_{2.5} discharge. In other words, PM_{2.5} emissions are likely to be high under normal production conditions."

Atmospheric emissions from the cement industry can be characterized by their source in the cement production processes. There are thermal processes and "cold state" operations, both of which produce emissions of PM.

Table 4-1 Classification of emissions from cement plants

Emission source		Production Equipment (Facilities)	Emission Form	Pollutants	under classification of GB4915
Thermal process	Combustion	Kiln	Chimney	Dust, air pollutants	Kiln & Kiln grinding machine
	Drying	Dryer, Dryer-mill, Coal-mill	Chimney	Dust	Dryer, Dryer-mill, coal-mill and cooling machine
	Cooling	Cooling machine	Chimney	Dust	
"Cold state" operation	Processing	Crusher, Rawmill, cement mill	Chimney	Dust	Crusher, Miller, Packing machine and other ventilation equipment
	Storage	Storage yard, coal yard	Fugitive	Dust	
		the warehouses of Raw material, rawmill, rawmill homogenization, coal powder, clinker, mixed-compound and cement	Chimney	Dust	
Others	Packing machine, bulk machine, transfer equipment, loaded and unloaded, transportation equipment.	Some have chimneys, but mostly fugitive	Dust		

Source: the illustration document for “Cement Industry Air Pollutants Emission Standard” (Proposal), Oct 2012.

The table above shows that possible fugitive emission sources include open yards, road dust, and leaks or overflows of dust-containing gas from pipes or other equipment. The emissions are mainly made up of dust which directly affects the surrounding environment.

Waste gases from production processes that are discharged from high chimneys contain not only PM but also atmospheric pollutants that can undergo secondary reactions to form atmospheric secondary pollutants. This means discharge from high chimneys can have a wider effect on atmospheric air quality.

For these reasons it is equally important for cement plants to control controlled emissions (chimney discharge) as it is to control fugitive emission.

Fine particles measuring less than 2.5 microns (PM_{2.5}) make up the majority of China’s air emissions. The make-up of PM_{2.5} is extremely complex and includes inorganic matter, sulfates, nitrates, ammonium salts and all types of heavy metals. The toxic nature of PM_{2.5} has already been confirmed; it can penetrate deep into the lungs and cause serious harm. From there particles can enter the bloodstream and affect the whole of the body.

The sources of PM_{2.5} can be split into natural sources and man-made sources. Man-made sources include primary and secondary particulate matter. Primary particulate matter includes direct pollution source emissions like coal soot, industrial dust, vehicle exhaust, construction and road dust. Secondary particulate matter is formed when complex chemical reactions happen with atmospheric pollutants like sulfur oxide, nitrogen oxide, ammonia and volatile organic compounds. This is the main source of PM_{2.5} in the atmosphere.

2.2.3.2 Large Volume of NOx Discharge

NOx emissions from the cement industry accounts for 10-12% of total national NOx emissions, which makes cement production the third largest emission source for NOx after thermal power plants and vehicles. NOx is a primary air pollutant and has a direct impact on the formation of hazy conditions.

Furthermore, another notorious pollutant that troubles big cities – ozone – is also formed via complex photochemical reactions of NOx and VOCs present in the atmosphere.

2.2.3.3 Enormous emissions of Greenhouse Gases (GHGs)

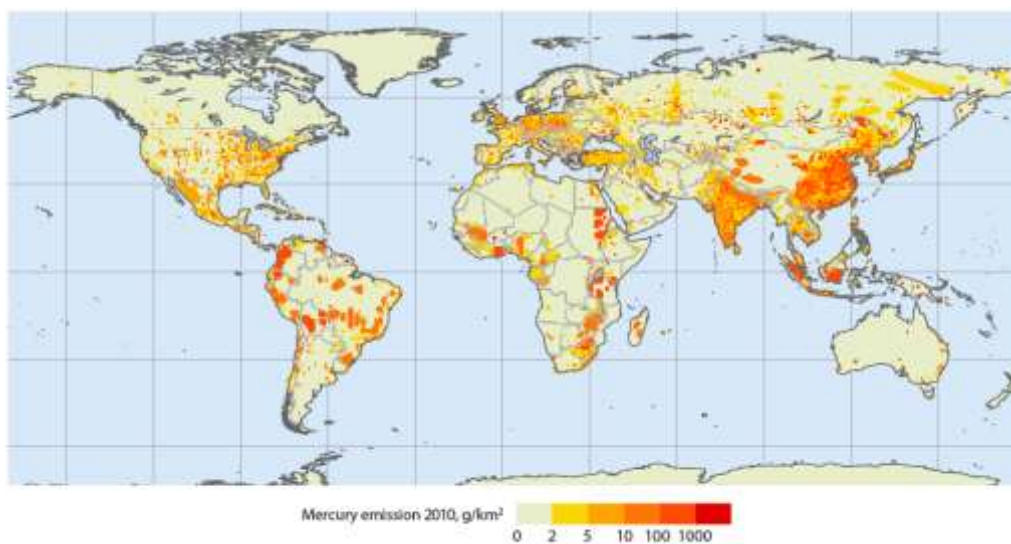
The cement industry is second to only the power industry when it comes to national CO₂ emissions, accounting for approximately 11% of total national emissions.⁸

Enormous GHG emissions from the cement industry are partly caused by the fact that coal is used as the main energy source. Large amounts of CO₂ are also released in the calcination of limestone – the primary raw material used to make cement.

These two reasons account for the fact that the CO₂ intensity (per unit output) of the cement industry is the highest among all industries in China, 7.5 times as high as the national average (according to 2005 statistics).⁹

2.2.3.4 The Cement Industry is a Major Industrial Source of Heavy Metals in China

The UNEP publication, “Global Mercury Assessment 2013”,¹⁵ shows that “50% of the mercury released through anthropogenic activity is from Asia, mainly from the South East Asia region. In this region, China releases 3/4 of total mercury discharged, which accounts for approximately 1/3 of the world’s total emissions.”



Global distribution of anthropogenic mercury emissions to air in 2010.

Figure 6. Global distribution of anthropogenic mercury emissions to air in 2010

⁸ Statistics from the China Cement network show that in 2009, discharge of CO₂ from China’s cement industry was 840 million tons and the total national annual discharge was 7.36 billion tons.

⁹ China Cement Industry Energy and Emissions Reduction “11th Five-year Plan” review and “12th Five-year Plan” investor analysis and forecast report. <http://www.ocn.com.cn/report/125bg/201012/shuiniinjip011631.htm>

As indicated in the “Technical Policy for Mercury Pollution Prevention” issued by the Chinese MEP in January 2013, major mercury pollution sources include cement plants. These have caused pollution to the surrounding atmosphere, water and soil, and some surrounding areas have suffered severe pollution. The chart below shows the major industrial emission sources for mercury in 2007, of which cement production accounts for 14%. Cement kilns are one of the major sources of mercury emissions and mercury can be detected in clinker products. The document also points out that heavy metal pollution caused by cement plants still does not get enough attention. Mercury in the environment can cause serious harm to people and ecosystems located near to pollution sources. People can be exposed through respiration, drinking water and food sources.

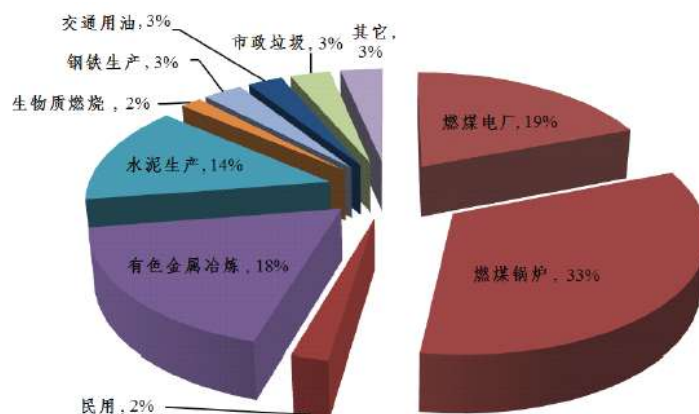


图 2 2007 年中国主要行业大气汞排放量

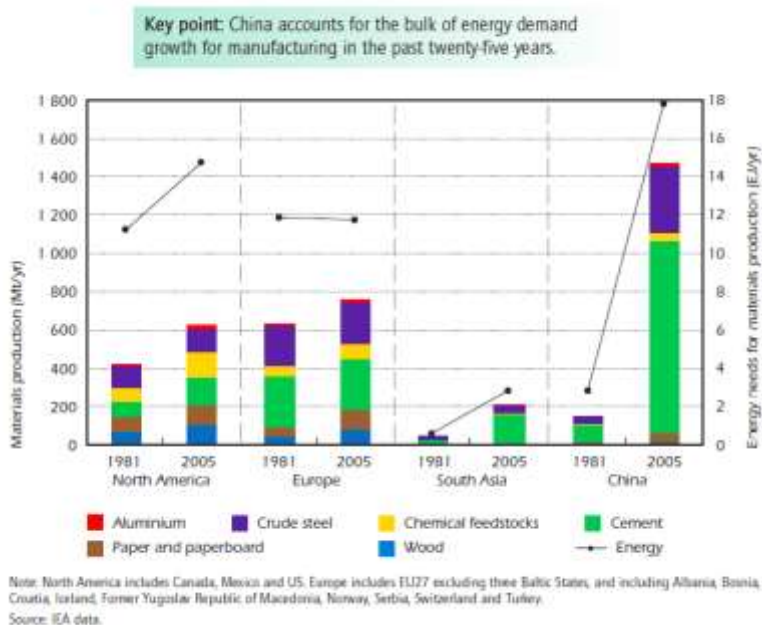
2.2.3.5 Energy Intensive and a Big Consumer of Coal

The significant emissions of various pollutants such as NO_x, SO_x, CO₂ and mercury in the cement industry are mainly due to the industry’s huge consumption of coal. In 2009, the cement industry contributed 1.9% to China’s national GDP while consuming about 5% of national energy resources.¹⁶ Processes such as grinding and calcination require a large amount of fuel and electricity, making cement the 3rd biggest coal burner after the power generation and steel industries.

The International energy Agency’s (IEA) report titled “Tracking Industrial Energy Efficiency and CO₂ Emissions,”¹⁷ shows energy needs for materials production by various countries for the period 1981-2005 (see graph below). Compared to North America, Europe and South Asia, China has shown a rapid increase in energy needs over the past 25 years, largely driven by the production of energy-intensive commodity materials such as cement (green column) and steel

(purple column).

Figure 2.2 ▶ Materials Production Energy Needs, 1981 - 2005



Fast growing heavy industries such as cement, power generation and steel have led to an explosive increase in China's coal consumption over the past 10 years, meaning that 70% of China's energy is now produced by coal. To put this in perspective, China's coal consumption accounts for almost 50% of total global consumption.

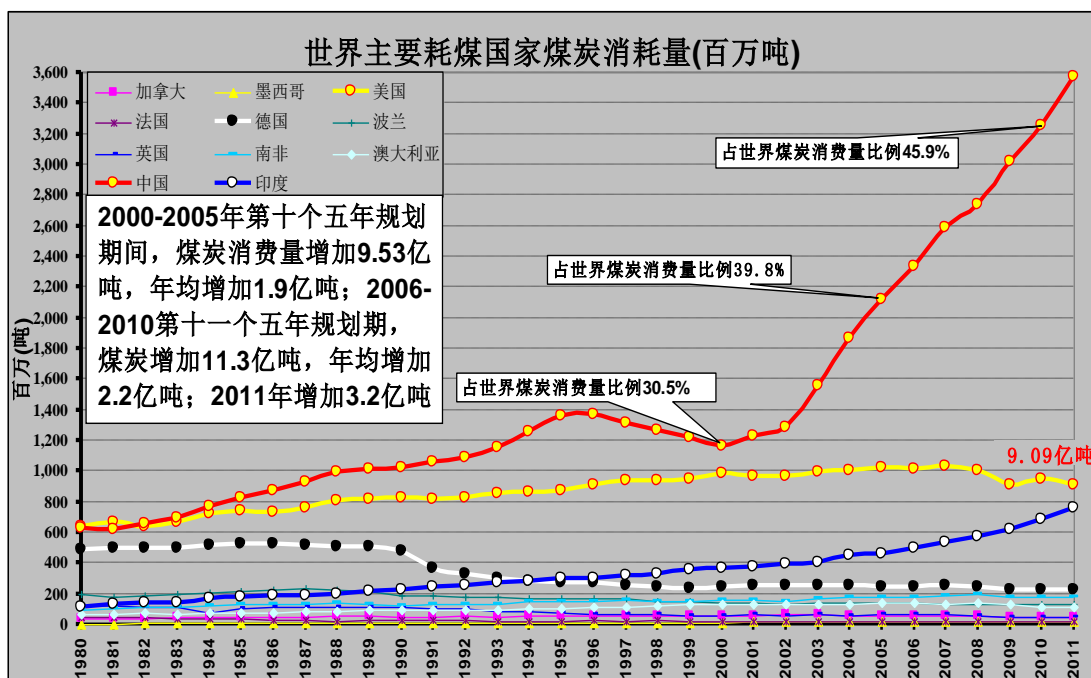


Figure 7. Coal consumption of major coal consuming countries¹⁰

¹⁰ Graph from Hao Jiming's "Air Quality" Report, January 16th, 2013.

