Corporate Adoption and Implementation of Innovative Environmental Policy Measures in China

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B.S. in Environmental Science
Peking University (2002)

Submitted to the Department of Urban Studies and Planning
in partial fulfillment of the requirements for the degree of

Master in City Planning

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2006





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ABSTRACT

Since the1970s, the governments in many countries including China have begun to implement systematic environmental policies aimed at curtailing industrial pollution. During the past three decades, the traditional environmental policies have evolved from simple directives regarding emission limitations into comprehensive packages using various market-based economic instruments, such as taxes and emissions trading. However, with the environmental degradation becoming more and more serious, these traditional approaches have become inadequate. Several innovative measures, including voluntary action, collaborations between stakeholders, and dissemination of information regarding industry behavior, have emerged in recent years in many countries. This study explores how these three innovative measures have been implemented in China. The thesis focuses on how these measures have encouraged private corporations in China to improve their environmental practices. Three case studies are conducted to show how these three policies work to overcome the inefficiencies of the traditional policy approaches. This study also examines the limitations inherent in these measures. Corporate collaborations with environmental non-governmental organizations, the International Standards Organization 14000—an environmental management systems certificate program— and the China Environmental Labeling Program, are studied in detail to provide examples of the limitations and what they imply for the future. This study finds that the inherent demands have motivated these enterprises to adopt the innovative measures are different. At the same time, these measures have various levels of effectiveness, challenges and social benefits.

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## Acknowledgements

I sincerely thank my academic advisor and thesis reader, Professor JoAnn Carmin and Professor Jim Hamilton, for giving me advice. Professor JoAnn Carmin has given me a great deal of patience, knowledge, and instruction during my study at MIT. She taught me not only about research and civil society, but also how to get through the difficulties at the end of the process by tirelessly giving me an opportunity to succeed.

Without the support of my family, I could not have finished this thesis. Thanks to every member of my big family for their love and support. I dedicate my thesis to my entire family, including my dearest grandfather who passed away when I started preparing for this study.

I am grateful to many Chinese individuals, companies, and organizations for their correspondence and assistance in the telephone interviews. Ms. Bi Lei from Shell Oil (China), Mr. Michael Zhou from ITT-Conan (Tianjin), Mr. Duan Zhimei from Nippon Paint (China), and Ms.Li Junhui, Ms. Li Jian, Ms. Li Jie from the Friends of Nature have given me much help in collecting data and information for the case studies.

I also wish to express my sincere thanks to my English teacher—Patricia Brenneck—and all faculty members, especially Thalia, in the Writing Center at MIT. They provided extremely useful comments, suggestion, and corrections to my writing. There are many thanks to my friends Tian, Julia, Judy, Jennifer, Ham, Peiyuan, Wen Bo, and many others who have given me a great deal of encouragement, advice, as well as language assistance.

## Introduction

Since the 1970s, environmental policy has traditionally consisted of mandatory directives regarding emissions limitations from governments in many countries. However, as environmental problems become more complex, traditional approaches are becoming less efficient. During the past few decades, traditional environmental policies have evolved from simple directives regarding emission limitations into comprehensive packages using various market-based economic instruments, such as pollution taxes and emission trading.

In addition to these market-based instruments, several newer measures have recently appeared. These policy measures fall into three categories: voluntary actions, collaborations between stakeholders, and dissemination of information regarding industrial behaviors (De Bruijn & Norberg-Bohm 2005). Instead of relying on economic incentives or disincentives, these new approaches are designed to promote dialogues, consensus-building, and voluntary action as means of effecting environmental change.

This study specifically focuses on newly emerging environmental policy tools which involve neither direct regulation nor market-based economic incentives. These new measures require the involvement of both the public and private sector. Governments need to improve their mechanisms for making policy decisions, and enhance the implementation of the policies they make. On the other hand, the private sector is being expected by the public to play a more proactive role in innovating and incorporating new technologies in the production process, in order to protect the environment.

