# Going Green with Management-Management Technology Comparison within Green Companies: China, USA, and Korea

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Abstract—There is increasing discussion about pollution and climate change and what can be done. This paper looks at the images and results of four companies (Coex, Haier, Baosteel, IBM) that are recognized for green management and improving sustainability while maintaining high profits. The role of management, human resource management, technology, and motivation are examined to find out what has led these companies to succeed. Motivation among employees is a necessity for sustainability innovation, but how that is achieved varies and includes financial incentives and social media networking cooperation among various employees.

Index Terms—East-Asian business, globalization, green management, social media.

### I. INTRODUCTION

We know the importance of the environment and how people are causing harm to it. Keywords include pollution, contamination, warming, climate global sustainability, etc. However, sustainability-may solve all the others. The importance of sustainability has been made clear by, "the fact that Dow Jones Sustainability Index, FTSE4GOOD Index and KLD's Domini 400 Social Index, all of which emphasizes the importance of sustainability in an investors' portfolio creation, are being actively employed in the market" [1]. Of course, the problem is how to obtain it, especially without sacrificing economic growth, which is a goal particularly important to developing countries like China. With its huge global domestic product (GDP) growth every year and largest population on the planet, China is in the spotlight when it comes to the future of sustainability. There have been international movements dedicated to saving the environment, such as the Kyoto treaty or various U.N. agreements. However, these only carry so much weight and authority. For a country to truly embrace sustainability, it must make it an appetizing option for business people and corporations within it. This paper will try to figure out how China can do just that by comparing Chinese companies that practice green management with one from Korea (COEX) and one from the United States (IBM).

### II. METHODOLOGY

First, this paper will review examples of environmental

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problems the world is faced with and then will move on to policy aspects that have been put in place in reaction to these issues.

Following this, the importance of globalization and cultural differences will be discussed, followed by the investigations into the previously mentioned companies, and ending with suggestions for companies (particularly Chinese ones) who wish to adopt green management.

## III. ANALYSIS

Since pollution and the like do not respect national boundaries, environmental problems can come and go between places that cause them and places that simply receive their effects. For this reason, it can be difficult for a country to commit to decreasing its emissions of greenhouse gases, such as CO2, when the problem can easily be ignored by pointing to other countries that emit the same amount or saying that other countries did the same thing while they were developing; both the United States and China have used at least one of those excuses and those two countries are the biggest green-house gas emitters in the world [2]. But for these same reasons—the spread of pollution—it is even more important for countries to take responsibility for their actions and for their share in the sustainability of the world (with sustainability being defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [3]).

China has enough China-specific problems to worry about that the issue of environmental sustainability should be a no-brainer to officials and to businessmen, who of course are also citizens of their country. While China's economic growth amazed people all over the world and has pulled over 700 million people out of poverty in the past 20 years, it has come with a price [2]. This growth has largely been achieved by "export-friendly trade and investment policy, sound macroeconomic management and political stability....and the timely delivery of urban infrastructure" [2]. However, according to the PRC (People's Republic of China) Ministry of Environment Protection, at least two thirds of China's lakes have chemical deficiencies caused by pollution and as a result of the pollution and increased consumption, two thirds of China's cities are lacking portable water [2]. Since the PRC was founded over fifty years ago, "GDP has grown 10 times and mineral resource consumption has increased 40 times" [4]. Unsurprisingly, the country is having a hard time keeping up with the growing demand. The continuing growth of the

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population—and the rising urbanization of that population is dramatically increasing demand for energy natural resources of all kinds, such as fossil fuels, water, and fertile land. However this demand is actually decreasing the amount of available resources through the damage of unsafe business practices and has triggered "a range of secondary impacts in desertification, flooding, and biodiversity loss,' [5]. Quickly apparent to visitors, the pollution levels in China's major cities are serious, and in fact are among the highest on earth; "a noted World Bank study based on conservative assumptions estimate that the mid-1990s' urban air quality and water pollution alone cost the Chinese economy US\$32.3 billion annually in premature deaths, morbidity, restricted activity, and other negative health effects," [5]. The World Health Organization has findings in line with this, according to a study of theirs done in 1998, "three of the 10 most severely polluted cities are located in China. Air pollution levels in Chinese cities frequently double the world average; Beijing has the dubious distinction of competing with Mexico City for the "honor" of the world's most polluted capital," [5]. It is clear here that not only are China's environmental issues not good for the planet, they are hurting Chinese people in regards to their health and their economy.