2.2.3.6 Quarry Exploitation and Damage to Ecosystems

The first step of cement production is to quarry out limestone as the main raw material. The quarrying process will inevitably impact society and the natural environment, in particular the soil is always removed, and the topography altered, which can impact local ecosystems and watersheds.

3. Target and Methodology

While fundamental pollution control technologies have been available for a long time, there still exists prevalent pollution in some industrial production processes in China. Over the past 10 years, the government has injected around 4 trillion RMB¹ into pollution control. The overall pollution situation, however, is still alarmingly severe, and the turning point has not yet been reached. We hereby believe that the biggest obstacle in solving China's environmental pollution problems is not a lack of technology or capital, but a lack of an effective driving mechanism, or motivation.

This lack of motivation originates from loose enforcement of environmental law and the difficulty of pursuing legal proceedings in the environmental field. Due to a weak environmental supervision system and low penalties for violations, polluting companies have transferred their own production costs over to the social environmental. Some companies even consider paying fines as a kind of approval for their illegal pollutant discharges. An underdeveloped environmental legal system, which causes difficulties in registering and filing environmental lawsuits against violators, as well as the judicial and execution processes, all lead to failure in protecting the general public's environmental rights. Difficulties in upholding environmental law and filing charges reflect local government's misplacement of economic development over environmental protection, obstructing environmental law enforcement and judicial procedures.

3.1 Using Green Investment to Drive Green Production

In order to tackle such a deeply rooted conflict, it's necessary to introduce new driving forces. In the past the GCA (Green Choice Alliance) NGO partners have used "Green Supply Chains" as leverage to work with various domestic and international brands and stakeholders. To date, nearly 1000 companies have been successfully pushed to provide explanations for their environmental violation records and the rectification measures they have implemented.² So far, the Green Supply Chain program has reached out to a number of FMCG manufacturing companies and pushed them to reduce their pollution. It has not, however, effectively reached out to companies sitting upstream in the supply chain, such as energy intensive companies in the energy and commodity/raw material industries.

We think energy intensive companies are not currently sensitive to consumer pressure. Nevertheless, they are capital-oriented and sensitive to pressure from their investors. The "Green Stocks" project focuses on listed companies with high-energy consumption and heavy-pollution profiles, and their investors in the financial capital market. By focusing attention and pushing for actions from various stakeholders, "Green Stocks" aims to push investors to make green investment commitments and drive green production, thus pushing manufacturers to reduce their pollution.

3.1.1 International Experiences

Socially Responsible Investing, abbreviated as SRI, refers to investment decisions that have been made in consideration of environmental and social factors. Socially responsible investors should advocate “making money and a difference,” and believe that good companies should be responsible for society and the environment. As a result, they will create steady and continuous value for shareholders. Further to this, companies that pollute the environment and harm society are unsustainable.

In the western world, contemporary socially responsible investing started in the 1960s and 70s. Since then, industrial disasters, leakage from nuclear plants, and tanker spills have continued to occur. Furthermore, worsening environmental pollution and global warming now pose a risk to the sustainability of the global economy.

In the United Nations Environment Program Financial Initiative (UNEPFI)’s 2010 report "Why Investors Need to Consider Environmental Risk", they estimated that in 2008, environmental damage caused by human activity totaled 6.6 trillion USD, equivalent to 11% of the world's GDP. Out of the 6.6 trillion USD, three thousand publically traded companies were responsible for 2.15 trillion USD in environmental damages.

On the one hand, publically traded companies damage the environment; conversely, the environment negatively affects the companies’ business. According to the MSCI All Country World Index, environmental costs have negatively influenced over half of companies’ profits.

Environmental damage raises the operating risks of publically traded companies, and so is scrutinized by large scale investor organizations. Investors have gradually realized that more control and suppression of environmental risks is needed during the investment process, creating socially responsible investing.

In the 1990s, pension funds and the sovereign wealth funds began to accept the concept of socially responsible investing. For example, the California Public Employees’ Retirement System, CalPERS, and the Norwegian Oil Fund established rules restricting investors from investing in companies that damage the environment. Their reasoning is simple: the retirement fund represents employees’ assets, thus it naturally wants to invest in companies with better employee welfare. Developed countries, especially European nations, emphasize environmental protection, thus they naturally do not want to fund companies with a bad environmental record. Pension funds and sovereign wealth funds adopting socially responsible investing is reasonable because such funds are often very large, controlling up to hundreds of billions of US dollars, objectively expanding the market for socially responsible investing and increasing its influence.

Since the beginning of this century, the concept of socially responsible investing has become increasingly well known and has attracted the attention of more investors. In 2006 the United Nations Principles for Responsible Investment (UNPRI) were established. The PRI is a system that

has asset management organizations as its core. It encourages its members to follow the principles of socially responsible investing. Today, the PRI has over 1200 investment members, including Morgan Stanley, Merrill Lynch, and Citibank. The program also includes huge pension funds, insurance companies, and venture capitalists. This organization manages assets over 32 trillion dollars, which is more than 15% of the world's total investment funds, making it the core force in the expansion of socially responsible investing.

3.1.1.2 International Case Studies

California Public Employees Retirement System

CalPERS was signed into California law in 1932. Data shows that CalPERS managed 230 billion USD and had 1.5 million members in 2007. In terms of assets, CalPERS is the biggest public pension plan in the US, and third largest in the world.

CalPERS actively pushes for transparency of invested companies' data and the prompt release of major environmental impact data, such as that on climate change. CalPERS activities in socially responsible investing include: participating in the Carbon Disclosure Project (CDP); communicating with and requiring large carbon discharge corporations, such as companies in the electric power and public service industries, to publish plans to reduce greenhouse gas discharge; supporting the Investor Network on Climate Risk (INCR) and calling for large American corporations, Wall Street, and the Securities and Exchange Commission (SEC) to strengthen the release and analysis of financial risks caused by climate change in order to provide investors with specific data; requiring invested companies to abide by regulations regarding the release of environmental data by proposing board resolutions, voting, etc.; along with 19 other members of INCR, communicating with the insurance industry by requiring the 30 biggest American insurance companies to analyze effects of climate change on their services and reporting their findings to shareholders.

CalPERS's investing team has identified companies in the transportation, public service, and petrochemical industries that have yet to release their environmental data, and is preparing to require them to release this data to the public.

In addition to communicating with various companies and industries, CalPERS has also chosen suitable circumstances to lobby legislators to empower investors. CalPERS has advertised positive experiences in corporate management to the SEC, other major stock exchanges, and California Legislative Council. CalPERS has jointly signed the following initiatives and proposals: UNPRI, CDP, INCR, Extractive Industries Transparency Initiative (EITI), International Corporate Governance Network (ICGN), Global Investors Governance Network (GIGN), and the Council of Institutional Investors.

Best Practice Case Study: NGO influencing corporations to share environmental responsibility by pushing financial institutions

In the 1990s, environmental organizations started protesting against large corporations' pollutant discharge in the crude oil, chemical engineering, timber, and steel industries. At the same time, environmental organizations realized that financial institutions providing funding for polluting corporations should be held responsible, and that persuading them to stop funding is an effective way to stop pollution.

A good example is TXU Energy. TXU Energy is headquartered in Texas, and has an annual profit of over 10 billion USD. In spring of 2006, it announced plans for 11 thermal power plants in Texas, totaling 11 billion USD at 1 billion USD each. Each power plant will discharge 78 million tons of carbon dioxide per year, which is greater than the CO₂ discharge from Sweden, Denmark, and Portugal. Environmental organizations took a series of actions to stop this project through influencing investors. After the Environmental Defense Fund (EDF) failed to dissuade TXU through direct communication, the EDF lobbied Wall Street investors to sell TXU shares, suppressing TXU's market performance and hurting its shareholders. As a result, TXU share prices dropped 20% in a few months. These stock price drops impelled famous private equity firm Kohlberg Kravis Roberts (KKR) and others to buy TXU.

In this incident, the Rainforest Action Network (RAN) also took action on the capital market, sending letters to a total of 56 globalized banks in the US, Europe, and Japan, requiring them to refuse loans to TXU.

In reality, RAN began tracing the movement of funds many years ago. They carry out market activities, targeting influential investing organizations and attempting to dissuade them from funding polluting companies, thereby influencing companies to correct destructive environmental behavior. In 2002, a number of NGOs around the globe, including RAN, Friends of the Earth, the World Wide Fund for Nature UK, and the Berne Declaration, allied to promote sustainable finance in commercial industries. This unofficial network soon became BankTrack. More than 200 organizations have signed BankTrack's 2003 "Collevocchio Declaration: The role and responsibility of financial institutions".

3.1.2 Conditions in China

The public as "Mutual Fund Investors" can form a driving force

Environmental awareness among the general public has significantly increased in recent years, but the ability to influence big emitting companies is still lacking. With the advent of savings and investments, the public as depositors now have a chance to influence those big emitters.

The balance of savings deposit of Chinese urban and rural residents had reached 40 trillion RMB by the end of 2012. Because of low interests rates, and increased knowledge of financial investment opportunities, many public investors have chosen to invest in equity funds of mutual funds. According to statistics from Tonghuashun iFinD, by mid 2012 there were 74 fund management companies in China and mutual funds had AUM (Assets Under Management) of approximately 2.5 trillion RMB. Statistics show that from 2006-2010, investments made by public offering funds in China's equity market account for 18-31%⁷ of the total Free Float Market (A share) Capitalization. The public offering funds have a clear capital edge among institutional investors, and because of this, their investment strategy and decisions have an influencing impact on the equity market.

Our investigation revealed that a number of public offering funds have invested in energy-intensive industries such as the cement industry. This means that the public, as investors, are also investing in these industries indirectly. At the same time, the general public are victims of haze and pollution caused by these big emitters. For these reasons, public investors in public offering funds could rightfully request the funds to make green investments, or otherwise "vote by walking-away" to look for greener and more responsible funds.

3.1.2.2 Leading Investors have begun to pay attention to the Environmental Performance of Listed Companies

Since 1990, the equity market in China has developed into the world's third biggest capital market by market value. By the end of 2012, there were 2026 listed companies in the mainland China markets had a market value of 20 trillion RMB, making up more than 50% of national GDP and listed companies are playing an increasingly important and leading role in the national economy.

At the same time, many listed companies have demonstrated a rather disappointing environmental record. Using the Pollution Map Database to conduct a search, the results showed that over 700 listed companies or their affiliates had environmental violation records. This accounts for nearly one third of the total listed companies listed in the Shanghai and Shenzhen stock markets. The ratio is even higher, between 40-60%, in traditional heavy industries (such as power & gas supply, mining, metal, non-metal/construction materials, and chemical industries).

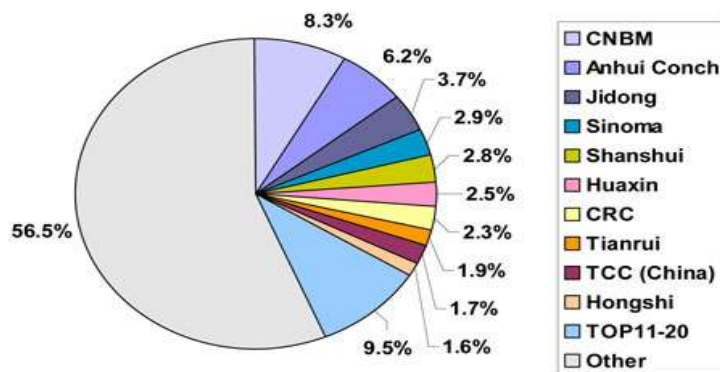
In recent years there have been frequent pollution accidents and violations by listed companies. This has not only caused huge damage to the environment and society, but has also raised concerns among institutional investors. A number of leading investors have started to think how to control investment risks associated with environmental issues in a more proactive and effective manner. For instance, AEGON-INDUSTRIAL Fund Management Company established the "Social responsible fund" – the first of its kind in China - in April 2008, and made a clear claim

that the fund aims to pursue excellent investment performance and long term asset appreciation while stressing listed companies' sustainable development goals, and legal and ethical responsibilities.

A diversified base of investors in the cement industry provide a good base for NGOs to influence

The continued expansion of the cement market in China has attracted many investors in recent years. At present the total market value of listed cement companies on the Shanghai and Shenzhen stock markets has exceeded 220 billion RMB. Market leaders in the cement industry have accelerated the process of mergers and acquisitions of smaller companies. By the end of 2010, the output of cement from the top 10 cement companies (groups) accounted for more than 40% of national output.