China's rapid economic growth over the last two decades has resulted in massive environmental degradation. For example, according to the World Health Organization (WHO), by 1998 seven of the ten most polluted cities in the world were in China (WHO

Report 1998). At the same time, China's remarkable economic development has contributed in diverse ways to the growth of innovative environmental policies. As in other countries, traditional regulations have not been fully effective. As a result, the Chinese government is developing new policy tools and encouraging the adoption of international norms and instruments. My research focuses on China's current implementation of environmental policies and investigates general trends in policy innovation.

In this study, I examine in detail the situations and practices of environmental policy innovations in China. China's adoption of innovative environmental measures is not simply a reaction to newly emerging environmental problems or an attempt to offset the perceived deficits of traditional approaches. Rather, the adoption of new policies and reforms can also be described as a result of international policy transfer and diffusion (Tews, Busch, & Jorgens 2003).

The core of the thesis is to ask how these three innovative measures—collaborations between stakeholders, voluntary actions, and dissemination of information regarding industrial behaviors—have been implemented in China, and how these measures have encouraged private corporations in China to improve their environmental practices and investment behaviors. My analysis explores how these innovative measures can incorporate social environmental concerns into the entrepreneurial decision-making process. I highlight key areas of decision-making and identify the major trends in industrial environmental practice, such as incorporating new technologies for pollution clean-up. This research is not intended to be exhaustive regarding the current situation in China. Rather, it simply seeks to provide a general picture of recent emerging environmental policy trends. This is a focused study, and the analyses for the three

innovative measures concern only their application to the environmental practice of selected companies. However, the findings about how innovative measures have driven specific companies to improve their environmental practice in one small area can provide insights into broader issues of environmental protection in current China.

The research methods in this thesis consist of case studies, analysis, and discussion. First, I conducted a literature review to gather data about the characteristics of environmental policies implemented in China. Then, I have analyzed each of the three innovative measures by conducting both a literature review and case studies. Three private companies from different industrial sectors in China were selected. Each of them has conducted, or is currently conducting, environmentally friendly activities by using one of the three environmental policy measures. I explore what the specific policy measure is, how well it has motivated the companies to improve their environmental practices, and what limitations still exist with each measure. A case study for each policy measure is conducted in order to further examine industrial motivation and environmental practices. I look at the frame of how environmental concerns are incorporated into industrial behaviors and what the consequent benefits and problems are, as well as the other aspects of monitoring effects, measuring, and evaluating.

Corporate collaborations with environmental non-governmental organizations (NGOs), the International Standards Organization (ISO) 14000 (an environmental management systems certificate program), and the China Environmental Labeling Program are studied in detail to provide examples of achievements, limitations, and what they imply for the future. Shell Oil China Company, ITT-Conan (Tianjin) company, and Nippon Paint (China) were selected as case studies in this research because these companies are taking leading positions in collaborations with citizen groups, in ISO 14000 certification, and in

environmental labeling within their industrial sectors.

Chapter One describes the general definitions and current situations with traditional regulation and market-based environmental policies in China. Chapter Two summarizes the inefficiencies of these policy approaches for newly emerging or more complicated environmental problems. Each of the following three chapters looks at one of the three innovative environmental measures: voluntary actions, collaborations between stakeholders, and dissemination of information regarding industrial behavior. Chapter Six sums up these three innovative environmental measures, and makes policy recommendations regarding them. Although the traditional policies will keep their leading roles in the environmental protection movement in China, innovative policy measures are good complements to compensate for the deficiencies of the traditional approach on different levels of benefits and impacts.

# Chapter 1 Chinese Environmental Policy Evolution

## 1.1 Background

With a population of 1.3 billion and a 10 % average annual industrial development rate, China is currently the largest developing country in the world. During the last two to three decades, China has been experiencing extraordinary economic development. By 2006, China is expected to surpass the United Kingdom and France, and become the fourth largest economic body in the world (People's Daily 2006). It also plays an important role in the global supply chain because the country is the largest host of manufacturing operations in the world, while also being a large consumer for many goods, such as food, coal, iron, and oil.

