

## **CHINESE AND KOREAN ENTREPRENEURS GOING GREEN**

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### **ABSTRACT**

Developing countries in Asia, including China and Korea, have faced serious environmental challenges as their economies have grown. We review in this paper information on the unique, environmental problems and regulatory systems developed by both the Chinese and Korean governments. We envision entrepreneurs as ingenious storytellers of green narratives and actionable ideas that can attract and sustain public interest as well as governmental investment. Thus, by emphasizing the role of entrepreneurs as change agents transmitting green narratives that spark the process of imitation, we attempt to answer our initial research question: What would be the emerging roles of entrepreneurs in actualizing government-mandated environmental policies in Asia? We propose an emerging role of entrepreneurs as creative change agents who fill the gap between unfulfilled goals and policies initiated by governments and actual programs enacted by them. We close our paper by emphasizing a more interdisciplinary approach for educating future entrepreneurs.

### **INTRODUCTION**

China is the fastest growing economy in the world and poised to be the next great superpower. The Chinese government is in the process of merging capitalist models with Communist ideology while fighting pollution and a widening income gap that has the potential to create schisms within Chinese society. For China, pollution is a current, not future, threat as increased manufacturing spews poison into air and water. Although Chinese leaders view the damage to the environment as merely a secondary problem to the threat that it poses to the continuation of the Chinese economic miracle, the people of China are demanding healthier air and water standards. Chinese entrepreneurs are heeding the challenge and world investors are backing their efforts.

For Korea, the idea of harmony between economic development and conservation of the natural environment was shared among a small circle of social philosophers and poets since 1970 (Park, 2000). Yet, it was during the early 1990s that sustainability or sustainable development slowly began to attract public as well as management scholars' attention. Since then, according to Park, various environmental schools of thought including land ethics, deep ecology, and eco-feminism

have been introduced in academia. For corporate leaders, however, the strategic importance of corporate sustainable management (CSM) has only recently gained attention. Efforts to design and implement ecologically clean technology and production processes are still reactive, mainly to abide by global standards. The current level of awareness and implementation of sustainable management practices among Korean small- and medium-sized enterprises (SMEs) and entrepreneurs is relatively low compared to Japanese and Chinese counterparts (Korean Enterprise Institute, 2005).

From above, we suspect that there exists a variation in terms of levels of governmental, corporate, and entrepreneurial initiatives to deal with environmental challenges among Asian countries. Apparently, Chinese and Japanese governments have taken measures that are more aggressive compared to their Korean counterpart. Thus, because of the national differences that have emerged from multiple factors, including their unique histories of socioeconomic development, their similar stages of economic development, and the clear differences in how they deal with environmental challenges, we have decided in this paper to concentrate on two countries: China and Korea.

In this paper, we have two goals. First, we seek to fill the gap between espoused governmental policies and goals, and actual programs that facilitate reaching those goals. Second, we envision a new role for entrepreneurs as storytellers of “green narratives” (Starkey & Crane, 2003) and innovative ideas.

## **ENTREPRENEURSHIP, INNOVATIVE STORYTELLING, AND GREEN NARRATIVES**

It has become evident that, facing environmental challenges, Chinese and Korean governments, corporations, and entrepreneurs have set different strategic priorities and followed different paths to deal with the problems. Nevertheless, both the Chinese and Korean governments have apparently tried to imitate the old paradigm of economic development initiated by the West in reproducing predominantly technology-centered public and legal discourses on environmental issues.

In this paper, we propose a new role of entrepreneurs envisioning and articulating “green narrative” (Starkey & Crane, 2003). In a seminal paper on the “evolutionary epic” written from a Darwinian perspective, Starkey and Crane argued that current management thinking and practices have contributed significantly to various ecological problems. They further claimed that the situation would get worse as long as we (i.e., policy makers, corporate leaders, and management educators) stick to a techno-centric paradigm. The techno-centric paradigm is a specific way of looking at one’s relationship with nature. Until recently, according to Starkey and Crane, the dominant assumption of the relationship between economic progress and nature has been the manipulation of the latter for the sake of the former.