Capacity Market Share of TOP 20 Cement Producers in China 2010



Source: OneStone Research

2011-1053 CEMfocus.com

Some world leading cement producers, and a number of both domestic and international institutional investors, have entered the Chinese capital market through buying in, holding a dominate share of, and strategic acquisition of domestically listed cement companies. These investments have helped fuel the rapid development of China's infrastructure projects, and have also benefitted from a growing national economy.

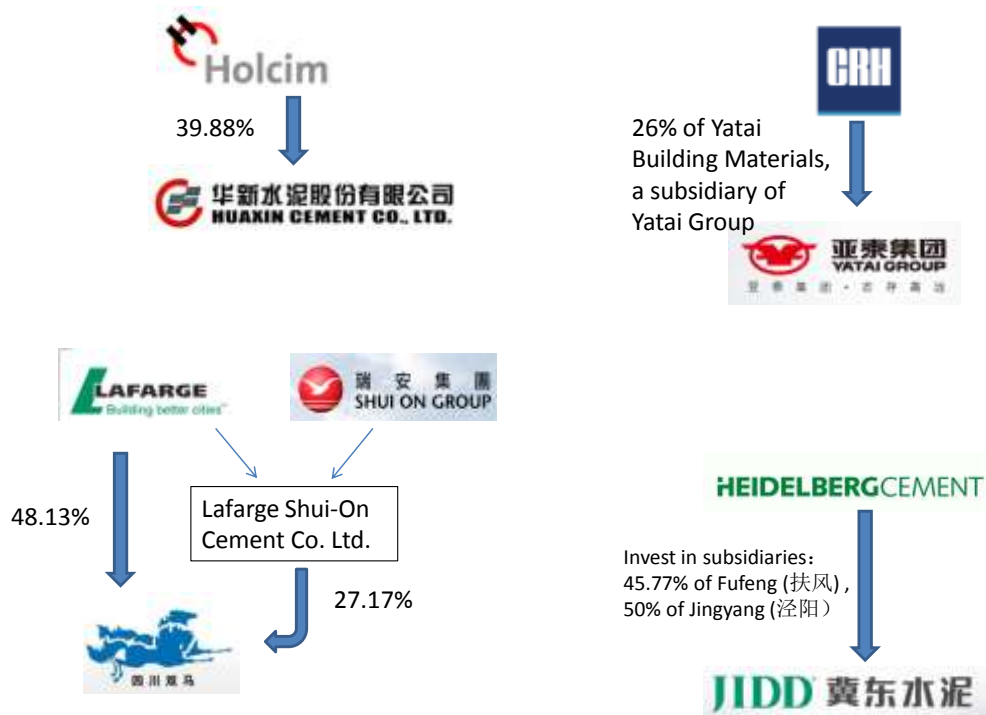


Figure 8. Shareholding structure of some international cement producers

Table 1 below lists major institutional investors in the cement industry and their shareholding percentage, which include large-scale public offering funds, pension funds and renowned overseas financial institutes.

Table 1: Major institutional investors in the cement industry

Major institutional investors in the cement industry	Invested listed cement companies and their shareholding percentage ⁸
JP Morgan Chase & Co.	China Shanshui Cement Group Co. Ltd—7% China Tianrui Group Cement Co Ltd—8.36% China National Building Material Co. Ltd (CNBM)—13.48%
T. Rowe Price Group	China Shanshui Cement Group Co. Ltd—5.99%
KKR& Co. LP (shareholding through Titan Investment Ltd)	China Tianrui Group Cement Co Ltd— 6.66%
UBS AG	Anhui Conch Cement Co. Ltd— 0.72%
MERRILL LYNCH INTERNATIONAL	Anhui Conch Cement Co. Ltd—0.71%
Aberdeen Asset Management PLC	Huaxin Cement Co. Ltd— 1.4%
Harvest Fund Management Co.	Jilin Yatai Group Co. Ltd— 1.06%
Bosera Funds Management Co.	Huaxin Cement Co. Ltd— 2.96%
Franklin Templeton Sealand Fund	Tangshan Jidong Cement Co. Ltd—1.14%

Management Co.	
E FUND Management Co	Xinjiang Tianshan Cement Co. Ltd— 0.91%
National Social Security Fund (the 110 combination)	Tangshan Jidong Cement Co. Ltd—0.64%
Labor Insurance Fund (Taiwan)	Asia Cement (China) Holdings Corporation— 1.67%
Fubon Financial	Asia Cement (China) Holdings Corporation—2.02%
Nanshan Life Insurance	Asia Cement (China) Holdings Corporation— 1.54%
Shin Kong Life insurance	Asia Cement (China) Holdings Corporation—1.44%
New China Insurance (NCI)	Tangshan Jidong Cement Co. Ltd—1.04%
Ping An Insurance (Group) (the Ping An Trust branch)	Anhui Conch Cement Co. Ltd— 0.99%
New Horizon Capital (the subsidiary Diamondrock Investment Limited)	Tangshan Jidong Cement Co. Ltd—10%

Legislative progress made by the Government

- ◆ A summary of laws and regulations to improve information transparency in China

“Law of the People's Republic of China on Promoting Clean Production” issued in 2003: Those companies who have been asked to carry out enforced clean production practice need to disclose their pollutant emissions. Follow-up documents and notices issued by the MEP have laid down specific requirements for heavy polluters such as cement producers to disclose information related to clean production practices.

“Regulation of the People's Republic of China on the Disclosure of Government Information,” issued by the State Council and the “Measures for Open Environmental Information (for Trial implementation)” issued by the MEP on May 2008 clearly specify the obligations of government and corporations to disclose relevant environmental information to the public.

The “Measures on Emissions Reduction monitoring of Major Pollutants during the “Twelfth Five-year Plan” Period,” issued on January 24th, 2013. Article 14 specifically requires the disclosure of pollution sources, particularly the timely disclosure of online real-time monitoring data.

- ◆ Strengthening government supervision

Early in 2007, the former State Environmental Protection Administration (now Ministry of Environmental Protection or MEP) and China Securities Regulatory Commission (CSRC) launched a “Green Securities” policy, which included three main policies. These were environmental checks prior to the corporate IPO process, environmental information disclosure from listed companies, and environmental performance evaluation of listed companies. These three policies are called the “troika” for China’s green security development. So far the only effective policy has been the

environmental check prior to the corporate IPO process, which serves as an admission ticket for corporations to enter the capital market, and hence has a direct impact on corporations and pushes them to rectify their environmental wrong-doings. However, for those heavy polluters who are already listed on the stock market, the existing policies that supervise and urge rectification are soft forms of enforcements and so have limited effects.

In terms of the obligation that listed companies have to disclose environmental information, in 2010, the MEP published “Guidelines on the Environmental Information Disclosure of Listed Companies” (Draft for Comments). The regulation requires listed companies to publish annual environmental reports and temporary environmental notices with clear guidelines on when, how and what to publish. Regrettably, the guideline is still an instructive document without legally binding enforcement. It is clear that for China there is still a long way to go to establish a comprehensive environmental information disclosure system.

The stock exchanges in China have played an important role in promoting environmental information disclosure by listed companies. In 2008, the Shanghai Stock Exchange published the “Guidelines on the Environmental Information Disclosure of Listed Companies,” and in 2006, the Shenzhen Stock Exchange published the “Guidelines on the Social Responsibility of Listed Companies”. Both documents encourage listed companies to establish social responsible policies and release corporate social responsibility (CSR) reports at the same time as publishing their financial reports. The good news is that the two stock exchanges have both issued compulsory disclosure requirements to listed companies on CSR reporting. The Shanghai Stock Exchange has requested listed companies from the following three categories to publish CSR reports: (1) “SSE Corporate Governance Sector” Sample Company; (2) companies with overseas listed foreign shares; (3) Financial companies. In 2010, the Shenzhen Stock Exchange also released a compulsory requirement for companies in the “Shenzhen 100 Index” to disclose social responsibly related information in a separate reporting format.

By 2012, over 640 listed companies on the Shanghai and Shenzhen stock exchanges had published their CSR reports.⁹

- ♦ A summary of cement industry policies: a tightening of industrial and environmental regulations

2008.9	"Dust collection project technical specification of the cement industry" issued by the MEP: to specify the construction of dust collection projects in the cement industry to control dust released during cement production.
2009.7	"Cleaner production standard - Cement industry" issued by the MEP: To set a three-level standard for the cement industry using factors such as energy and resource utilization, pollutants generation, waste recycling and reuse etc. Based on relevant notices and documents, key industries (such as cement) shall complete one round of clean production audits every three years. By the end of 2012 they should complete the first round of clean production audits and evaluations /assessment work. The companies required to carry out clean production need to disclose their environmental information to the public.
2010.11	"Cement Industry Access Requirement" issued by the Ministry of Industry and Information Technology (MIIT): newly built cement (clinker) production installations must install NOx-removal equipment to treat gas emissions with no less than 60% removal rate, to install online real-time monitoring system and other highly effective pollution treatment equipment. "Guidance on 'Energy-saving and Emission reduction' Practices in the Cement Industry" issued by MIIT: set main targets for the cement industry during the 12th "Five Year Plan" period - the overall energy consumption < 93kg standard coal/ton cement, PM and NOx emission reduced by 50% and 25% respectively on 2009 base, CO2 emission intensity to further decrease.
2011.2	The MIIT and other ministries issued a notice to carry out inspection of "phasing out of over capacity" among steel, cement and glass-making industries in 2010. For companies not meeting the requirements, banks and finance institutes will stop issuing new credits to them and the national land and resource bureau will stop approving new land permit, and if necessary stop their electricity supply.
2011.8	The State Council issued a "Comprehensive Scheme on Energy Saving and Emissions Reduction during the 12th Five-Year-Plan": one of the main targets is to reduce NOx emission by 10% and force the cement industry to install NOx-removal treatments. To strengthen financial support and guide investment towards "energy saving and emissions reduction" sectors. To increase the loan threshold for high energy consumption and high emission industries. To add corporate environmental violation data into the corporate ranking system of the People's Bank and the information disclosure system of the bank regulatory commission, and to link the data with corporate credit ranking, loan issuance and security financing.
2012.8	"Planning on "Energy Saving and Emissions Reduction" during the 12th Five-year-Plan" issued by the State Council: total NOx emissions for the cement industry to be controlled to 1.5 million tons by 2015, and emission reduction rate of 12%, to phase out "backward cement capacity" of 370million tons.
2012.11	"Emission Standard of Air Pollutants for the Cement Industry" issued by the MEP: to be implemented in July 2013 with a significantly reduced NOx emission limit. "Pollution Control Standard of Cement kiln co-processing of Hazardous Waste" issued by the MEP: technical requirement for kiln co-processing of hazardous waste, the property of rawmill waste, operational requirement, discharge emission of pollutants and monitoring requirement. "The norm of energy consumption per unit product of cement" issued by National Standards Committee: new national standard replacing 2007 standards to be implemented on Oct. 2013.

When pressured, listed companies are likely to create internal motivation

The rise of China's economy has created increasing demand for energy and resources. In the future, prices of scarce resources and primary energy will go up. To achieve sustainable development for energy-intensive industries, it is critical to act proactively to improve energy efficiency and reduce emissions, and in doing so mitigate the cost increases.

Among the total profit of over 40 billion RMB made by China's cement industry in 2009, more

than 10 billion RMB profit was achieved by projects such as “generating electricity using waste heat” and “energy conservation and emission reduction”. It indicates therefore that the practice of “energy conservation and emissions reduction” helps to improve the overall profitability of the cement industry. The “co-processing of waste using cement kilns” is also a promising project for future developments.

3.2 Methodology

As mentioned above, the biggest obstacle to solving China’s environmental pollution is not a lack of technology or capital, but a lack of an effective driving mechanism or motivation. The key to an effective driving mechanism is the participation of affected and concerned communities, and the public, under the premise of transparency in environmental information.

Information itself can not eliminate pollution, this can only happen through people’s actions. The traditional way for the public to participate in this process is to pressure polluters or underachieving governmental bodies to push the companies to reduce pollution. However, in China, these practices are often ineffective due to the restrictions on social governance and the power that the public have. Therefore, under these conditions, alternative methods of pushing companies to reduce pollution are necessary.

The leveraging process requires three key elements: a lever, a fulcrum and a driving force. In line with this concept, a green stocks leveraging system has been designed. Green investment is the lever itself, listed companies and their major investors act as fulcrums and the driving force comes from the general public, media and other stakeholders.