Currently, over two thirds of the world's renewable energy (which is 20% of energy consumption as of 2008) comes in the form of biomass, which is mostly in developing countries and some of it is still unsustainable [3]. Most of this failure does not come from lack of existing technology, but a lack of two renewable sources on the market. Omer [3] says, "The most important step governments could take to promote and increase the use of renewables is to improve access for renewables to the energy market. This access to the market needs to be under favorable conditions and, possibly, under favorable economic rates as well." In addition, the government could provide subsidies for companies that purchase and use these renewable energy sources (or to companies that build them). This is particularly possible in China, where the government and companies often have a close relationship[4]. The Chinese government is already working with companies in some ways to promote sustainable development, including policy and financial incentives, and setting up the system and mechanism of resource recycling in key areas [4]. This needs to be expanded to reach more small and medium enterprises, which likely have the least resources, but employ the most people [2], [4].

Singapore has done a similar thing, by switching to clean natural gas for the use of power generation, etc. and by actively promoting remanufacturing. Singapore can provide a role model to China, considering their similar culture, government system, and their quick rise to being a financial center.

It's no secret that the world is getting smaller. The internet is being used by more people every year, allowing people to connect with others who before they would never have even known existed. The amount of multi-national companies has increased to over 63,000 [6] and according to Dunning [7] about 2/3 of the world's exports of goods and services are made using these multinational corporations. With increasing globalization come increasing

modernization and the spread of today's most prominent economic ideology (at least among rich states): neocapitalism. While this ideology and the business practices that originated with it are spreading, local customs, traditions, and culture a company comes from still has a huge impact on how they manage. This is obvious when visiting a country with a culture vastly different from the one you are accustomed to, but it may be even more important to remember when confronted with cultures that are similar, because it is then that we are tempted to ignore differences and assume everything important is the same.

The similarities and differences among Chinese *guanxi*, Korean *inhwa*, and Japanese *wa*, are one example of similar cultures containing critical differences. By comparing these values we can also uncover "national differences with respect to the focus of social relationships (the relational versus the collective) and the nature of social ties (instrumental versus emotional)"[8].

The guanxi relationship is unique due to its focus on saving face and the concept of reciprocity. Guanxi ties may be emotional or they may be simply "utilitarian and instrumental" depending on the people. Wa on the other hand, "places a unique emphasis on social harmony, which derives from loyalty and commitment to the groups or organizations of which one is a member." Wa drives Japanese business people to seek harmony and mutual cooperation for a mutual goal. However, it does not drive them to make self-sacrifices on an individual level, such as sacrificing leisure time to help a stressed-out colleague. While *inhwa* also stresses harmony, it is different from the Japanese 'wa' in that it the harmony sought after is "embedded in dyadic relationships between, for example, subordinates and superiors, not group relationships between employees and the organization." Koreans want to protect each other's "kibun", or emotions, so the Korean employee would be more likely than the Japanese employee to help their stressed colleague and less likely (in comparison) to give up time to help the company.

The survey done in the article [8] revealed in regards to the four tactics (Rational-influence distributive, emotionalappeal distributive, information-sharing integrative and relationship-building integrative) that:

Chinese managers: The least likely to endorse information-sharing tactics endorsed by East Asian neighbors, as well as the least likely to endorse norms of rational influence and relationship-building tactics.

Japanese managers: About even with Koreans in rational-influence endorsement and about even with the Chinese in emotional-appeal tactics. They most strongly endorse information-sharing and are in the middle among the three when it comes to relationship-building tactics.

Korean managers: The least likely to endorse emotionalappeal and the most likely to endorse relationship-building tactics. They were in the middle in regards to informationsharing.

For more information on this subject, please see the works cited under "[8]."

The next part of this paper will focus on what four major companies have been doing within their management to ensure that environmental sustainability is practiced.