To ameliorate the environmental problems, Starkey and Crane (2003) proposed an “evolutionary epic” that should challenge old mental models regarding the link between management and ecosystem. We fully endorse the arguments proposed by them. There should be more corporate as well as public awareness on the fundamental shift from the old paradigm of manipulating and

controlling nature to a new paradigm of coexistence of diverse species and ecoscience (Barlow, 1997; Wilson, 1992). We understand that sharing mere “green narratives” or “evolutionary epic” may sound too naïve or theoretical when we have to secure huge investment of financial and human capital to deal with environmental threats. Nevertheless, we believe in the adaptive and practical utility of storytelling as a means to improve our awareness of and shared vision for environmentally clean technology.

In the literature of diffusion of innovation and organizational storytelling, several scholars have argued for the adaptive functions of stories/narratives as a key medium for transmitting technological innovations or solutions to the various types of problems (e.g., Denning, 2001; Orr, 1996). Wilson (as cited in Barlow, 1997) also argued that humans cannot think without narratives because the human mind has a strong urge to organize experience in terms of narratives. From a cultural evolutionary perspective, a story is understood as a unit of information transmitted, replicated, or mutated (Dawkins, 1990). Essentially, humans are storytelling animals (Carroll, 2004; Sugiyama, 1996; Zunshine, 2006). Accordingly, we assert that stories filled with information about the process of developing new, clean technologies or new solutions to the specific, local problems will function as “green narratives”; thus, several Chinese entrepreneurial green narratives are included in this paper.

## **ENVIRONMENTAL CHALLENGES: THE CHINESE STORY**

According to the Kuznets curve, pollution and other environmental problems worsen during the early stages of economic growth and begin to improve as a country reaches middle-income status. Industrialization often begins with relatively crude production techniques, which are both easy to master and dirty to use. This is the current state of Chinese industry. Only after the industrial base becomes broader in terms of technological capabilities and access to more efficient production techniques does the quality of the environment begin to take on more importance (Kuznets, 1955).

How serious China’s environmental problems really are is difficult to discern. There are widespread complaints concerning dirty air and water that are likely to intensify as production escalates (Keng, 2006). According to the Energy Information Association, China is the largest producer and consumer of coal in the world and many of China’s large coal resources have yet to be developed. In addition, China has only a limited reserve of oil and natural gas available; therefore, production of coal will potentially increase in the future rather than decrease (U.S. Department of Energy, 2007). Currently, approximately 70% of China’s energy needs are provided by coal with consumption rates rising in 2006 to 2.4 billion tons. Unfortunately, in addition to powering China’s economic growth, coal is also choking the people of China (Economy, 2007).

However, since China is so heavily reliant on coal for cheap energy, projected rates of carbon related pollutants and greenhouse gases are expected to exponentially increase if China is to sustain current development goals (Smil, 2004).

In the area of sustainability of resource use, such as the ability of the natural system's capacity to replenish itself, China has much more serious problems. Water is one of the most critical resources because it is both highly polluted and currently being exploited in a way that is unsustainable, particularly in the relatively arid and highly industrialized northern provinces (Smil, 2004). According to a recent report from the World Bank, over half the water in the seven biggest river basins is unfit for consumption (A large black cloud, 2008).

The source of the Yellow River, itself the water source for 140 million people in a country of about 1.3 billion, is in crisis as scientists warn that the glaciers and underground water system feeding the river are gravely threatened. For the rest of China...it is the latest burden for a river saturated with pollution and sucked dry by factories, growing cities and farming – with still more growth planned.... China's leaders, worried about the unbridled growth, are trying to emphasize 'sustainable development,' even as questions remain about whether the party's rank and file can carry out priorities like curbing pollution and conserving energy. (Yardley, 2006)

In fact, China is quickly becoming one of the leading polluters in the world. The World Bank estimates the cost for China's air and water pollution at \$100 billion a year, or approximately 5.8% of GDP. The same report estimated deaths at 750,000 per year; however, after a complaint by the Chinese government, the estimate was removed (A large black cloud, 2008).

#### **KYOTO ACCORDS AND CLEAN DEVELOPMENT MECHANISM**

The Kyoto Accords represent the best international effort to date to contain the emission of greenhouse gases, which are directly linked to global warming and climate change. The Kyoto Protocol, adopted on 11 December 1997, is an agreement made under the United Nations Framework Convention on Climate Change (UNFCCC) that commits industrialized countries to stabilize greenhouse gas (GHG) emissions. The goal is to lower overall emissions of six greenhouse gases—carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydro fluorocarbons, and PFCs. The Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities" (Kyoto Protocol, 1997). Developing countries, including China and Korea, are exempt from the framework of the treaty.