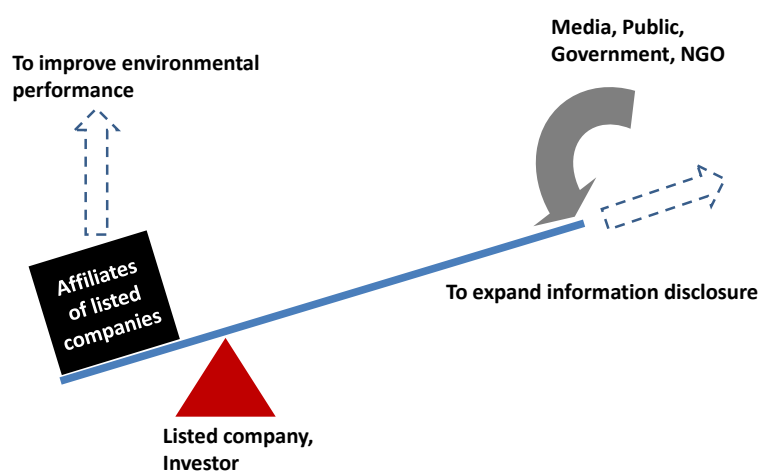


Figure 9. Diagram of Green Stocks leveraging process

It is obvious that there are an enormous number of big emitters that need to be pushed to reduce their emissions. When the load exceeds the driving force then the force being applied can be increased, or the length of the lever can be extended.

The fulcrum needs to be strong enough not to slip or collapse.

Through location and keyword matching of listed companies' affiliates, we identified many polluters that are subsidiaries or affiliates of listed companies. These listed companies and their major investors can act as a fulcrum.

Listed companies are large-scale enterprises who operate using publicly funded money in the capital market. They are usually influential and do not easily collapse under pressure. Listed companies have an inescapable responsibility to manage and oversee the environmental compliance of their affiliates, as well as an obligation to disclose critical information to investors.

Based on requirements made by their clients (public investors) to reduce environmental harm and reduce their investment risk, investment institutions, especially large-scale pension funds and well known public offering funds from China and abroad, have sufficient power to carry out responsible investing. Public offering funds are in charge of significant investment assets and hence can directly pressure listed companies and polluters. We aim to push institutional investors in multiple energy-intensive industries with the aim that they (1) stop financing the companies with repeated violation records that have provided no response to public inquiries; (2) invest in businesses to promote energy conservation, pollution reduction and sustainable operations.

Driving forces need to be found and strengthened. As environmental awareness among the general public has increased, various different media (in particular social media) has consistently focused on environmental issues. The media, the public, and NGOs, can all put pressure on listed companies and investment institutions. At the moment, there is only limited motivation, which is not enough to directly push polluters to correct their problems and reduce emissions. This requires that NGOs carry out campaigns to increase public awareness, increase motivational forces, and at the same time, provide necessary channels and tools to bring together pressures from various sources to push green stocks and responsible investing.

Identifying something that can act as a fulcrum as well as a source of motivation is very important, but it is also essential to utilize established information tools and management systems to extend the lever and accelerate the leveraging process.

4. Green Invest Tools have been developed

4.1 Green Stocks Website

In July 2011 the IPE, in conjunction with other specialist organizations, started research and development of the Green Stocks tool. On June 18th, 2013, the IPE officially launched the Green Stocks database and website: <http://www.ipe.org.cn/gca/greeninvest.aspx>. The website includes over 850 environmental supervision records for listed companies.

Investors just have to go onto the Green Stocks website and then enter the name or ticker symbol for a listed company. The environmental supervision records for the company's subsidiaries and affiliates will then be shown.

The following shows how to enter a search on the website:



4.2 Green Stocks Evaluation Tool

4.2.1 Listed Companies Evaluation Chart: Evaluation Criteria Explained

上市公司表现

序号	上市公司	违规并同 通行业 治理情况	合规性与整改行动			持续改进		绩效及转移数据披露			环评信息		建立绿色供应链	
			违法违规 记录	建立检索 机制	推动整改 并说明	内部减排 完成情况	在线监测 实时发布	第三方数 据	工厂常规 污染物	工厂特征 污染物	环评报告 全本	与社区沟 通	建立检索 机制	推动整改 情况
1	投建集团 FR0000120537.PAR	√	×	×	×	×	×	×	×	×	×	×	×	×
2	四川双马水泥股份有限公司 000935.SZ	×	×	×	×	×	×	×	×	×	×	×	×	×
3	新疆天山水泥股份有限公司 000877.SZ	×	×	×	×	×	×	×	×	×	×	×	×	×
4	中深建材股份有限公司 3333.HK	×	×	×	×	×	×	×	×	×	×	×	×	×
5	吉林亚泰(集团)股份有限公司 600883.SH	×	×	×	×	×	×	×	×	×	×	×	×	×
6	冀东水泥股份有限公司 000401.SZ	×	×	×	×	×	×	×	×	×	×	×	×	×

Evaluation Criterion 1

Have pushed listed cement companies to provide explanations on the environmental performance of their related companies to make them understand that production in the cement industry creates a serious amount of pollution discharge. However, “Replying to the NGO Letter” is only the first stage in pushing the cement industry to control pollution and reduce discharge and is not the final goal.

Evaluation Criterion 2: Compliance and corrective Action

Compliance and corrective Action		
Checks on Affiliates’ Violation Records	Use of Public Information to Establish Search Mechanism	Push for Affiliates to take Corrective Actions & Disclose Information

For this criterion there are three sub categories: “Checks on Affiliates’ Violation Records,” “Use of Public Information to Establish Search Mechanism,” “Push for Affiliates to take corrective Actions & Disclose Information.” The purpose of sending a list of affiliates with environmental violation problems to the parent listed company was to push them to actively follow up on the violation records, and understand the environmental performance and existing issues at their affiliate companies. Furthermore, we hope that listed companies will treat this as an opportunity to use public information disclosure tools to establish or improve their internal search mechanisms. This

way they can very quickly and effectively understand the environmental problems and environmental risks associated with their affiliated companies. After a listed company has used the search tools to obtain the relevant information we naturally need to evaluate whether the listed company has pushed the problem affiliate company to take corrective actions.

Evaluation Criterion 3: Continuous Improvement

Continuous Improvement	
Energy and Emissions reduction Results	Real time disclosure of Monitoring Data

For this criterion there are two sub categories: “Energy and Emissions reduction Results” and “Real time disclosure of Monitoring data”. The cement industry consumes large amounts of energy and resources and also discharges a significant amount of atmospheric pollutants. For this reason government departments have clearly demanded that the cement industry actively implement measures to save energy and reduce emissions. Online monitoring data is an important source of data for the public to be able to evaluate results from the cement industries efforts to control and reduce pollutant emissions.

Using this as a basis we hope to push listed companies to actively disclose their energy saving and emissions reduction targets and information on what they have done to achieve those targets. They should also release real time online monitoring data. One aspect of this is that it allows the general public to supervise the results of a company’s emissions reductions and also allows NGOs to benchmark the results. The other aspect is to encourage positive competition within the industry to push for an increase in environmental management levels.

Criterion 4: Disclosure of Pollutant Release and Transfer Data

Disclosure of Pollutant Release and Transfer Data		
Group Discharge Data	Factory Basic Pollutant Data	Factory Special Pollutant Data

For this criterion there are three sub categories: “Group Discharge Data,” “Factory Basic Pollutant Data,” “Factory Special Pollutant Data”. We hope that listed companies will actively and continuously improve their environmental management practices and not just give passive responses to issues related to basic environmental compliance that they are required to correct. Listed companies have a duty to release financial information. We feel that a listed company’s environmental emissions information should also be an important indicator that investors and the general public can use to evaluate the value of a company. Of course, we understand that to establish this kind of pollutant release and transfer data disclosure system requires a certain level of technological expertise and a period of preparation. For these reasons, the evaluation criteria have been set up to show incremental progress. A parent group company can push its subsidiary manufacturing company to first release basic pollutant data and then work towards releasing

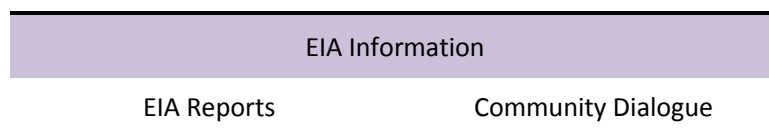
more specialized data (such as that identified in the company’s EIA report).

Why push subsidiary companies to publish their pollutant discharge data?

The main reasons are as follows:

1. From an environmental management perspective the disclosure of discharge data means that a company must collect, arrange and file away the results of outside testing or self testing of discharge volumes. Each subsidiary company can then understand the state of pollutant control in their company. Cement companies can also more clearly understand the environmental footprint of the products they manufacture.
2. This is a key step in getting companies to go beyond compliance. The evaluation criteria before this one all had the aim of pushing companies to be environmentally compliant. Environmental compliance is of course important, but legal requirements are merely the most basic requirements. After a company reaches a level of basic compliance they must use this as a base to make further and continuous progress. Whether or not a company really is continuously improving is not something that can be asserted without foundation. It must be based on solid and reliable data so that it can be confirmed to the general public whether or not their environmental performance has improved and whether or not their environmental footprint had increased or decreased.

Criterion 5: EIA Information



There are two sub categories in this criterion. They are “EIA Reports” and “Community Dialogue”. Environmental Impact Assessments analyze the impact on the environment of a facility after it has been built and gone into production. They also propose pollution prevention measures and scientific evaluation of the measures, as well as give the general public an important means of being involved in the supervision of the projects from the launch of the project. Because their EIA procedures and conclusions are concerned with significant interests such as the ecological environment and public health and safety, EIAs for energy intensive and heavily polluting projects should not be categorized as commercial secrets. We hope that listed companies will publish their subsidiaries’ EIA reports in full and maintain good and active communications with the local community during the EIA process.

Evaluation Criterion 6: Establish a Green Supply Chain

Establish a Green Supply Chain	
Establish Search Mechanism	Push for Explanations of corrective Actions

There are two sub categories for this criterion: “Establish Search Mechanism” and “Push for Explanations of corrective Actions”. The previous criteria all dealt with the environmental management capabilities of listed companies’ own affiliates and subsidiaries. Using this as a base we want to take it a step further and see whether or not listed companies can establish a “Green Supply Chain” system and extend environmental management to their enormous network of suppliers. Whether or not this is upstream raw material suppliers or downstream hazardous waste treatment vendors, listed companies should pro actively search for their suppliers’ environmental performance and push them to provide explanations on any corrective measures they have taken.

4.2.2 Investor Evaluation Chart: Evaluation Criteria Explained

As the evaluation criteria for investors are similar to that of listed companies, we will not repeat the explanations here.

It is worth mentioning however, that the concept of our evaluation criteria system shares similar characteristics with the Six Principles for Responsible Investment proposed by UNPRI. The following paragraphs will summarize the criteria and also compare our criteria with the Six Principles of the UNPRI.¹

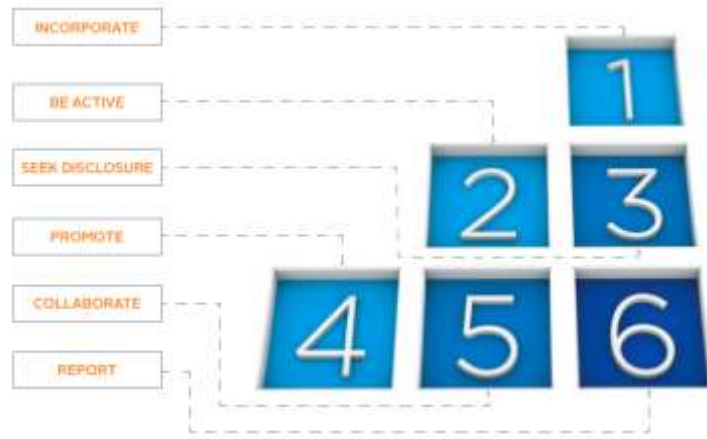
- (1) **INCORPORATE:** To incorporate ESG issues into investment analysis and decision-making processes; i.e. support development of ESG-related tools. Similarly, we will evaluate investor’s actions in utilizing public tools to establish a screening mechanism.
- (2) **BE ACTIVE:** Active users should incorporate ESG issues into their ownership policies and practices; i.e. engage companies with ESG issues. Similarly, we will evaluate how investors have followed up with portfolio companies on their violation records and if they have pushed them for responses and explanations.
- (3) **SEEK DISCLOSURE:** To seek appropriate disclosure on ESG issues by the entities in which we invest; i.e. ask for ESG issues to be integrated within annual financial reports. Similarly, we will evaluate investor’s actions on pushing portfolio companies to disclose various environmental factors (such as completion status of “energy saving and emission reduction” practice, online real-time monitoring data, discharge of regular and specific

pollutants etc.)

- (4) **PROMOTE:** To promote acceptance and implementation of the Principles within the investment industry, including supporting the development of tools for benchmarking ESG integration. Similarly, our evaluation and ranking chart for investors is designed to benchmark the communication and follow-up performance of a group of investors and to eventually involve/influence more investors to carry out responsible investment.
- (5) **COLLABORATE:** Work together to enhance our effectiveness in implementing the Principles, including supporting/participating in networks and information platforms to share tools, pool resources. Similarly, in conjunction with other professional organizations, we have developed the “Green Stocks” website consisting of environmental performance data for over 2400 listed companies and their affiliates’ listed on the Shanghai and Shenzhen stock exchanges. This provides an effective information platform for various parties to carry out green investment in China.
- (6) **REPORT:** Report on our activities and progress towards implementing the Principles. Similarly, the “Green Stocks” website and the Investor Ranking Chart provide an online platform for investors to communicate with the public and demonstrate their activities and progress.