One of the leaders in green management and

environmental business among South Korea companies is COEX. Their company focuses on exhibitions, conventions, and holding conferences; they even hosted the 2010 G20 conference [9]. They operate in several buildings, which led them to search for sustainable energy. A simple Google search will erase any doubts about how true their own reports are; COEX continuously shows up as a search result for green management in Korea and when researching the company itself, over half of the results revolve around their environmental leadership. Their environmental achievements are numerous, including reducing their "annual CO2 emissions by approximately 1,400 tons," [9]. Since they are a relatively small business compared to others in this paper (about 200 employees according to their annual report), these achievements are all the more impressive. They are also a sub-company of KITA (Korean International Trade Association), which influences their green policies as well as provides them with multiple opportunities to increase their network, exchange ideas, and garner support. The answer to how they have been able to do this, of course lies to a great degree in their management.

The chart below shows a basic outline of their management hierarchy structure (adopted from the Coex 2011 Environmental Report). Each division listed in one box under the Senior Executive Vice President as multiple understudies, including various project teams (ex. Energy and Healthcare project) and Planning and Accounting.

COEX's management strategy, based on their company vision of "grooming COEX as a prestigious organizer of elegant exhibitions/conventions" is divided into three divisions: global Coex, smart Coex, and green Coex. Each division has their share of Coex's "top eight tasks to implement"; for example,global Coex must work on the "change the exhibition operation paradigm" task, smart Coex is working on establishing an online exhibition center, and green Coex is focusing on building an eco-system combining GT and IT. The Sustainable Management Team is the cornerstone of the "green Coex" vision, Fig. 1.

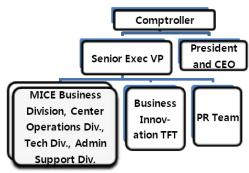


Fig. 1. Organizational chart of COEX in Korea.

This team was first created in 2010 and was referred to as "Green Management TFT" was has since been upgraded to its current status. In addition to the Sustainable Management Team, the Technical Support Team and the Facility Management & Operations Team also play key roles in implementation of their strategy. This was created by the CEO (Mr. Hong Sung-won) who has "put emphasis on sustainability in all our operations and is very active in enforcing the new, green strategy throughout the entire organization," [9] & an e-mail from Mr. So Woongook).

Staff knowledge and participation is utilized in other ways as well, including the creation of the Green Management Council which contains employees from Coex's sister companies (and it's head company, KITA) that meet quarterly to discuss and evaluate their plans and progress. In regards to the rest of the company, Mr. So Woongook in an interview explained, "We have therefore suggested 20 ways in which our employees can put the green lifestyle into practice and ask them to self-evaluate their efforts with a web survey every month. It is an opportunity to get them to think more about sustainable issues in their life," [9]. Coex has been able to succeed as much as it has so quickly due to the emphasis the CEO places on the concept, the CEOs heavy involvement with developing a green management strategy, and hiring people whose job it is to just focus on the sustainable development of the company.

Among American companies, IBM is consistently viewed as and voted as one of the greenest companies (such as in Newsweek magazine). Alongside Baosteel, IBM is one of the leader's in patent production. So much so, that "it earned the most of any organization in 2008, with 4,186 new patents to its name," [10]. IBM has been focusing on different ways in which technology can be used to make the environment better, in areas from traffic to water. In addition to developing patents, IBM created a Corporate Environmental Innovation Program that focuses exclusively on increasing energy efficiency and decreasing any negative impact on the environment [10]; IBM website). IBM also does work vicariously by financially backing groups with the same vision, such as Eco-Patent Commons and Smarter Planet

Perhaps due to its large size and multi-national status, IBM's green management policies are less personal than those of Coex, Baosteel, and Haier. Rather than fostering a sense of community, innovation, or competition within the employees, IBM management simply instill rules that must be followed, such as "setting targets of energy use by floor, shutting down lighting after 20:00 hours, strictly avoiding redundant lighting devices, controlling air conditioner use (to make sure air conditioning is not used when rooms are empty), lowering hot water temperatures for sinks, investing in lighting stabilizers and, finally, promoting work off-site" [11]. Not only do the managers of that specific firm check to make sure the guidelines are met, IBM headquarters checks as well (less often, of course). The previous examples come from IBM Tower in Beijing, in which the managers simply imported their global environmental standards to a Chinese site. While pondering why IBM was able to succeed by doing this, Presas wrote, "such innovations in corporate facility management probably work due to the character of IBM's policy of following the strictest regime in place (that of the company dominates in the case of Beijing); this makes it a front-running company in the greening of its premises worldwide," [11]. Again, due to its size, money, and the power that comes from those, IBM is able to succeed at green management while making minimal changes to its policies.