China's classification has come under the magnifying glass as a developing country or a developed country. Western countries began to question to which category China belongs. In some instances, China purports that it is a developing country; in others, it purports that it is already developed. Although researchers believe that China has moved into the position of producing the largest amount of greenhouse emissions in the world, China perceives itself, under the Kyoto Protocol (1997), as a developing country and insists that the emissions level of any given country is a multiplication of its per capita emission in relation to the size of its population. China has a population control measure in place and claims low emissions per capita based on current population; thus, it considers itself exempt under the developing nation framework (Yihong, 2007).

The Clean Development Mechanism (CDM) was designed under the Kyoto Protocol (1997), Article 12, to encourage financial transfers from developed countries (with emission-reduction or

emission-limitation commitments) to developing economies to implement emission-reduction projects. According to the World Bank, CDM prompted investments of \$59 billion in 2007, but is scheduled to halve and then shrink to almost zero by 2010. The depletion of the program stems from the impending expiration of the Kyoto protocol at the end of 2012. The treaty required developed nations to cut greenhouse gas emissions by 5% below the 1990 level (excluding the U.S., which never ratified it). At the same time, the treaty incorporated developing countries into the plan to reduce global warming by setting up the CDM.

The plan would allow wealthy governments or businesses to pay for projects that would cut emissions in poorer developing countries to earn certified emission reduction (CER) credits, each equivalent to one ton of CO<sub>2</sub>, which could then be counted towards meeting the plan's domestic emission reduction targets at home. A CDM project might stimulate sustainable development and emission reductions, while allowing industrialized countries some flexibility to meet emission reduction and limitation targets.

There are currently more than 3,000 CDM projects in progress worldwide, 60% of which are in China (A moment of truth, 2008). Companies can propose anything that would reduce greenhouse emissions, but the system is difficult to navigate. There is only one official restriction, "additionality," which means that, to be eligible, a project must be viable because of the extra revenue that selling credits will produce. Project developers must hire an approved auditor to review their designs before they submit them to the overseeing board of CDM, and auditors must check on the implementation of the project before developers can apply to the board for credits or certified emissions reductions. Until April 2007, the executive board of CDM accepted 82% of proposals without question and approved over 96% of projects.

According to Michael Wara of Stanford University, in some cases the CDM gives emerging countries an excuse to avoid implementing climate-friendly regulations, including improvements they could easily afford (A moment of truth, 2008). Governments justify their decision to do nothing by asking, "If someone else is willing to pay to make the same improvements, why spend government money?" China accounted for the most CDMs, 524 projects in 2006, worth almost \$5 billion (Green shoots, 2008). In 2007, China collected \$5.4 billion or 73% of the total money allotted for CDMs (Melting Asia, 2008). Relatively few green technologies are competitive without subsidies or incentives of some sort. The Chinese government has quickly realized the benefit of CDMs.

#### **FIFTEENTH FIVE-YEAR PLAN (2006 ñ 2010)**

New green urban development projects have begun in Shanghai, Beijing, and Huangbaiyu. The Dongtan project on Chongming Island near Shanghai was clearly outlined in the government's Fifteenth Five-Year Plan, which included acceleration of infrastructure construction, improvement of the investment environment, and support for a trial development that will eventually be home to half a million people living in green buildings powered by renewable energy produced from wind, bio-fuel, and recycled city waste (Steffen, 2006). Hydrogen fuel cells will power public transportation and a network of cycling and footpaths will help the city to achieve its close to zero vehicle emissions goal. Farmland will use organic farming methods to grow food. Dongtan will eventually become a city of three villages with the first phase for as

many as 5,000 people to be completed in 2010. The project will be implemented in several phases and should accommodate 80,000 people by 2020 and half a million by 2050 (de Châtel, 2007).

Dongtan will be the world's first eco-city. However, more importantly, governmental agencies will document the research on Dongtan's development strategy for future developments that will incorporate environmental and ecological protection first. All materials, technology, and management used in the Dongtan project must meet international environmental protection standards. The research on Dongtan's development strategy contains many important elements for the future of China and the world.

Architect Alejandro Gutierrez stated (O'Reilly, 2006),

All over China...peasant farmers are becoming urban citizens, working in factories, doing urban service jobs and so on. So China has initiated this extraordinary process of urbanization. They're expecting to build about 400 cities...in the next 20 years. Urbanization is becoming the dominant factor in what is happening in China and how China, ultimately, will affect the rest of the world.