Investor Ranking

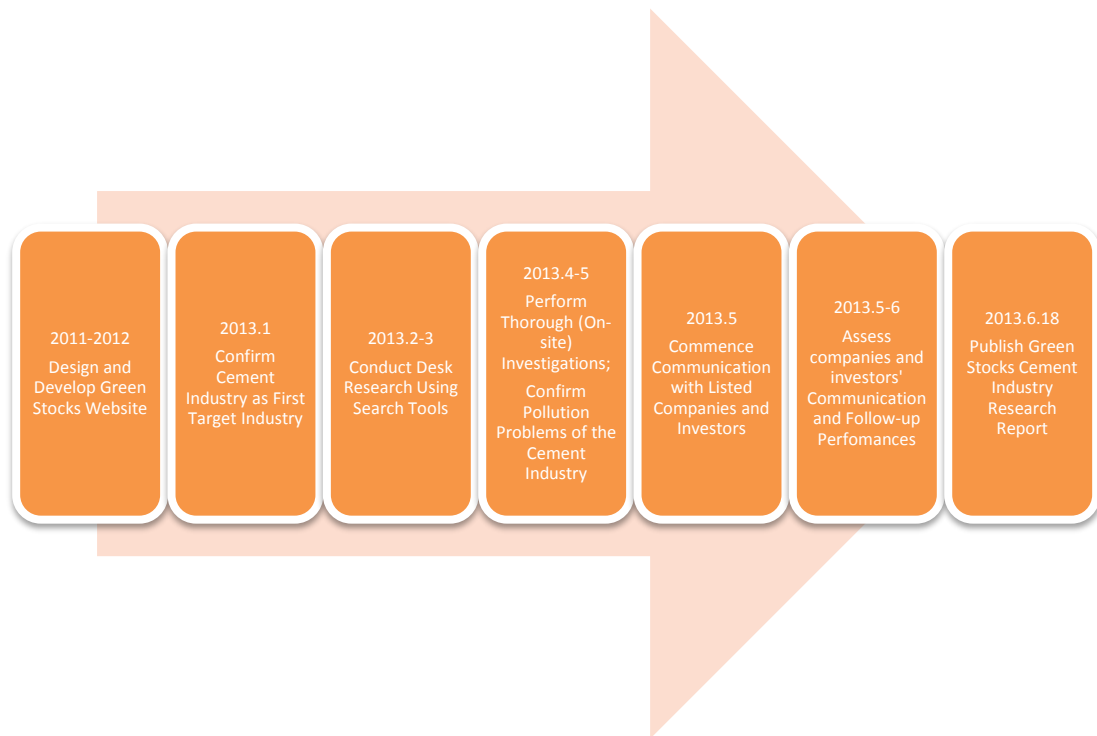
Sub-Category	No.	Investor	Records & Background Check	Push/Invited Companies to be Compliant & Take Corrective Action			Continuous Improvement		Disclosure of Pollutant Release & Transfer Data			Disclosure of Affiliates' EA Information		Establishment of Green Supply Chain	
				Check on Violation Records	Affiliate Screening process	Corrective Action & Info Disclosure	Energy & Pollutant Emission Reduction Targets	Online Monitoring Data Disclosure	Green Discharge Data	Regular Pollutants - Affiliates level	Specific pollutants - Affiliates level	Full EA Report	Comments Dialogue	Supplier Screening process	Push/ Suspect to take Corrective Action & Disclose Info.
Mutual Fund	1	DBL	✓	✓	x	x	x	x	x	x	x	x	x	x	x
PE fund	2	T-Rose Private	✓	✓	x	x	x	x	x	x	x	x	x	x	x
Pension fund	3	ICPR	✓	x	x	x	x	x	x	x	x	x	x	x	x
GPII	4	Bojiang Funds	✓	x	x	x	x	x	x	x	x	x	x	x	x
Commercial Insurance Co.	5	Uster Investor (Taiwan)	✓	x	x	x	x	x	x	x	x	x	x	x	x
Others	6	Free Channel (HAC)	✓	x	x	x	x	x	x	x	x	x	x	x	x
	7	UBS	✓	x	x	x	x	x	x	x	x	x	x	x	x
	8	Hansen Funds	x	x	x	x	x	x	x	x	x	x	x	x	x



The Six Principles for Responsible Investment by UNPRI

5. Findings

5.1 Green Stocks - Cement Industry Investigation Process



5.2 Common Environmental Violations at Listed Companies in the Cement Industry

The scale of China's cement industry is enormous, with large numbers of production facilities distributed throughout the country. Even if pollutant discharge is kept under regulatory levels, the cement industry will still put the environmental capacity of the atmosphere under pressure, and impact the livelihood of neighboring communities.



Figure 10. Result of a Baidu Maps search with “cement” as keyword

According to our research, many cement companies have environmental violation records, to the extent that many fail to consistently meet pollutant discharge standards. As of June 2013, there were 3500 environmental monitoring records in the China Pollution Map Database which appear when searching using “cement” or “concrete” as keywords.

5.2.1 Environmental Records for 17 Listed Cement Companies

Searching the Green Stocks website (<http://www.ipe.org.cn/gca/greeninvest.aspx>), we found over 170 environmental monitoring records for 17 listed cement companies.

Xinjiang Tianshan Cement Co., Ltd. (000877.SZ) Subsidiaries and Related Companies	Region	Environmental Records
Turpan Tianshan Cement Co., Ltd.	Turpan	2013
		2012
Xinjiang Hejing Tianshan Cement Co., Ltd.	Bayingolin	2013
		2011
		2010
		2009
Xinjiang Tianshan Cement Co., Ltd.	Urumqi	2012
Jinagsu Tianshan Cement Co., Ltd.	Changzhou	2012
		2011
	Wuxi	2011
		2010
Xinjiang Tunhe Tianshan Cement Co., Ltd.	Changji	2010
Aksu Tianshan Duolang Cement Co., Ltd.	Aksu	2008
China National Building Material Co., Ltd. (3323.HK) Subsidiaries and Related Companies	Region	Environmental Records
HuaiHai Zhonglian Cement Co., Ltd.	Xuzhou	2013
Changshan South Cement Co., Ltd.	Quzhou	2013
TongLu South Cement Co., Ltd.	Hangzhou	2013
Hunan Yueyang South Cement Co., Ltd.	Yueyang	2012
Hunan Liuyang South Cement Co., Ltd.	Changsha	2012
Hunan JinLei South Cement Co., Ltd.	Chenzhou	2012
Jiangsu Liyang South Cement Co., Ltd.	Changzhou	2012
		2011
		2010
Hunan Pingtang South Cement Co., Ltd.	Changsha	2012
Fuyang Shanya South Cement Co., Ltd.	Hangzhou	2012
Xingtai Zhonglian Cement Co., Ltd.	Xingtai	2011
Huzhou Meishan South Cement Co., Ltd.	Huzhou	2011
Huzhou Huaikan South Cement Co., Ltd.	Huzhou	2011
Huzhou Baijian South Cement Co., Ltd.	Huzhou	2011
Tongxiang Heshan South Cement Co., Ltd.	Jiaxing	2011
Deqing South Cement Co., Ltd.	Huzhou	2011
		2010
Anyang Zhonglian Cement Co., Ltd.	Anyang	2011
Nanyang Zhonglian Cement Co., Ltd.	Nanyang	2010
Tongxiang South Cement Co., Ltd.	Jiaxing	2010
Rizhao Zhonglian Cement Co., Ltd.	Rizhao	2010
Shandong Taihe Dongxin Holdings Co., Ltd.	Taian	2006
Jilin Yatai (Group) Co., Ltd. (600881.SH) Subsidiaries and Related Companies	Region	Environmental Records

Yatai Group Anda Cement Co., Ltd.	Suihua	2012
Yatai Group Ha'erbin Cement (Acheng) Co., Ltd.	Ha'erbin	2011
Yatai Group Ha'erbin Cement Co., Ltd.	Ha'erbin	2011
Jilin Yatai Dinglu Cement Co., Ltd.	Changchun	2010
Tieling Tiexin Cement Co., Ltd.	Tieling	2007
Tangshan Jidong Cement Co., Ltd. (000401.SZ) Subsidiaries and Related Companies	Region	Environmental Records
Datong Jidong Cement Co., Ltd.	Datong	2012
Shenyang Jidong Cement Co., Ltd.	Shenyang	2012
Jidong Heidelberg (Jingyang) Cement Co., Ltd.	Xianyang	2011
		2010
Jidong Fengxiang Cement Co., Ltd.	Baoji	2011
Shannxi Qinling Cement Co., Ltd.	Tongchuan	2011
		2010
		2008
		2005
Anshan Jidong Cement Co., Ltd.	Anshan	2010
		2007
Jidong Heidelberg (Fufeng) Cement Co., Ltd.	Baoji	2010
Tangshan Jidong Cement Co., Ltd.	Tangshan	2010
		2009
		2006
Jidong Panshi Cement Co., Ltd.	Jilin	2010
Liaoyang Jidong Cement Co., Ltd.	Liaoyang	2010
Jidong (Fuyu) Cement Co., Ltd.	Songyang	2010
Jidong (Jilin) Cement Co., Ltd.	Jilin	2010
		2007
Jidong (Luanxian) Cement Co., Ltd.	Tanshan	2009
		2006
Jidong (Inner Mogolia) Cement Co., Ltd.	Hohhot	2007
Shannxi Qinling Cement Co., Ltd. (600217.SH) Subsidiaries and Related Companies	Region	Environmental Records
Shannxi Qinling (Tongshan) Cement Co., Ltd.	Tongchuan	2011
		2010
		2008
		2005
Shannxi Qinling Cement Co., Ltd.	Tongchuan	2011
		2010
		2008
		2005
Huaxin Cement Co., Ltd. (600801.SH) Subsidiaries and Related Companies	Region	Environmental Records
Huaxin Cement Co., Ltd.	Huangshi	2013

		2012
		2010
		2006
Huaxin (Yangxin) Cement Co., Ltd.	Huangshi	2013
		2010
		2006
Huaxin Jinlong (Yun County) Cement Co., Ltd.	Shiyan	2012
Huaxin (Chibi) Cement Co., Ltd.	Xianning	2011
Huaxin (Enshi) Cement Co., Ltd.	Enshi	2011
Huaxin (Henan Xinyang) Cement Co., Ltd.	Xinyang	2011
Huaxin (Wuhan) Cement Co., Ltd.	Wuhan	2010
Huaxin (Kunming Dongchuan) Cement Co., Ltd.	Kunming	2009
Huaxin (Xiangyang) Cement Co., Ltd.	Xiangyang	2008
Huaxin (Zhaotong) Cement Co., Ltd.	Zhaotong	2009
Anhui Conch Cement Company Limited (600585.SH /914.HK) Subsidiaries and Related Companies	Region	Environmental Records
Nanjing Conch Cement Co. Ltd.	Nanjing	2013
		2006
China Cement Plant Co. Ltd.	Nanjing	2013
		2008
Liquan Conch Cement Co. Ltd.	Xianyang	2011
Xiangshan Conch Cement Co. Ltd.	Ningbo	2010
Yingde Conch Cement Co. Ltd.	Qingyuan	2010
		2007
Anhui Huaining Conch Cement Co. Ltd.	Anqing	2010
Anhui Chizhou Conch Cement Co. Ltd.	Chizhou	2010
Anhui Zongyang Conch Cement Co. Ltd.	Anqing	2010
Guizhou Liukuang Ruian Cement Co. Ltd.	Liupanshui	2009
Shuangfang Conch Cement Co. Ltd.	Loudi	2008
Hunan Conch Cement Co. Ltd.	Loudi	2008
Anhui Conch Cement Co. Ltd.	Wuhu	2007
Anhui Digang Conch Cement Co. Ltd.	Wuhu	2007
Haimen Conch Cement Co. Ltd.	Nantong	2007
Nantong Conch Cement Co. Ltd.	Nantong	2007
Wuhu Conch Cement Co. Ltd.	Wuhu	2007
Anhui Conch Cement Co. Ltd.	Wuhu	2007
Taiyuan Lionhead Cement Co. Ltd. (600539.SH) Subsidiaries and Related Companies	Region	Environmental Records
Taiyuan Lionhead Cement Co. Ltd. Qifeng Concrete Branch	Taiyuan	2013
Taiyuan Lionhead Cement Co. Ltd.	Taiyuan	2013
		2012

		2011
		2010
		2009
		2008
		2005
Taiyuan Lionhead Cement Co. Ltd. Branch Number One	Taiyuan	2011
		2010
		2009
		2008
Yangquan Lionhead Special Cement Co. Ltd.	Yangquan	2010
Taiyuan Lionhead Cement Co. Ltd. Branch Number Two	Taiyuan	2010
China Shanshui Cement Group Ltd. (691.HK) Subsidiaries and Related Companies	Region	Environmental Records
Shandong Cement Plant Co. Ltd.	Jinan	2009
Jinan Century Chuangxin Cement Co. Ltd.	Jinan	2009
		2008
Dongying Shanshui Cement Co. Ltd.	Dongying	2006
Dongying Shanshui Cement Co. Ltd.	Dongying	2006
Sichuan Shuangma Cement Co. Ltd. (000935.SZ) Subsidiaries and Related Companies	Region	Environmental Records
Sichuan Shuangma Cement Co. Ltd.	Mianyang	2012
		2010
		2008
Dujiangyan Lafarge Cement Co. Ltd.	Chengdu	2011
China Gezhouba Group Co. Ltd. (600068.SH) Subsidiaries and Related Companies	Region	Environmental Records
Gezhouba Jingmen Cement Co. Ltd.	Jingmen	2013
Gezhouba Group Machinery & Ship Co. Ltd. of China	Yichang	2012
Gezhouba Dangyang Cement Co. Ltd.	Yichang	2011
Gezhouba Group Cement Co. Ltd.	Jingmen	2008
Gezhouba Group Cement Plant Co. Ltd. of China	Jingmen	2008
Gezhouba Laohekou Cement Co. Ltd.	Xiangyang	2008
Gezhouba Qianjiang Cement Co. Ltd.	Qianjiang	2008
Gezhouba Wuhan Cement Co. Ltd.	Wuhan	2004

5.2.2 Key Cases

Case 1: Tianshan Cement (Liyang) Co. Ltd

Situated in Liyang city in Jiangsu Province, Tianshan Cement is the subsidiary company of the listed company, XinJiang Tianshan Cement (000877.SZ). Tianshan Cement Co. Ltd is officially registered in Urumqi and was listed on the Shenzhen Stock Exchange in 1999. Based on public information, Sinoma Corp (1893.HK) is the parent company of Tianshan Cement. China Yinhe Investment management Co. and E-funds security investment funds are also important investors in Tianshan Cement.