Despite its economic success, China is a large country with limited natural resources and large consumption of those resources. Existing environmental problems and the loss of natural resources are already severe. For example, China has only 8 % of the world's fresh water supply (WHO Report 1998). According to China's State Environmental Protection Agency (SEPA), 50 % of the river systems in China have become polluted and the airborne concentrations of dust and suspended particles in most Chinese industrial cities exceed environmental standards by several hundred percent. Air pollution is an urgent problem in China's urban areas. According to the statistics from the World Bank and WHO, at least half of the world's most polluted cities are located in China now and seven Chinese cities appear on the top ten most polluted cities in the world. At the same time, environmental degradation costs China 3 % of its GDP each year (World Bank Report 2005).

Another challenge for the Chinese government's policy-making is that, while learning lessons from the Western countries, China cannot follow these nations by experiencing

the practice of "pollute now and treat later" because of China's large size and high energy consumption. Therefore, the Chinese government has to attempt comprehensive approaches in pursuing a sustainable growth pattern that will be unique for China's own social and economic situation.

Furthermore, since China is geographically large, pollutions can be transferred into the other countries, making the pollution global. The Chinese government has received increasing international pressure because of its environmental deterioration. For example, the dust storms in spring which come from the desertification of Mongolian areas have emerged in recent years as a severe problem for public health in Beijing, Tianjin, and some other cities. Due to the global atmospheric circulations, countries such as Korea and Japan are also affected by dust storms from China (Day 2005).

During the last three decades, Chinese government has put significant efforts in environmental protection and the whole society has made progress in many aspects of the protection agenda. Now, the Chinese government has already established six national-level laws for environmental protection and nine natural-level laws for natural resource rehabilitation. Since the 1970s, the central government has announced 29 environmental guidelines, more than 70 regulations, 375 environmental standards, and more than 900 local regulations (SEPA 2006). The Chinese government is also encouraging the environmental protection to become an industrial sector. Currently, China has more than 8,700 private enterprises doing businesses related to environmental protection facilities. Now, more than 1.1 million people are working in this sector and deriving annual income which is 1 % of the world's revenue. Moreover, the Chinese government has established connections for environmental protection with 24 countries by signing 29 international environmental agreements or memos (SEPA 2006).

### 1.2 Milestones

The Chinese government began to pay attention to environmental protection issues in 1973, influenced by the 1972 United Nations Conference on Human Environment. During the past three decades, the government has put extensive efforts into environmental policies and protection strategies. There have been five national level decisions that can be viewed as milestones shaping the evolution of Chinese environmental policy. These five decisions also reflected how economic development and environmental protection grow together.

Since 1981, the State Department of China has released five national level decisions on environmental protection and then implemented these decisions from the central to the lowest level of government. Moreover, the variation among these five national decisions reflects the significant social, economic, and environmental changes in China since the economic reforms at the end of 1970s. On February 24, 1981, the State Department of China announced the first national decision regarding how to protect the natural environment during the economic transition period. By making this decision, the Chinese government first recognized its mistake of ignoring environmental protection during the previous decades of development.

On May 8, 1984, the Chinese government announced its second key decision on environmental protection. Based on the first decision, the second one further regulated the government's responsibilities in environmental protection. For example, by that time a national committee for environmental protection had been established and was managed directly by the State Department of China. The second decision stipulated that each industrial or social sector in each department must assign specific governmental officials to regulate and manage the environmental practice in their own fields. At the

same time, each level of government should also assign officials to be responsible for environmental protection issues (SEPA Regulatory Documents Achieve, 1984)

On December 5, 1990, the third key decision was announced to the public by the State Department of China. This decision had two significant advances over the former two. First, the 1990 decision enlarged the government's environmental concerns from only industrial pollution to natural resource management, environmental ecology, and urbanization. Furthermore, this decision strengthened the collaborative efforts from different contributors. For the first time, the government called for developing new environmental technologies, public environmental education, and international cooperation. On August 3, 1996, the government made another decision, which stressed again that environmental protection should be consistent and compatible with economic and social development in China.