China is a unique case given it's variation in business types. Not only are there the typical privately owned enterprises, joint ventures, multi-national corporations, and small and medium enterprises, but also state owned enterprises (SOEs). Chinese state owned enterprises have gone through various reforms over the past couple decades. They used to all use the danwei system, in which workers received housing and a full welfare system (sometimes referred to as "the iron rice bowl"). Since the 1980s there have been efforts to decentralize the administration and the responsibility from the government to state-owned enterprises. These reforms include "profit retention systems" (in which the enterprise did not have to turn over all its profits to the state, but could keep some) and "contract responsibility systems." While this helped some, the companies still faced a lot of pressure in welfare costs for workers. This situation became more serious due to the continue rise in life expectancy in China. As Gu wrote in 2002 about the situation right before the 1997 crises, "the surge of welfare spending was a huge drain on the competitiveness of SOEs; at the same time, the decline in profitability in the SOE sector significantly eroded state revenue." None the less, SOEs continue to employ a large amount of the workforce, "with 39% of the Chinese workforce being employed in the SOE sector" [12].

In addition to this, the managerial roles have undergone massive changes, with central planning only attributed to 30%-40% of industrial production within the first five years of reform [13]. As time goes on, SOEs are gaining more and more control over their own decision making and receive fewer directions from the government.

With all the changes SOEs have had to go through recently, it is a wonder that any of them have even tried to implement green management at all. However, according to the China Top 100 Green Companies report, there are quite a few SOEs who are doing just that. This paper will focus on two leaders in the category, Baosteel and Haier. These two companies were chosen based on their placement in the rankings as well as specific examples shown on other websites and writings.

Like many jobs in the public sector, positions at stateowned enterprises tend to offer high job security. In fact before the year 2000, several SOEs did not fire underqualified workers, and even after changing the policy to allow such firings, they hardly ever took place, if at all [12]. This tradition means that managers have to use more creative methods to motivate their employees to be productive and/or innovative. Haier group is a leader in doing just that. They are "one of the largest companies in the household appliance industry in China," [15] and number two on the list of greenest Chinese state-owned enterprises. In the past, the CEO used more negativereinforcement strategies, such as "if defective products were produced, 20 per cent would be deducted from the salaries of all the employees involved," [14] but have since adapted more positive-reinforcement methods, even though the CEO has remained the same since 1984 [14]. Various management practices used in Haier uniquely and strategically mix competition and group-orientated development to improve their company and get the most out of their employees, while providing opportunities for employees to make more money (more of a merit-based system compared to the average Chinese company) as well as to get psychological satisfaction from feeling like they are making a difference. A quote from Zhao and Du [15] describes this succinctly when they say:

"Haier regards realization of individual value as the foundation for the company's development. Employee development is derived from a team's progress as a whole; the accumulation of personal development also promotes the level and goal of development. Haier has created a system to ensure common development between the company and its employees. In this way, the realization and recognition of every employee's value could help the company to achieve its own value."

Zhang Ruimin, the CEO of Haier, has recognized the evolving environment that companies are a part of these days, notably the impact of the wide-use of the internet. Due to this, Zhang said that companies must move from mass manufacturing to mass customization, given the change from companies seeking customers to customers seeking companies that meet their needs (China Top 100 Green Companies Report). Due to this, there has been an effort to match a particular employee with the customer she or he should serve. Examples of this on a large scale include developing air conditions customized for the harsh conditions in the Middle East and "designing washing machines that could also handle cleaning vegetables in rural Asia," [17]. Their organizational structure has also changed from a typical up-right triangle schema to an inverted triangle, with grass-roots workers at the top, middle managers in the middle, and then the higher ups at the bottom. Rather than executive decision making and the like, this new structure reflects the change in cooperation instead of simply giving orders; in other words, the managers listen to what the employees need to complete their tasks and how their work is going and act accordingly.