There are many reports of complaints from local residents that this cement plant discharges pollution to nearby villages. NGOs made an on-site visit to the area around the Tianshan Cement (Liyang) plant on May 3rd 2013.

From a distance as far as 9 km away, a chimney in the plant could be seen discharging thick smoke. Closer to the chimney, large amount of yellowish thick smoke could be seen, the discharge of which did not stop during the whole visit of more than one hour. According to a resident who lives just next to the plant, sometimes the emissions discharge from the chimney is an even darker color and in the morning yellow particles can even be seen covering the ground.





Photo taken from the yard of a house in Hewan village

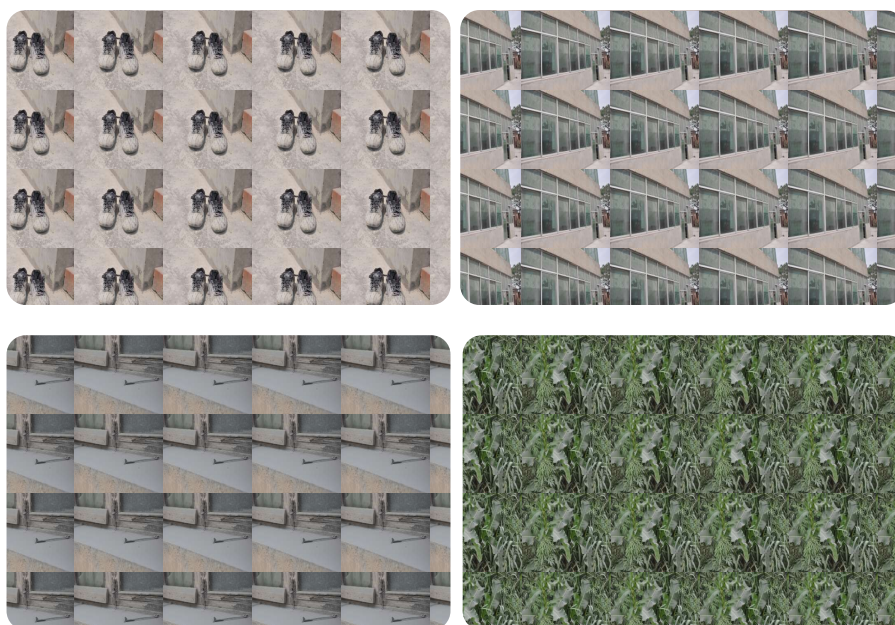
The Tianshan Cement (Liyang) plant was built in 2004. There is only a road separating the southern boundary of the plant from several villages and the closest house is only 100m away.

There are still a few dozen residents living in the nearby villages, namely Hewan Village and Hanli Village. Through talking to local residents it was possible to understand that cement production and its pollution have had a huge impact on their living conditions. Cement dust from the nearby chimney has spread all over the residents' roofs, courtyards, window sills, farmland and crops. The surrounding air, water and crops have all been polluted to various degrees. The heavy duty trucks that drive along Tianshan South Road (the road next to the southern boundary of the plant) have increased the dust and noise pollution.

In the past, local residents have raised complaints and appealed to the local governments about pollution issues at the cement plant and Tianshan cement has finally agreed to pay a "pollution compensation fee" of 1600 RMB/year to every resident that qualifies as a victim of pollution. Reports suggest the local government has got a plan to relocate the plant but regrettably the

long-due relocation schedule has yet to be released.

实地拍摄：落满水泥灰的房舍、院子、窗台、植物



Photos taken from the village houses: houses, courtyards, window sills and plants are completely covered in cement dust

Relevant media coverage¹¹:

On July 2011, a news reporter from the Daily Economic News visited the Tianshan Cement (Liyang) plant and wrote about its pollution issues:

“Relocation plan of nearby village in the air for 6 years - Tianshan Cement accused as the polluter
The reporter from the Daily Economic News visited Tianshan Cement Company. As soon as he walked into the area of Pei Min Village, the reporter saw smoke coming out of several chimneys from Tianshan Cement Co., blocking the sky. The Han Li and He Wan sub-village under Pei Min Village and the plant itself have been covered by smoke and dust. The windows and roofs of residents’ houses are covered in a layer of cement dust as thick as 3-4mm. According to the villagers, if the house is not cleaned for a while, you can’t see your toes when you place your feet on the ground. According to a representative from Tianshan Cement, all the construction projects have obtained the EIA report and the plant is a zero-pollution plant.”

The news report also mentioned that the Tianshan Cement (Liyang) plant has not met the minimum standard of health protection distance for construction projects. (Minimum health protection distance is the distance when the health of human beings might be affected after taking in the pollution. For cement plants, the minimum health protection distance is 500m.) The Environmental Protection Bureau of Jiangsu Province has requested in writing in the 2008 EIA

¹¹<http://finance.sina.com.cn/stock/s/20110705/022210092835.shtml>

project reply that: “Tianshan Cement (Liyang) Company should move residents living in Xiazhuang Village, He Wan Village, Hanli Village, which is within 500m of the plant. The move should be completed before the trial production of the project. Within the distance there should not be any environmentally sensitive projects built.” Lastly the report raised the question: “Why has Tianshan Cement not acted, after more than 3 years, to the requirement of Environment Bureau of Jiangsu Province? Why has the local environmental bureau not followed up to implement the requirements?” The reply from Mr. Zhou Wei, the deputy director general of Liyang Environmental Bureau was that: “The relocation plan should be put in place by the local administrative government, it is a common that requirements from upper level departments (provincial Environmental Bureau) are hard to implement at the local level.”

The IPE Pollution Map Database has one environmental supervision record² related to the Tianshan Cement (Liyang) plant. As a major NOX emitter in the cement industry in Liyang city, Tianshan Liyang was requested by government departments to complete the following rectification measures by April 2012: (1) To upgrade its phase combustion system for its kiln production line and SNCR project; (2) to install a DCS system; (3) to install online monitoring systems for its air emissions and to pass a verification check on the system.

During our latest visit to the plant in May 2013, it was disappointing to see that the plant dust collection system was obviously working abnormally and had been discharging dark colored smoke for long time periods of time. The plan to relocate nearby villages was approved by the provincial EPA more than five years ago but is still pending a proper settlement. Faced with this kind of cement industry pollution so close by, the villagers are in a hopeless and helpless situation.



Chimney of the Tianshan Cement (Liyang) plant taken from a nearby village house



Billboard showing village relocation plan near to the cement plants in the Shangpei area, erected by the local government

Case 2: Jidong Cement

Tangshan Jidong Cement Co. Ltd (000401.SZ) is registered in Fengrun district of Tangshan City, Hebei Province, and was listed in Shenzhen Stock Exchange since 1995. Based on public information, the German company HeidelbergCement, the Franklin Templeton Sealand Fund and New Horizon Capital (via its subsidiary Diamondrock Investment) are among important investors.

Among the 17 listed cement companies looked at in this investigation, Tangshan Jidong Cement and its affiliates were found to have as many as 28 environmental supervision records. Some affiliates of Jidong Cement had violation records for repeated discharge of air emissions in breach of regulatory standards and were listed by the local environmental protection bureau on a list of corporations that came in below standard.

In 2010 the Ministry of Environmental Protection (MEP) carried out a follow-up check on the status of companies who went through the process of "Environmental Protection Investigation as part of Stock Exchange Listing Process". Later in a public announcement, the MEP openly criticized Jidong Cement for its failure to implement rectification measures for a number of issues identified in the "Environmental Protection Investigation as part of Stock Exchange Listing Process" in 2007-2008. The MEP has requested Jidong Cement carry out a thorough self-check, to draw up corrective action plans immediately and to report the rectification status to the environmental protection bureau in a timely manner. The MEP also requested Jidong Cement disclose relevant information to the public.

Summary table of Jidong Cement and its affiliates' environmental supervision records

关联企业 Affiliates	地区 Location	环境监管 Record year
大同冀东水泥有限责任公司 Datong Jidong Cement Co. Ltd	大同 DaTong	2012
冀东海德堡(泾阳)水泥有限公司 Jidong Heidelberg (Jiyang) Cement Co. Ltd	咸阳 XianYang	2011
		2010
冀东水泥凤翔有限责任公司 Jidong Cement Fengxiang Co. Ltd	宝鸡 BaoJi	2011
陕西秦岭水泥(集团)股份有限公司 Shaanxi Qingling Cement (Group) Co. Ltd	铜川 TongChuan	2011
		2010
		2008
		2005
鞍山冀东水泥有限责任公司 Anshan Jidong Cement Co. Ltd	鞍山 An Shan	2010
		2007
冀东海德堡(扶风)水泥有限公司 Jidong Heidelberg (Fufeng) Cement Co. Ltd	宝鸡 BaoJi	2010
唐山冀东水泥股份有限公司 Tangshan Jidong Cement Co. Ltd	唐山 Tang Shan	2010
		2009
		2006
冀东水泥磐石有限责任公司 Jidong Cement Panshi Co. Ltd	吉林 JiLin	2010
辽阳冀东水泥有限公司 Liaoyang Jidong Cement Co. Ltd	辽阳 LiaoYang	2010
冀东水泥扶余有限责任公司 Jidong Cement Fuyu Co. Ltd	松原 Song Yuan	2010
冀东水泥吉林有限责任公司 Jidong Cement Jilin Co. Ltd	吉林市 JiLin	2010
		2007
冀东水泥滦县有限责任公司 Jidong Cement Luan County Co. Ltd	唐山 Tangshan	2009
		2006
内蒙古冀东水泥有限责任公司 Inner Mongolia Jidong Cement Co. Ltd	呼和浩特 Hohhot	2007

We have chosen a few affiliate companies (bold highlighted in the table) which have typical environmental supervision records and put together a brief description of the records as follows:

Datong Jidong Cement Co. Ltd: during the supervision monitoring checks carried out by the local environmental protection bureau in April 2012, it was found that 12 waste gas discharge outlets had discharged PM over the regulatory limit, some as high as 5.5 times of the limit. The company was also listed in the Q2 2012 list of "Provincial Key Monitored Enterprises that Failed to meet Environmental Requirements" by environmental protection departments in Shanxi

Province.

- a.) Jidong Heidelberg (Fufeng) Cement Co. Ltd:** It is a joint venture between JiDong Cement and Heidelberg Cement Group (Germany). Due to its discharge in breach of regulatory standards and the fact it was classified as being in an over-capacity industry, the company was listed by the local media – The Sanqing City Post - as one of the “Provincial Companies Required to Complete Rectifications within a set Deadline”.¹²
- b.) Tangshan Jidong Cement Co Ltd:** On April 14th 2010, the Department of Pollution Control and Prevention from the MEP, issued a public announcement on the findings of follow-up checks on the status of companies who had been through the process of “Supervision after Environmental Protection Investigation as part of the Stock Exchange Listing Process”¹³. In this announcement, the MEP mentioned that a few affiliates of Jidong Cement were found to have seriously violated environmental regulations and the listed company failed to implement corrective actions against the environmental issues identified in the process of “Supervision after Environmental Protection Investigation as part of the Stock Exchange Listing Process” in 2007-2008. Such as: new production line failed to receive the “Three Simultaneous” project approval from the government after many years of running; failed to install the real-time online-monitoring system or wrong read /over-limit read from the online system.