Chinese entrepreneurs have turned to world investors to finance their own innovative projects.

#### **GREEN NARRATIVES OF SUCCESSFUL ENTREPRENEURIAL VENTURES IN CHINA: SOME EXEMPLARS**

With a projected population of 1.4 billion by 2050, China is under increasing pressure to find sustainable solutions to waste management and resource use. For entrepreneurs like Wu Hao, founder of Landwasher Science & Technology Development Co., Ltd., this is a perfect opportunity to create a product that meets the special needs of China. Wu's company designs energy efficient, water conserving toilets. Since its inception in 2001, Landwasher has grown to become one of China's leading companies. The special purpose agent and sterilization process used in Landwasher's toilets requires no water and very little electricity to flush them. "Because the special-purpose agent is free of heavy metal and phosphorous, discharge composts quickly and poses no harm to the environment" (Last, 2007, p. 1).

Wu is but one example of a new generation of green business entrepreneurs that are sweeping through China. Landwasher was one of four big winners in the Fourth New Ventures China Investors Forum, which was held on 31 May 2007 in Beijing. According to the panel of judges (representatives from China Environment Fund; BoozAllen Hamilton; Citigroup; AsrIA; Shanghai Pudong Development Bank; and the International Finance Corporation), Landwasher's eco-friendly toilets are in heavy demand specifically in rural locations where the infrastructure is less than perfect. Landwasher has also been selected by the Olympic Organization Committee to manufacture and install mobile toilets for the Olympic Games in Beijing. Wu Hao states, "Assuming all of our country uses water-flushing toilets, not even the Yangtze River and the Yellow River will be enough" (Last, 2007, p. 1).

The other three "green companies" chosen at the Fourth Investor Forum were (a) Shenyang

SMEs Credit Guarantee Center that provides loans to small and medium sized enterprises; (b) Tianjin Lotus Biological Technology Co., Ltd. that develops and produces a radically new technology for environmentally friendly organic fertilizer that needs to be applied only once during the entire growing cycle and generates 15–60% increases in yield; and (c) Beijing Yusen Jaiyu Environment Protection Technology Co., Ltd., that develops and produces 100% biodegradable ‘polymers’ and granule material made from discarded straw, shrimp, and crab shells. The planting bags will help to reverse desertification in rural ecosystems (Newberry, 2007). “China’s State Forestry Administration estimates that desertification has hurt some 400 million Chinese, turning tens of millions of them into environmental refugees, in search of new homes and jobs” (Economy, 2007, p. 41).

Solar-powered water heaters are another entrepreneurial venture that is improving life in China. Himin Solar Energy Group Co., Ltd. was founded in 1996 and is the main producer of solar-powered water heaters. The Chinese government is hopeful that expanding the use of solar powered hot water heaters to hospitals, schools, and restaurants will reduce China’s addiction to the use of coal as the dominant energy source. Integration of solar hot water systems into building designs has become a recent trend in China with some large-scale projects also adopting the systems for use in high-rise buildings and new residential areas. Although only capturing 11% of the market share, \$2.6 billion worth of solar-powered water heaters were sold in China in 2006/2007 (Li, 2007).

## **ENVIRONMENTAL CHALLENGES: THE KOREAN STORY**

As noted earlier, the highest CO<sub>2</sub> emissions in Asia and the Pacific region in absolute terms come from China. Yet, in 2005, both CO<sub>2</sub> emissions per capita and the consumption of ozone-depleting substances per capita were higher in Korea than in China (Statistical Yearbook for Asia and the Pacific 2007, 2007). Considering the highest pollution intensity of small and medium sized enterprises (SMEs) and the gap between the governments’ planning and rapid development of SMEs in developing countries, increasing levels of air and water pollution in Korea is a serious challenge for SMEs that often lack resources as well as awareness about the importance of environmental management. Furthermore, greenhouse gas emission has been one of the key environmental issues in Korea and, as of 2001, the air quality of Korea ranked 72<sup>nd</sup> out of 122 countries according to the Environmental Sustainability Index (Ahn, 2007).