The most obvious difference between the most recent decision, which was made in December 3, 2005, and the previous four decisions is that the government changed its wording to stress the importance of requiring the compatibility of economic development with environmental protection. This small reversal of the relationship between environment and economics implied a significant fact: the government has become aware that when there is a conflict between the environment and economics, the latter is usually chosen by local government as a priority. For this reason, the Chinese environment has continued to deteriorate even though the total investment in environmental protection has increased substantially. Now the Chinese government has determined that environmental protection is more important than economic development in the country when there is any conflict between the two.

This most recent national decision on the environment is expected to influence the

Chinese society in many ways. First, the decision can help enhance China's environmental legal system. Second, the national level decision-makers have already recognized that environment should be more important than economics. Concerns or uncertainties on environmental impact will probably become the only reason to postpone any controversial regional project. Third, the government's recent emphasis on environmental protection may accelerate the transformation of economic structure in China. Regional development projects, with high investment and heavy pollution, will have less support, and projects with high technology and less pollution will be more welcomed.

### 1.3 Policy Structure

Although the Chinese government has learned about environmental protection from the extensive experience of other countries, such as the United States and Europe, the basic structure of the environmental policies in China has its own features. The basic structure of environmental policy of China can be generalized into three principal policies and eight core regulatory programs. The three principal policies include: first, that pollution prevention, the integration of prevention, and polluting control are always priorities; second, that industrial polluters are responsible for pollution elimination; and third that the Chinese governments on all levels should strengthen environmental management. The eight core regulatory programs have evolved from the three principal policies and are as follows:

1. **Environmental Impact Assessment** (EIA) is an approach that the Chinese government took from the western industrialized countries. It was implemented in China at the end of 1970s. The EIA requires an evaluation of the environmental impacts of any enterprises which will discharge pollutants. Local environmental protection agencies

have the authority to accept applications from enterprises, review the environmental assessments, and decide to give approval or not. Without the final approval from the government, any development project cannot be executed and constructed.

2. **Three Synchronization Policy** means that for any industrial project, during the design, construction, and operation period, the pollution treatment facilities must be installed with the overall project. This policy applied to all industrial sectors and individual factories. The Three Synchronization Policy is designed by the Chinese government and is regarded as a complement to EIA. The reason is that the Chinese government wanted to take the lesson from the United States and other developed countries which have experienced a period of severe pollution before the environmental improvement and conservation. Therefore, the synchronization of protection and construction was specially stressed in the Chinese regulatory structure for the environment.

3. **Pollution Discharge Fee** has been the core of the economic instruments of entire policy structure in China since 1979 and it was the first economic instrument implemented in the country for environmental protection. Pollution discharge fees are demanded of industrial enterprises which discharge of pollutant gas, wastewater, solid waste, noise, and radioactive wastes in excess of national standards. This discharge fee system aims to encourage industrial polluters to improve their production process and help local government accumulate more revenue for pollution clean-up. The pollution discharge fees are compulsory for industrial enterprises and cannot be excused because of any other instrument.

4. **Discharge Permit System** is another economic instrument that the Chinese government took from the experience of other countries. Under this system, all the

industrial waste resources must receive a permit from the local government before discharging any waste. Now in China, this system particularly focuses on the disposal into oceans, noise in cities, and waste water.

5. **Environmental Responsibility System** is created by the Chinese government according to the real situations in China. The system regulates that who make economic and social development decisions should also take the responsibility for environmental protection. Local governments implement this system by signing contracts with higher level environmental protection agencies and the industrial polluters who are under their management.

6. **Assessment of Urban Environmental Quality** is another policy instrument for pollution control focusing on urban environment in China. This policy has been created by the Chinese government due to rapid urbanization and corresponding urban environment deterioration. Under this regulation, environmental protection agencies give annul assessments which are based on twenty criteria covering air, water, solid waste, noise, and afforestation for each city (Sinkule and Ortolano 1995). By the end of 2005, SEPA has conducted this annual and quantitative assessment for environmental quality in 47 major cities. In addition to the national level assessments, provincial level governments also have implemented this program in a total of more than 600 hundred cities in China (SEPA 2006). From 2006, SEPA made a significant reform for the Assessment of Urban Environmental Quality program. The criteria were reduced from 20 to 16. However, as a newly significant factor, public satisfaction was added into the system (Chinese Government 2006).