Please see appendix II for more details (in Chinese only)

The MEP requested Jidong Cement carry out a thorough self-check, draw up a corrective action plan immediately, and report the status of rectifications to the environmental protection bureau in a timely manner. The MEP also requested Jidong Cement disclose relevant information to the public. On May 28th 2010, the board of Jidong Cement published an announcement in “Securities Times” providing a detailed explanation of why the rectification measures were not done in time and what their corrective action plans were.

Case 3: South Cement (Hunan Pingtang) and (Hunan Yueyang)

Hunan South Cement (Pingtang) Co. Ltd and South Cement (Yueyang) Co. Ltd are both subsidiaries of CNBM (3323.HK). CNBM is listed on the HK Stock Exchange. Public sources show that JP Morgan is an important investor in CNBM.

Hunan South Cement (Pingtang) Co. Ltd is located in Pingtang town, Qiulu district, Changsha City, Hunan province, in the “Changsha, Zhuzhou, Xiangtan” economic delta. The company enjoys a good location for both water and road transportation; it is close to Xiang River, and only half an hour drive to Xiangtan City on the Changtan West highway. The company occupies an area of 200 acres, owns assets of more than 600 million RMB and has two cement production lines that have new dry-process rotary kilns with a capacity of 2500 t/day. As the largest industrial company in

¹² http://www.ipe.org.cn/pollution/com_detail.aspx?id=616776

¹³ http://www.ipe.org.cn/pollution/com_detail.aspx?id=646374

Qiulu district, it produces over 2 million tons of Taiping branded high grade cement every year, and exports some klinker.



In May 2013, the NGO Green Hunan, located this cement plant which is hidden in a mountainous area. In June, Green Hunan staff once again paid a visit to the plant to investigate the impact that it has on the nearby community. They discovered large amounts of muddy-colored water flowing down the sides of the road that connects to the plant.

At the house of one resident, which is adjacent to the wall of cement plant, the owner expressed concern that the cement plant generates loud noise and huge quantities of dust. Local residents pointed out that the dust collection equipment at the plant, which was just two boards placed at the discharge outlet to block the dust from escaping. However, the dust was still escaping day and night. The staff from Green Hunan observed that the furniture in the house was accumulating small cement particles every day. Dust can be found on the furniture, clothes and the vegetables grown there. It's said that the cement plant runs 24 hours a day and the noise from the plant did not stop day and night. Ever since the cement plant was built five years ago, the residents living in the nearby village have suffered greatly from the noise and pollution.

A search on the "China Pollution Map" revealed that this company has multiple records of discharge of PM in breach of regulatory standards in the first three quarters of 2012.¹⁴

¹⁴http://www.ipe.org.cn/pollution/com_detail.aspx?id=701824



Staff from Green Hunan talking with local residents near to the cement plant



Staff from Green Hunan wrote down the name of the group company (South Cement) on the dust-covered window sill in one of the resident's houses.

Another company, South Cement (Yueyang) Co. Ltd is located in the Yangmao village, Lujiao Town, Yueyang County in Hunan. The west of the plant is less than 1 km away from Dongting Lake. The north of the plant is just next to Yangmao Lake. There are residents living on the north and

east side of the Yangmao lake.



The west of the plant is less than 1 km away from Dongting Lake, from where the raw materials are transported to the plant.



Notice board erected by the South Cement Company about a recent renovation of dust-collection equipment at the docking station.

Staff from Green Hunan visited a nearby residential area where there was a line of one-story houses about 100m in front of the front gate of the cement plant where workers from the cement plant lived. According to one of the workers, as cement production consumes a large amount of electricity, the plant usually starts to produce after 11pm at night in order to control costs. The plant has purchased and installed around ten noise reduction devices and the dust collection equipments are in use too. There is not much of issue regarding cement dust. Some villagers raised complaints about the cement plant's pollution last year and the plant has implemented corrective actions since then.

However, when NGO staff went into the village from the north side of the plant to understand the pollution situation, there was a different take entirely. Villagers complained deeply about pollution from the cement plant. From information on the internet, last year, the villagers raised complaints to the county environmental protection bureau that made follow-up investigations into the plant. The local environmental protection bureau then requested the cement plant rectify the dust and noise issues within a set deadline. However, the villagers said the situation

had not changed much during the 2-3 years the plant had been in operation. The noise from the plant disturbs the sleep of the villagers and when production starts, the dust rising up from the site is visible and gets blown out when there was strong wind. “Even repeated complaints have not helped”, said one of the villagers in a desperate and helpless tone.

We hope that this cement plant, as a subsidiary of a listed state-owned company, and being located in such a quiet and beautiful village next to Dongting Lake, can take their environmental responsibilities seriously and stick to the commitment that they made in the initial construction period that “the cement plant will generate zero pollution to the nearby environment”. Just as it is described on the poster at the front gate of the plant (see picture below): “Misfortune comes from pollution, fortune comes from protecting the environment.”

The complaint raised by nearby community against the Hunan South Cement (Yueyang) Company, and the feedback from the local environmental protection bureau, has been entered into the China Pollution Map database.¹⁵



¹⁵ http://www.ipe.org.cn/pollution/com_detail.aspx?id=712900

5.3 Responses from listed companies and investors to cement industry pollution issues

After initial investigations, a list of 17 listed cement companies with violation records was put together along with a list of 22 of their major investors. The NGO coalition then sent a letter to each company's CEO on 16th, 17th and 20th May 2013.

The letter explained that as a group of NGOs, in an effort to reduce pollution and protect the environment, there were specific concerns with corporate environmental performance. The environmental impact of cement production was then explained to the listed companies and investors. A list of affiliates and subsidiary companies of listed cement companies that were found to have environmental violation records were also provided. It was hoped that the listed companies and investors would follow up with the questions raised in the letter and respond to the NGOs.

Positive Response

Lafarge SA was the only listed companies to contact the environmental NGO and provide a preliminary response to the questions raised in the letter. Lafarge expressed that as a multinational company they emphasize social responsibility and particularly environmental protection. Lafarge welcomes the public to monitor and inspect the corporation's environmental performance. They stated that Chinese staff at Lafarge SA would provide an official reply to the NGO's questions regarding the environmental violation records of La Farge.

5.3.1 Most Listed Companies take an evasive Position towards Pollution Issues

There was no contact from any listed companies one week after the letters were sent. The 17 listed companies were contacted again on the 27th and 28th May to confirm the receipt of the letter. From the second round of proactive communication, 16 out of the 17 listed companies took an evasive position towards the environmental violation issues.

China National Building Materials Group Corporation (CNBM,3323.HK), in holding of CUCC and South Cement, stated that, "If you (NGOs) have not received a reply to the letter it is probably because the company felt the contents of the letter was of no interest." Jilin Yatai Group (600881.SH) claimed that, "It was not clear how a reply should be given." BBMG Corporation

(601992.SH, 2009.HK) replied saying, “If we feel it’s necessary we will follow up and contact you.” Out of this round of communications, we also found that some domestic listed companies lack a public communication channel, and specific personnel to answer environmental inquiries from the public.

Table 2: Summary of two rounds of communication between 17 cement listed companies and the NGOs

Short name of Listed company	Stock code	Reply on first round letter (Fax) sent on 16 May 2013	Reply on second round confirmation calls on 27-28 May 2013
Xinjiang Tianshan Cement	000877.SZ	None	NGO called on 27 May 2013: Phone receiver cannot confirm the receipt of earlier fax. Said hundreds of faxes are received everyday by different departments. Not sure if the NGO letter has been forwarded to relevant department to follow up. NGO re-sent the letter by fax and confirmed the receipt with Mr. Chen on a follow-up call.
CNBM	3323.HK	None	NGO called on 27 May 2013: Phone receiver said usually the emails will be received and read by the person in charge and forwarded to relevant department to follow up. If the NGOs have not received a reply to the letter it is probably because the company felt the contents of the letter was of no interest.
Jilin Yatai	600881.SH	None	NGOs called on 27 May 2013: Phone receiver confirmed the receipt of fax but was not sure how a reply should be given. It needs to be discussed internally to decide how to reply.
Tangshan Jidong Cement	000401.SZ	None	NGO called on 27 May 2013: Phone receiver said the email was not received. NGOs re-sent by email and got the receipt confirmation by mail administrator who said they would forward to responsible staff.
Shanxi Qinling Cement	600217.SH	None	NGO called on 27 May 2013: Phone receiver did not know if the email had been received. NGOs re-sent the email on 29 May 2013 and got the confirmation of receipt. Staff on the line said after reading she felt there was not much content to the letter. NGOs expressed briefly the purpose of letter and the environmental compliance issues of cement companies. The staff said she will forward the letter to her boss.
Shanshui Cement	691.HK	None	NGO called on 27 May 2013: Phone receiver has no recollection of receiving the letter hence cannot

			confirm receipt. NGO resent the letter, Mr. Ding confirmed receipt and stated that he will show it to the boss.
Huaxin Cement	600801.SH	None	NGO called on 27 May 2013: Staff of Security department said corporate mailbox is not regularly checked. NGO called the company operator and resent the letter to the office fax line of the broad of directors. The fax machine showed the transmission was OK.
Anhui Conch Cement	600585.SH 914.HK	None	NGO called on 27 May 2013: the operator tried several times to transfer the line to the secretarial office but no answer. Operator said it was the time for annual shareholder meeting (26-31 May) so the staff were probably out of the office. NGOs resent the letter to the automatic fax line of Secretarial office and showed transmission OK.
Taiyuan Lion-head Cement	600539.SH	None	NGO called on 27 May 2013: phone receiver said the fax machine was out of paper hence not received our letter. NGO tried to resent by fax a couple of times and made follow up calls but failed to get any confirmation on letter receipt status.
Sichuan Shuangma Cement	000935.SZ	None	NGO called on 27 May 2013: staff of security department was not sure who was checking the corporate public mailbox and said they receive many phone calls every day and they only reply to their investor's questions. NGOs expressed briefly the letter content, Shuangma staff said the representative and chief secretary were not available and do not know who can follow up on the letter. After a long communication NGO resent the letter to the staff on the line who confirmed receipt and said will try to forward the letter to one department to follow.
BBMG	601992.SH 2009.HK	None	NGOs called on 27 May 2013: Phone receiver said emails are usually received and read by relevant staff. If necessary they will follow up and make contact.
Tianrui Group	1252.HK	None	NGO called on 27 May 2013: Phone receiver confirmed the receipt of letter.
Asia Cement	743.HK	None	NGO called on 27 May 2013: Mr. Zhou, spokesman of Asia Cement answered the phone and confirmed the receipt of letter. Mr. Zhou said Asia cement plants in Taiwan have excellent environmental performance and the plants mentioned in the letter (Yadong Cement) are not affiliates of Asia Cement. Yadong cement operates independently to their plants in China and

			NGOs should approach Yadong cement directly for their environment issues. Mr. Zhou confirmed that Asia cement did invest in Yadong cement and holds a certain share in Yadong cement.
TCC Group	1136.HK	None	NGO called on 27 May 2013: Phone receiver is not sure if the email that was sent to a public mailbox was received. Suggest NGOs resend the letter to Financial director Mr. Zhang (NGO did).
China Gezhouba Group	600068.SH	None	NGO called on 27 May 2013: Phone receiver said corporate communication department was in charge of the corporate mailbox. NGO talked to relevant staff in communication department later, who said not sure and need to double confirm with colleagues. NGO called back the next day for several times but no one answered the line.
Lafarge S.A	NYSE Euronext Paris (ISIN: FR0000120537)	None	NGO called on 27 May 2013 to Lafarge headquarter in France, operator refused to transfer the line to sustainable department without a contact name. Lafarge China called NGO on 30 May 2013, person in charge of Sustainable development told NGO that some plants mentioned in the letter are affiliates of Lafarge China and explained briefly the environmental management practice of Lafarge affiliates and some of the violation records. Lafarge China confirmed that their holding company Sichuan Shuangma cement also received letter from NGOs, as a next step Lafarge China will send official reply on behalf of both companies. Lafarge China (Legal department) contacted NGO on 4 June 2013 to understand the background of NGOs. Lafarge China expressed that as a multinational company they emphasize social responsibility and particularly environmental protection. Lafarge welcomes the public to monitor and inspect the corporate environmental performance. Some of the issues raised in the letter did happen before and have been rectified already. Official reply will be provided.
Taiheiyo Cement	TSE:5233 (Tokyo)	None	NGO resent email on 28 May 2013 to mailbox listed in the company's annual report and called: Mr Naopaka confirmed the receipt of letter.