## **ENVIRONMENTAL POLICY AND REGULATORY SYSTEMS IN KOREA**

Since the early 1990s, Korean government, business circles, and academic associations have sustained efforts to promote an environmentally friendly industrial structure and clean technology. The key milestones of environmental management in Korea, according to Lee (2005), are described below:

- Environmental Manifesto of Korean Business Circle (May 1992)
- Participate in ISO/TC207 for ISO 14000 Series (1993 )
- Introduce the Environmentally Friendly Company Certification Scheme: Ministry of Environment (MOE) (1995)
- Enact the Promotion Act for Conversion to Environmentally Friendly

- Industrial Structure: Ministry of Commerce, Industry, and Energy (MOCIE) (1995)
- Principles and Guidelines on Environmental Management: Korea Chamber of Commerce and Industry (1997)
- Charter for Environmental Management towards Sustainable Development: Federation of Korean Industries with four other Industrial Associations (2000)
- Korea Business Council for Sustainable Development – KBCSD (2002)
- Korea Environmental Management Association – KEMA (2002)
- Business Institute for Sustainable Development – BISD (2005)

The popularity of green management, environmental management, or sustainable management reflected by some indicators (e.g., media coverage, publications, and academic conferences) is probably due to governmental and corporate leaders' awareness of increasing external pressure to comply to global standards to survive in global competition (e.g., ISO 14001 that provides the *requirements* for an environmental management system [EMS]). In fact, until now, Korean corporations have mainly focused on the compliance of global standards and external regulations (e.g., Registration, Evaluation, Authorization and Restriction of Chemical substances [REACH] and Restriction of Hazardous Substances [RoHS]) imposed by importing countries and regions (Jung, 2007).

In Korea, the Ministry of Environment (MOE) and the Ministry of Commerce, Industry, and Energy (MOCIE) are the two major governmental bodies that have developed various policies and measures related to sustainable management (Lee, 2005). The core mission of both MOE and MOCIE is to improve the quality of living for both present and future generations in Korea. Accordingly, the Presidential Commission on Sustainable Development has conceptualized sustainable development in terms of three pillars: economic prosperity, social unity, and environmental sustainability (Ahn, 2007).

As of 2005, MOE has developed Environmental Cost Accounting and Reporting Guidelines and Environmentally Friendly Company Certification Schemes for approximately 150 companies (Lee, 2005). According to Lee, the MOE has also initiated and issued Environmental Labeling (i.e., Type I and Type III), Green Purchasing Law & Network, and the Green Building Certification.

In addition, the MOCIE has supported and promoted cleaner technology development in Korea. By late 2004, approximately 2,600 companies had been awarded ISO 14001 certification by the Korean Accreditation Board (KAB) under the supervision of the MOCIE. There were also approximately 20 certification institutions and 250 auditors in Korea (Lee, 2005). Regarding the active roles and status of MOCIE, Ahn (2007) wrote:

Korea's industrial environmental policy was based on '*The Promotion Act for Conversion to Environmentally-Friendly Industrial Structures*,' enacted in December 1995 by MOCIE. Its purposes are not only to encourage environmental management in Korean business circles through environmental management systems like ISO 14001 and cleaner production, but to improve eco-efficiency continuously. The MOCIE has also established and implemented the '*Comprehensive Action Plan for Environmentally-Friendly Industrial Development*' from 1996, and based on it, MOCIE established the

Korean National Cleaner Production Center (KNCPC) in 1999....In connection with developing and diffusing cleaner production technology, the National Cleaner Production Center provided about USD 170 million dollars to more than 1,320 cleaner production technology development projects from 1995 to 2003. (pp. 58–59)

## **CURRENT STATES OF ENVIRONMENTAL MANAGEMENT IN KOREA**

The sustainable development of a nation-state highlights the strategic importance of the simultaneous pursuit of economic growth, environmental protection, and social equity (Ahn, 2007). At the corporate level, Ahn (2007) circumscribed the conceptual boundary of corporate sustainability management (CSM) to eliminate conceptual confusion as follows:

Sustainability development, environmental management, corporate social responsibility, stakeholder engagement, and corporate accountability may be the five pillars of corporate sustainability management (CSM). The CSM is an evolving concept that managers are adopting as an alternative to the traditional growth and profit-maximization model.... While corporate sustainability recognizes that corporate growth and profitability are important and basically the same point of view, it also requires the corporation to strive to have a relationship with a wide range of stakeholders in order to reach the societal goals, specifically those relating to sustainable development; environmental dimensions, social dimensions, and economic dimensions. (pp. 97– 98)

Simply put, CSM is a new strategic paradigm in management and its conceptual basis is to maximize the Triple Bottom Lines (TBL). From the TBL perspective, the value of a company is expected to be assessed simultaneously according to three areas of corporate responsibilities: social, environmental, and economic (Ahn, 2007; Jang, 2004).