7. **Centralized Pollution Control** was designed and implemented by Chinese government because the government has been aware that regional pollution control

cannot be achieve solely by regulating the individual polluting enterprises. Centralized Pollution Control is a complement rather than replacement for any other regulation which focuses on individual industrial behavior.

**8. Limited Time Treatment** is a compulsory regulation which imposes strict deadlines on the heaviest polluting projects. If the deadlines are missed, polluters may meet significant penalties which will usually be fines. The difference between Limited Time Treatment and Pollution Discharge Fees is that the Limited Time Treatment focuses on regional pollution management instead of regulating individual industrial behaviors. After 1989, Limited Time Treatment mostly sets deadlines for regions and industrial sectors rather than for individual enterprises. This regulation is not only a tool for the central government to integrate industrial pollution by its management of local governments, but also a measure that gives local governments more choices to manage regional pollution controls.

### 1.4 Summary for Command and Control Measures

Command and control measures were the policy instruments first used by most countries for pollution control. These regulations have changed the industrial behaviors and reduced pollution by setting quality standards, establishing emission limits, and restricting production restrictions. Command and control measures are still the majority of the Chinese environmental policies which aim at preventing pollution release into the environment and promoting sustainable development. Although China has a comprehensive regulatory system for environmental policy which is based on the country's own characteristics and created by the government, the efficiencies and effectiveness of policy implementation are still problematical. For the Central government, command and control measures have been more easily formulated than

economic instruments because they are more straightforward (Xie 1999). However, local government bureaucracies play a dominant role in shaping the process of environmental policy implementations. It is true that the command and control measures in China are powerful and effective in reducing significant pollution spots in the country. But the central government has to pay high efforts and price in supervising and enhancing these regulations.

### 1.5 Summary for Economic Instrument

Economic instruments are referred to as the policies that use market pricing mechanisms, such as taxes, pollution fees, and financial incentives to influence industrial behaviors. The economic instruments work mainly by increasing governmental revenue for pollution clean-up, internalizing environmental costs in both production and consumption, and providing market incentives to industries. Economic instruments as environmental policy tools have been first widely used by countries with market economy such as Organization for Economic Co-operation and Development (OECD) Member countries since the 1970s (OECD1994). Now most of the economic instruments in China are implemented by the local governmental environmental protection agencies. However, the economic instruments have not been fully effective in environmental protection in China (Wang and Lu 1997).

As described in previous section, pollution discharge fees are at the core of economic instruments in China. Currently, the country has five major categories discharge fees covering more than one hundred pollutants (Xie 1999). In addition to the system of pollution discharge fees, the Chinese government has also implemented other economic instruments such as taxes, compensation fees on natural resources, national subsidies, and deposits for construction. For example, since 1989, ecological destruction compensation

has been implemented in many provinces and the compensation fees are collected and managed by the local government for ecological rehabilitation. The deposits for construction are also a good complement for the Three Synchronization Policy.

# Chapter 2 the Limitations of Conventional Environmental Policies in China

## 2.1 Existing Challenges

Although the Chinese government has paid more and more attention to environmental issues, the governmental officials have admitted that the current environmental situation in China is still severe. For example, Shoumin Zou, the vice director of SEPA's environmental planning department, has recently pointed out that the environmental protection results of the National Tenth Five-Year Plan, which lasted from 2001 to 2005, were not satisfactory. According to the report of the Tenth Five-Year Plan, many environmental goals were not achieved during the past five years. For instance, in the plan, the goal for Chemical Oxygen Demand (COD) reduction is that the amount by the end of 2005 be 10 % lower than that of 2000. However, the actual reduction rate was only 2 %. In addition, energy consumption, which refers mainly to coal combustion, has increased 55.2 % in the past five years in China. Industrial emissions of sulfur dioxide have increased 27 % during the past five years, reaching a total of 25.49 million tons in 2005 (People's Daily 2006). The environmental quality in China has continued to degrade even though the country has a comprehensive set of environmental policy programs.