Table 3: Evaluation chart of Listed Company's response and follow up actions

	Name of Listed company	Respond and background check	Compliance and Corrective Action			Continuous Improvement		Disclosure of pollutant release and transfer data			Disclosure of affiliates' EIA info		Establishment of green supply chain	
			checks on violation records	Affiliates screening process	Corrective actions and info. disclosure	"Energy and emission reduction" targets	online real-time monitoring data disclosure	group discharge data	Regular pollutants –affiliates level	Specific pollutants –affiliates level	EIA	Dialogue	Supplier screening	push suppliers
1	Lafarge SA FR0000120537.X PAR	√	X	X	X	X	X	X	X	X	X	X	X	X
2	Sichuan Shuangma Cement 000935.SZ	√	X	X	X	X	X	X	X	X	X	X	X	X
3	Xinjiang Tianshan Cement 000877.SZ	X	X	X	X	X	X	X	X	X	X	X	X	X
4	CNBM 3323.HK	X	X	X	X	X	X	X	X	X	X	X	X	X
5	Jilin Yatai 600881.SH	X	X	X	X	X	X	X	X	X	X	X	X	X
6	Tangshan Jidong Cement 000401.SZ	X	X	X	X	X	X	X	X	X	X	X	X	X
7	Shaanxi Qinling Cement 600217.SH	X	X	X	X	X	X	X	X	X	X	X	X	X
8	Shanshui Cement 691.HK	X	X	X	X	X	X	X	X	X	X	X	X	X
9	Huaxin Cement 600801.SH	X	X	X	X	X	X	X	X	X	X	X	X	X
10	Anhui Conch Cement 600585.SH	X	X	X	X	X	X	X	X	X	X	X	X	X
11	Taiyuan Shitou Cement 600539.SH	X	X	X	X	X	X	X	X	X	X	X	X	X
12	BBMG 601992.SH	X	X	X	X	X	X	X	X	X	X	X	X	X
13	Tianrui Cement 1252.HK	X	X	X	X	X	X	X	X	X	X	X	X	X

14	Asia Cement 0743.HK	X	X	X	X	X	X	X	X	X	X	X	X	X
15	TCC Int'l 1136.HK	X	X	X	X	X	X	X	X	X	X	X	X	X
16	China GZB 600068.SH	X	X	X	X	X	X	X	X	X	X	X	X	X
17	Taiheiyō Cement 5233.TSE	X	X	X	X	X	X	X	X	X	X	X	X	X

5.3.2 Most of the Investors have not provided adequate responses

+ Investors with positive Response:

CRH Group, which is located in Ireland, contacted the environmental NGOs just two days after the letter was sent to them and provided a proactive response. On June 3rd, CRH Group's global Sustainable Development Manager gave an official response. The response stated that they would push Yatai Building Material, a company in which they hold shares in, to investigate the environmental supervision records, and then, within one month, provide an explanation detailing rectification measures.

Two foreign fund companies, **T. Rowe Price** and **KKR & Co. LP**, provided positive initial responses saying that they are conducting a follow up investigation into the environmental performance of listed cement companies that they have invested in.

-Investors with negative or no response:

Regrettable to see, none of the large-scale domestic mutual funds have responded, except Boserā Funds who contacted the NGOs through customer service team, and Harvest Funds who confirmed the receipt of letter with no further follow up.

NCI Insurance and the Labor Insurance Fund (Taiwan) have provided a preliminary reply, in introducing their investment strategies and their emphasis on topics of corporate social responsibility. The reply, however, did not mention any specific information regarding the environmental violation issues of listed cement companies. NCI Insurance mentioned that it will not comment on any specific stock in the market.

Many international leading cement producers and financial institutions have still not replied to letter and inquiries from the NGO's.

Among them, JP Morgan, who have invested in CNBM, Shanshui Cement Group and China Tianrui Group have not provided a single reply. J.P Morgan's CEO, Jamie Dimon, in dialogue with Mark

Tercek (The Nature Conservancy, TNC) on how JP Morgan can have an impact on the environmental performance of large scale companies stated the following,

“We obviously want to invest in and lend to companies that are well-run and successful – that’s good business for us. And we believe that how our clients manage environmental and social issues is an important aspect of sound management. We take a serious look at their practices on those issues - and where we don’t think they are doing a good job, we give them specific feedback. Sometimes we even require them to improve their operations before we’ll do business with them. Those can be tough conversations but, more often than not, they are constructive and our clients feel we provide value by working with them to help improve performance. It’s a difficult area to demonstrate impact, however, since much of the work we do is behind the scenes.”

However, one month after receipt of the letter, JP Morgan have still did not replied to the NGOs inquiries about 30 environmental supervision records of its invested companies. The validity of above expression is doubtful.

The German cement maker HeidelbergCement and Swiss producer Holcim are among the same group that kept silent towards the NGOs. The two cement producers are in holding of domestic cement listed companies with multiple violation records. One joint venture of HeigelbergCement and JiDong Cement was publicly criticized by the Chinese MEP due to its failure to pass the “follow-up check on environmental compliance inspection for IPO listing”. We have seen both companies’ commitment on environmental compliance and sustainable development on their official website, which shows a huge contrast to the lack of replies to NGO letters.

Table 4: Evaluation chart of Investor’s response and follow up actions

	Name of investor	Respond and background check	Pushed Invested Companies to be Compliant & take Corrective Actions			Continuous Improvement		Disclosure of Pollutant Release & Transfer Data			Disclosure of Affiliates’ EIA Information		Establishment of Green Supply Chain	
			checks on violation records	establish screening process	Corrective actions and info. disclosure	Energy and emission reduction	online real-time monitoring data	discharge data	Regular pollutants	Specific pollutants	EIA	Dialogue	supplier screening	corrective actions and disclose info.
1	CRH Group	√	√	X	X	X	X	X	X	X	X	X	X	X
2	T. Rowe Price Group	√	X	X	X	X	X	X	X	X	X	X	X	X
3	KKR& Co. LP	√	X	X	X	X	X	X	X	X	X	X	X	X
4	NCI Insurance	√	X	X	X	X	X	X	X	X	X	X	X	X

5	Labor Insurance Fund (Taiwan)	v	X	X	X	X	X	X	X	X	X	X	X	X
6	Bosera Funds	v	X	X	X	X	X	X	X	X	X	X	X	X
7	Harvest Fund	X	X	X	X	X	X	X	X	X	X	X	X	X
8	Franklin Templeton Sealand Fund	X	X	X	X	X	X	X	X	X	X	X	X	X
9	UBS AG	X	X	X	X	X	X	X	X	X	X	X	X	X
10	Groupe Bruxelles Lambert	X	X	X	X	X	X	X	X	X	X	X	X	X
11	Merril Lynch	X	X	X	X	X	X	X	X	X	X	X	X	X
12	Dodge & Cox Fund	X	X	X	X	X	X	X	X	X	X	X	X	X
13	Aberdeen Asset	X	X	X	X	X	X	X	X	X	X	X	X	X
14	National Social Security Fund	X	X	X	X	X	X	X	X	X	X	X	X	X
15	Ping An Group	X	X	X	X	X	X	X	X	X	X	X	X	X
16	Fubon Finance	X	X	X	X	X	X	X	X	X	X	X	X	X
17	Jpan Trustee Services Bank	X	X	X	X	X	X	X	X	X	X	X	X	X
18	Japan Master Trust bank	X	X	X	X	X	X	X	X	X	X	X	X	X
19	New Horizon Capital	X	X	X	X	X	X	X	X	X	X	X	X	X
20	JP Morgan	X	X	X	X	X	X	X	X	X	X	X	X	X
21	Heidelberg Cement	X	X	X	X	X	X	X	X	X	X	X	X	X
22	Holcim	X	X	X	X	X	X	X	X	X	X	X	X	X

6. Recommendations

Listed Cement companies should strive for energy savings and emission reductions

- further implement dust removal treatment and reduce discharge of PM. In Particular to control the fine PM release; to explore NOx-removal technology and reduce NOx emissions.

- reduce energy consumption and the use of coal.

- establish industry indicators for environmental information disclosure.

- widen information disclosure and begin constructive dialogue with stakeholders.

Regulatory bodies should strengthen supervision and expand disclosure of supervision info.

- further strengthen environmental law enforcement and control of total discharge volumes.

-request listed companies fully disclose environmental information such as regulatory records, online monitoring data, discharge data, and EIA report information.

-Security regulatory bodies and stock exchanges should support environmental protection bureaus and issue guidelines for listed company environmental information disclosure. This should include key indicators that show significant environmental impacts or of concern to stakeholders, to specify what are the key indicators of environmental performance and how to disclose them.

NGOs, the public and the media should strengthen Green Stocks capacity building

- raise awareness.

-increase influencing power.

- Listed companies should identify and follow up on violation issues of affiliates via Green Stocks website and request affiliates rectify and make public explanations.

Stakeholders should use publicly available environmental info. to identify issues and push for improvement

- Institutional investors can search listed companies that they've invested in or plan to make an investment in, push for rectifications and public explanations.

- Public as investors in stock markets or fund companies can search listed companies of concern, and push them to take responsibility in tackling air pollution.

Appendix I

大气污染物排放标准

标准名称	标准编号	发布时间	实施时间
水泥工业大气污染物排放标准 （征求意见稿）	GB 4915-201□ 代替 GB 4915-2004	2012-11-6	未定
炼焦化学工业污染物排放标准	GB 16171-2012	2012-6-27	2012-10-01
火电厂大气污染物排放标准	GB 13223-2011	2011-7-29	2012-1-1
稀土工业污染物排放标准	GB 26451-2011	2011-1-24	2011-10-1
钒工业污染物排放标准	GB 26452-2011	2011-4-2	2011-10-1
平板玻璃工业大气污染物排放标准	GB 26453-2011	2011-4-2	2011-10-1
橡胶制品工业污染物排放标准	GB 27632-2011	2011-10-27	2012-1-1
陶瓷工业污染物排放标准	GB 25464-2010	2010-9-27	2010-10-1
铝工业污染物排放标准	GB 25465-2010	2010-9-27	2010-10-1
铅、锌工业污染物排放标准	GB 25466-2010	2010-9-27	2010-10-1
铜、镍、钴工业污染物排放标准	GB 25467-2010	2010-9-27	2010-10-1
镁、钛工业污染物排放标准	GB 25468-2010	2010-9-27	2010-10-1
硝酸工业污染物排放标准	GB 26131-2010	2010-12-30	2011-3-1
硫酸工业污染物排放标准	GB 26132-2010	2010-12-30	2011-3-1
非道路移动机械用小型点燃式发动机排气污染物排放限值与测量方法（中国第一、二阶段）	GB 26133-2010	2010-12-30	2011-3-1
煤层气（煤矿瓦斯）排放标准（暂行）	GB 21522-2008	2008-4-2	2008-7-1
电镀污染物排放标准	GB 21900-2008	2008-6-25	2008-8-1
合成革与人造革工业污染物排放标准	GB 21902-2008	2008-6-25	2008-8-1
储油库大气污染物排放标准	GB 20950-2007	2007-6-22	2007-8-1
加油站大气污染物排放标准	GB 20952-2007	2007-6-22	2007-8-1
煤炭工业污染物排放标准	GB 20426-2006	2006-9-1	2006-10-1
锅炉大气污染物排放标准	GB 13271-2001	2001-11-12	2002-1-1
饮食业油烟排放标准（试行）	GB 18483-2001	2001-11-12	2002-1-1
工业炉窑大气污染物排放标准	GB 9078-1996	1996-3-7	1997-1-1
大气污染物综合排放标准	GB 16297-1996	1996-4-12	1997-1-1
恶臭污染物排放标准	GB 14554-93	1993-8-6	1994-1-15

Appendix II

为督促上市公司切实履行承诺，解决已有环境污染问题，我部近期对2007—2008年通过我部环保核查的上市公司承诺整改环保问题的完成情况进行了后督查。本次后督查包括公司自查和区域环境保护督查中心现场检查两个阶段。现场检查共涉及58家公司及其下属127家企业，检查的重点环保问题共计274个。现将有关情况通报如下：

序号	公司名称	未按期完成整改的环保问题
2	唐山冀东水泥股份有限公司	<p>1. 冀东海德堡(泾阳)水泥有限公司搬迁工作至检查时尚未完成；二期4500t/d水泥生产线2008年12月投入试生产，至检查时仍未验收。</p> <p>2. 辽阳冀东水泥有限公司原料磨500米内头道沟村31户居民搬迁工作至检查时尚未完成；11718平米石灰石预均化场项目至检查时尚未通过省环保厅验收。</p> <p>3. 鞍山冀东水泥有限责任公司居民搬迁工作至检查时仍未完成，二期水泥磨工程补办环评至检查时尚未通过辽宁省环保厅审批；检查发现未按要求安装在线监测设备。</p> <p>4. 冀东水泥扶余有限责任公司居民搬迁任务至检查时仍未完成。</p> <p>5. 从吉林市监控中心调阅数据显示，冀东水泥磐石有限责任公司二氧化硫和氮氧化物多次超标。</p> <p>6. 现场检查时，冀东水泥吉林有限责任公司氮氧化物在线监测系统没有读数，调阅历史数据发现，6-10月在线系统损坏，1-5月和11月均有二氧化硫、氮氧化物和烟尘监测超标的情况。</p>