From the CSM perspective, historically Korean corporate circles have put greater emphasis on the financial performance of a corporation overlooking social and environmental responsibilities. Given that the prime mover of Korean government-planned economic development in the early 1960s was the national longing to be free from absolute poverty, it is not surprising to find that a majority of corporate stakeholders in Korea are still not well aware of the meaning and strategic importance of CSM. For instance, Jang (2004) found that approximately 70% of his participants ( $N = 98$ , 66 employees, 32 customers and investors) in 18 Korean companies in manufacturing, financial, telecommunication, and service industries had not heard about CSM at all. Quite intriguingly, participants in Jang's study were also more favorable to the companies that put greater value on financial and social responsibility than the companies that emphasized environmental responsibility. Thus, it becomes clear that the TBL perspective as a corporate strategy has not been well accepted by the public or even corporate leaders in Korea. In other words, financial performance of a corporation is still perceived as the primary indicator of its corporate success.

## **DISCUSSION AND CONCLUSION**

Pollution caused by rapid growth is a serious environmental challenge in China and Korea. The government of each country has created policies for change, but there have been gaps between

the policy decisions and implementation of the policies themselves. In China, this gap has been filled by entrepreneurs who work with the government through acquisition of clean development mechanisms or governmental joint ventures (i.e., the Dongtan project), or through entrepreneurial endeavors in conjunction with world investors such as those outlined in the green narratives of successful entrepreneurial ventures.

To world investors, pollution represents an enormous opportunity for clean technology solutions. According to the Cleantech Group, an industry research body, venture capital investment in China's clean technology increased from \$170m to \$420m between 2005 and 2006. Entrepreneurs in China are well aware of the environmental problems that have been created by dirty air and water. They are taking a proactive stance, creating new environmentally friendly products to reverse the detrimental effects of rapid expansion, and drawing on the financial community of the world to underwrite their endeavors.

The future of China is filled with challenges and opportunities for entrepreneurs who want to improve the lives of Chinese people. The Kuznets curve might have reached its peak. People are demanding healthier air and cleaner water; entrepreneurs are grasping these new opportunities and moving forward with innovative ideas and creative new endeavors as China goes green. Green buildings, green cars, wind power, solar energy, and new models for measuring economic growth, that account for impact on the environment, are all on the horizon. A green China is the vision for the future, but in the view of Chinese leaders, damage to the environment is a secondary problem. The threat that pollution poses to the continuation of the Chinese economic miracle, public health, social stability, and international reputation is of greater concern (Economy, 2007). As Chinese leaders try to reverse the already-prevalent damage, Chinese entrepreneurs will play an important role.

For Korea, the initial momentum for proenvironmental change has been increasing competition and external pressures for compliance to global standards. However, public and corporate interests in corporate sustainability management have recently increased; for instance, large corporations, including Samsung (established the Samsung Global Environmental Research Center in 1993), Hyundai Motor, POSCO (formerly Pohang Iron and Steel Company), SunKyung (SK), Lucky Goldstar (LG), and Korea Telecom (KT) have initiated various eco-friendly management practices (Song, 2007). Yet, by 2005, only two Korean companies, Samsung SDI and POSCO, were included in the Dow Jones Sustainability Index (Ahn, 2007). According to Ahn, considering the current state of affairs, it seems that Korean companies have mainly been interested in obtaining the certificates of environmental management systems. Thus, overall, due to the lack of accumulated data and experiences in corporate sustainability management (CSM), Korean corporate circles (large companies and SMEs) are still in the early stage of implementation of CSM compared to other leading companies in CSM worldwide (Ahn, 2007; Jang, 2004).

For Korean corporate leaders, it is critical to realize that CSM requires a long-term perspective and support systems. The idea that environmental management is merely a cost factor is no longer tenable: the environmental viewpoint must be actively incorporated into the entire corporate vision with top executives' passion and commitment. Considering Korea's heavy dependence on foreign exports for economic growth, it is critical that the Korean government

should play a more active role in developing policies and programs to help entrepreneurs and SMEs develop clean technology and sustainable green management practices.