## 2.2 Inefficiencies within the Environmental Policy Structure

There are multiple external factors for the unsatisfactory situation of environmental protection in China. One reason is that economic development is still proceeding very rapidly. Some industrial sectors with high energy consumption and high resource input, such as electric power, construction materials, iron, and non-ferrous iron sectors, have average annual increasing rates higher than 15 %. The pollutant emissions from these

sectors cannot be reduced significantly within a short period (Day 2005).

Nevertheless, internal factors are also within the policy structure itself. First, the policy implementation has a close relationship with the sociopolitical structure. In China, environmental protection is highly centrally organized and managed. The command and control policies are always implemented from top to bottom. China is a large country with 31 provinces and rigid vertical administrative structure: The implementation power will be diminished as command and control regulations move downstream. SEPA plays a key role in China's environmental management and pollution control, but its role in day-to-day implementation of the environmental policies is limited because environmental polices are implemented mostly by the local environmental protection bureaus. At the same time, a related set of bureaucratic obstacles frustrates the environmental policy implementation. In China, central government ministries oversee lower-level agencies through tight vertical lines of authority. These vertical lines obstruct horizontal coordination among local government agencies, particularly when resource management issues cut across jurisdictional boundaries. The entire environmental governance system in China consists of more than 16,000 local environmental protection bureaus affiliated with and falling under SEPA's control at the provincial, municipal, county, and township levels (Day 2005). Policy implementation is diminished by many factors, such as local corruption and the lack of consensus building, hallmarks of the vertical transmission of power.

As second internal factor, the government needs a great deal of information when it makes and enforces regulations. Policy-making and enforcement are significant parts of the institutional framework for environmental protection in China because the enterprises need to know whether rule violations will be punished or not (Ma and Ortolano 2000).

SEPA and the local governmental sectors for environmental protection have to conduct periodical inspections in industrial sectors to gauge their reliabilities of self-reported data and facility improvement. Therefore, the information collecting plays a major role in the policy adjustment and enforcement. In order to avoid the cost of abatement, the government must spend a great deal of money for information collection. The high cost is a large burden for the central government and hinders the central government from making new reforms.

As the third internal factor, the Chinese economy is still in transition from a centrally planned economy to a socialist market economy. Market prices do not accurately reflect the real environmental costs of some raw materials which come directly from natural resources. For instance, energy is still not subjected to market forces in current China. The coal market in China has not been open to the world market yet and the price of coal in China is lower than the prices of the world market level (Wang and Lu 1997). At the same time, the pollution discharging fees levied have generally not worked effectively as a strong incentive to clean up the pollution because the fees are usually lower than the costs of pollution treatment (Sinkule and Ortolano 1995). In theory, charging rates should be set at a level slightly above the average operating costs of pollution control and treatment facilities, in order to encourage broadest compliance with standards. However, in practice, the charging rates are not indexed to inflation. Therefore, their real value has been reduced and they usually work only as a weak incentive for further pollution reduction (O'Conner 1998). So many firms would rather choose the pattern of paying fines after pollution than incorporating new technologies for pollution clean-up. Due to these inaccuracies of the current marketing signals, the economic instruments sometimes cannot effectively adjust to industrial behaviors

Furthermore, current existing regulatory or economic instruments are not adaptable enough for small and medium-sized enterprises. The small enterprises usually produce a single type of products and operate their businesses on a small economic scale. In addition, they have little capacity to incorporate new technology for pollution clean-up. For example, many small paper making factories in southeast China refused to stop discharging waste water because less or no pollution simply means bankruptcy. Although since September, 1997 the Chinese government has closed 65,000 small enterprises with heavy pollution, the total water pollution did not decrease (Day 2005).