Another unique aspect of Haier's management practices is proposal that, "the company's internal talent the management should adopt the idea of horse racing, in which every employee has a sense of pressure, providing the opportunity for them to become more competent in the process," [15]. The term horse-racing here refers to the competition and strive for improvement within each person and therefore for the company as a whole. Haier's internal competitive mechanisms don't end there: "It also includes grading its staff within three alternative degrees, which are employee," "qualified "excellent employee," "probationary employee," according to the individual's achievements," [15]. This is referred to as "talent management" and is used to separate the under qualified employees from the most capable ones. By doing so, Haier got closer to its dream of being a top 500 company and is already a leader in its home country in more ways than one.

Baosteel is another Chinese SOE that has made remarkable gains in its environmental sustainability programs while also being a highly successful company in financial terms. Baosteel is a steel production company in China with 20% of the market share, despite producing only 6% of the steel (China Top 100 Green Companies Report, 2011) [16]. In an interview with Ms. Meng Liu (the Chinese representative of UN Global Compact), the chairman of Baosteel Group, Mr. XuLeijang, admitted that their industry tends to be a high polluter and produces more harmful emissions than other industries, such as medicine, and for this reason, it is important for his company to place

environmental protection as an important part of management in addition to competitiveness [18]. Their placement as number one on the list of top green Chinese SOEs is evidence that the company is sincere in their desires and efforts.

Baosteel proposed its environmental management strategy in 2009 and in 2011 issued a "Green Manifesto" detailing its concerns and treatments regarding clean production within the company. These steps were only the beginning. These achievements "are closely related with Baosteel's 'Blue Collar Innovation' culture. Baosteel is making efforts to implant the sense of innovation in all its staffs," (China Top 100 Green Companies Report, 2012). This culture includes the "employee innovation base" which was made as a platform for personnel to share knowledge, experience, and method training (somewhat similar to the Green Management Council Coex uses). In addition to using employee contact, Baosteel also uses "a systematic and complete evaluation and incentive system for its personnel to share innovative benefits. The innovators can even get up to 10% of the cost saving incomes as reward," (China Top 100 Green Companies Report, 2012). This type of business culture nurtures innovation and creativity within its employees, so much that four patents are made a day on average at Baosteel (with about 40% coming from front-line workers) and more and more of these are environmentally friendly products.

If one were to look at the report cited above, it may seem suspicious that Huawai Corporation was not included. While searching for more information, an employee of Huawai headquarters in Chinawas contacted. After contacting a man through Linkkedin, he replied: "Sorry for replying you late, unfortunately I have left Huawei few months back and honestly, fyi, Huawei HQ where I worked only show the world how green they are but actually it's far from what they publicized..." For this reason, SOEs with the most trust-worthy information were focused upon. It is curious to consider what exactly was different between reality and what they show to the world, but that is outside the scope of this paper.

## IV. CONCLUSION

After researching different management techniques used by various East Asian (and one American) companies, it is possible to come up a list of possible techniques for improving the search for sustainability within a company. For Coex, creating teams of employees that focus specifically on green technology and attending conferences with partner companies that have the same ideals has helped them to become leaders in sustainable management. Baosteel offers financial incentives and has made efforts to change the corporate culture climate of the business. Haier instills competition within its employees and listens to the concerns of the grass-roots workers before making major decisions. IBM is an exceptional case among the discussed companies, in that its size and wealth allow it to more easily spend time and money on creating new products, acquiring other companies, or financially backing other groups in order to gain partnership with them. For Chinese firms, many of which are relatively young, the strategies being used by other Asian firms are more likely to provide a plausible blue-print for steps they can take to have greater energy efficiency or other green measures.

Given the worsening condition of the Earth's environment, it is critical that more and more businesses adopt green management strategies. While at first it may seem impossible or too expensive, there are plenty of examples that have taken on the challenge, succeeded, and even saved money. This paper reviewed multiple companies that have done just that. Coming from backgrounds that vary in country, culture, size, management styles, and more, they have all been able to achieve high standards in sustainability. Their success proves that it can be done if the leaders of a company really want to put in the extra work to make it happen and if they are willing to delegate important tasks to more people. As Asian business cultures continue to evolve, more delegation and decision making are likely to be given to people beyond just the top managers, which should make green management easier to achieve. Either way, it looks like Earth can breathe a sigh of relief, knowing that efficient and effective green management is a reality.

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