It is also worthwhile to note fewer green narratives are publically shared by Korean entrepreneurs compared to their Chinese counterparts. In fact, we have found very few published (i.e., publically shared) green narratives of Korean green entrepreneurs. In fact, compared to its Japanese and Chinese counterparts, it seems that a majority of Korean SMEs are financially challenged to initiate independent programs to develop environmentally sustainable product processes. For instance, according to a report by the Korean Enterprise Institute (2005), the current level of Supply Chain Environmental Management (i.e., a management practice emphasizing cooperation between manufacturers and suppliers in production design and in recycling the materials for reusing the products) of Korean companies (32.3%) is relatively low compared to those of Japanese (52.3%) and Chinese (68.9%) counterparts. It is obvious that government, large corporations, and SMEs in Korea should be more collaborative.

Nevertheless, there are also good indicators for changes being made in Korea. Since 2000, management educators have recognized and started several graduate-level programs specialized in environmental management. The Korea Environmental Management Association (KEMA) was established in 2002 and a few academic institutions have launched environmental management programs including Eco-MBA Program of Korea Advanced Institute of Science and Technology (KAIST), the Environmental Management Forum of Seoul National University, and the Environmental Management Academy of Hanyang University (Lee, 2005). The Environmental Management Forum of Seoul National University has specifically aimed for government, political, and corporate leaders.

Finally, given the deeply interdependent nature of environmental challenges faced by most industrial nation-states, we emphasize the critical role of systematic thinking, thus a more interdisciplinary approach for educating future entrepreneurs (e.g., Atwater, Kannan, & Stephens, 2008). Fruitful, cross-disciplinary cooperation among eco-biology, economics, engineering, and management emerged from a new paradigm of eco-science. Evolutionary epic might sound too idealistic at this point; yet it must be a major first step in the changes we all hope for.

## **IMPLICATIONS**

Although China and Korea are both still highly polluted, some lessons should be learned by Western governments and entrepreneurs. The government of China has recognized that pollution must be abated if its people are to live healthy, productive lives. The Chinese government, in conjunction with business, has invested in projects such as Dongtan as a first step in the right direction.

If this project is successful, the strategy will be followed to complete many more Eco-Cities throughout China using renewable energy produced from wind, bio-fuel, and recycled waste products. Dongtan will also be experimenting in hydrogen fuel cells to power public transportation as well as creating cycling and footpaths to help the city achieve a goal of close to zero vehicle emissions. Food will be grown organically. Chinese governmental agencies will be

documenting the research on Dongtan's development strategy for future developments. In this case, Chinese governmental agencies are working closely with foreign business to create a total green environment. This is a great strength of the Chinese government—to bring in business people who have the technology and the knowledge to create beyond the capacity of its own citizens and then to learn from the experience and to reuse the knowledge to produce new Chinese business enterprises.

However, the knowledge gleaned from the Dongtan project will not be used merely in China. This project is being engineered and designed by Arup, a London based firm. If the project is successful, the knowledge will be used worldwide. In this sense, China is a test tube for future green development for the rest of the world. The result could be cleaner air and water for all the world's citizens.

Although it has air and water that is nearly as polluted as China's, Korea has not proceeded in the same direction. The lessons that can be learned from the Korean government must be directed toward the education of future generations. This also is an important lesson for Western governments and entrepreneurs. Korea is offering graduate-level programs that specialize in environmental management for business majors; environmental management is not a separate category, but one that must be integrated into the thinking of Korea's future business leaders, SMEs, and entrepreneurs. By placing the environment firmly within the thinking of future business leaders, the planted seed will grow and develop over time. When this new legion of business scholars enters the world of business, preservation of the environment will be already deeply embedded in their psyches.

Knowledge is not a one-way street—from developed to developing countries—but rather is a multilane thoroughfare, moving back and forth between countries and business people worldwide. Experiments being conducted in China will have global implications. We will learn from their experiments and they will learn from our knowledge. Thus, ultimately, if pollution can be abated in China through experimental green development and in Korea through educational endeavors, the western world will breathe better air, too, regardless of who takes the lead.

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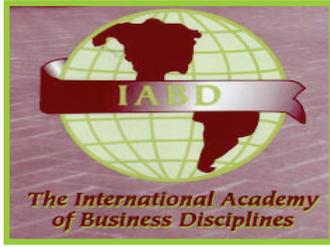
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