# Chapter 3 Environmental Collaboration—Case Study I – Environmental NGOs in China

## 3.1 Background

Collaborative environmental governance refers to the cooperation among multiple parties, including public institutions, private sectors, and civil society organizations (Zedak 2005). These participants come together to create persuasive solutions for long-term environmental changes, and to implement new rules for realizing them. Nowadays, more and more environmental policy-makers agree that reaching the goal of sustainable development requires more consultation, collaboration, and the innovation of new partnerships (De Bruijn and Tukker 2002). Collaboration can take many different forms between various actors. The ultimate goal of the collaborations is to transform both the production and consumption behaviors to be more environmentally friendly and sustainable.

Collaborative approaches have many reasons for emerging and existing. First, environmental collaborations are needed by governments to meet sustainable development goals. The direct environmental regulations enacted by the governments of most countries since 1970s are effective tools to control the industrial production behaviors. However, regulation only is not adequate to change the consumption behaviors that are also an important aspect of sustainable development.

Secondly, more and more companies have already accepted the corporate strategy that their companies are no longer a closed business system. Instead, the business future depends on the way customers, suppliers, investors, regulators, and other stakeholders relate to it (Bendell 2005). The corporations have begun to initiate actions to share expertise and resources in a broader environment. From the economic perspective,

collaborations with environment citizen groups should benefit the businesses financially or improve their credibility regarding environmental stewardship. From the management point of view, collaborations between corporations and environmental citizen groups must also have clear measurable goals and concrete results to reassure the stakeholders (De Bruijn and Tukker 2002). In a successful collaboration, environmental NGOs play roles in helping corporations monitor the transition to cost-effective environmental practice within business. They offer business the connections and knowledge to local communities, local government, and research institutes. Environmental NGOs benefit from the collaboration primarily by getting grants for their organizational development and for promoting green activism. They also gain knowledge and management strategies from the collaboration and expand their capacities. From the business side, companies benefit from improved production processes, better relations with local communities, and more environmentally friendly public reputation.

### 3.2 Brief History for Environmental NGOs Collaborations in China

The emergence of environmental collaborations was closely related to the development of environmental civil society and non-governmental organizations in China. "NGO" and "civil society" were still new concepts in Chinese society in the 1990s and the environmentalism in China developed in a different way from the West and ex-socialist states of Eastern and Central Europe (Ho 2001). Friends of Nature (FON) which was founded in 1994 in Beijing, was the first environmental NGO in China. In the late 1990s, the number of NGOs in China rose very quickly. Until 2001, there were more than 2,000 NGOs in China with several million voluntary participants (Report of Sino-US environment NGOs Cooperation Forum 2001). As the largest environmental NGO, FON has already had more than 100,000 members cross the country by 2006 (FON Website

2006). From a survey in 2000 for the NGOs in Beijing, NGOs for environmental protection make up 15.38 % of all the NGOs in Beijing (Survey Report of NGO Center of Tsinghua University 2000). This is the sixth large category following professional associations, research think tanks, international exchange, social service, and policy consultation. Until now, most of the environmental NGOs in China are working in the areas of environmental education, public awareness, and species conservation which are considered less sensitive by the government. The All-China Environmental Federation launched in research survey on all the environmental NGOs in China in 2005. It has been the most completed survey in this area ever. The survey result shows that, by the end of 2005, there has been a total of 2768 environmental NGOs existing and actively working in China. Most of environmental NGOs located in Beijing, Tianjin, Shanghai, and other big cities on the east coast of China. The following figure shows nearly half of the environmental NGOs now in China are governmentally supported organizations and the rest are composed of citizen oriented organizations, students association in colleges and universities, and the local offices of multinational organizations. Environmental NGOs has become more and more significant in the social movement of environmental protection. Within the single year of 2005, 8,570,000 people have been getting involved in voluntary activities in environmental NGOs, and a total of 370 million US dollars have been raised from the whole society of which 67.2 % of the money has been spent in projects implementation.

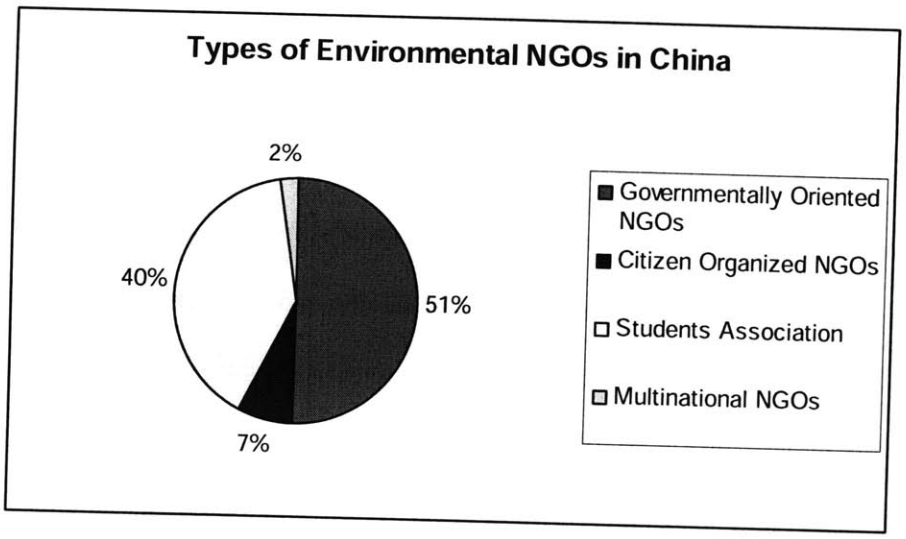


**Figure 1: The types of current environmental non-governmental organizations in China. (Sources: Survey of All-China Environmental Federation, 2006)**

The trend of environmental NGO development is consistent with significant changes in the political and social environment of China, with respect to legal reform, governmental administration change, and the social impact of information technology. During the early 1990s, the National People's Congress passed a series of laws that encouraged the involvement of citizens in China's social and economic life. The whole society began to shift from "ruled by men" to being "ruled by law." For example, in 1991 the Administration Litigation Law was passed so that, for first time in China's history, a citizen can sue the government (Zhang 2003). This law and the others formed the legal basis for subsequent civil society movement and public participation in environmental issues. At the same time, following the rapid economic growth in 1980s, many more social problems caused by environmental degradation come out in China's society in early 1990s, including floods and severe air pollution. The government came to be aware that with only the power of government, these problems could not be resolved. NGOs can perform better than governments in mobilizing public goods, managing voluntary human resources, and collecting community level actions. In 1998, the Ninth National People's

Congress voted and decided a new direction of administration in which China's government began to decentralize its power and pursue a goal of "a small state and a big society" (Zhang 2001). With this goal, the government not only continued in loosening its control of the market and encouraging more market competitions, but also downsized governmental agencies, and gave more freedom for citizen involvement. During the same period, the advancement of information technology also began to change the social lives of Chinese people. The rapid spread of the Internet is an important factor for the growth of environmental NGOs. Traditional Chinese politics is centralized and top-down; but the environmental movement presents more grassroots and bottom-up politics which is identified by direct participation, community involvement, and self-organizing (Yang 2003). The advanced information technology facilitated NGOs to get exposure for voluntary human resources, new ways of organizational management, and public transparency. The Internet also helped NGOs better manage their relationships with the central government because it provided a way for the NGO to exchange information with the government in a timely manner.

Although environmental NGOs grow rapidly in China, the existing challenges for them are still severe. According to Xiaodong Zeng, chief secretary of All-China Environmental Federation, the 2005 survey of environmental NGOs in China inflected more problems instead of the achievements in the first decade of the NGOs' development in China. For example, 76.1 % of the 2768 environmental NGOs in China are still lack of long-term and stable financial resources or supports. Currently, a total of 224,000 people are involved in the works of environmental NGOs in China, including 69,000 full time professionals and 155,000 part-time staff. However, due to NGO's non-profit characteristic and their lacks of stable financial support, 96 % of full-time professionals

working for NGOs earn salary below the local average level in the cities they are working and more than half of the full-time staff has no social benefits compared to the staff working in governments or private sectors. This fact has put the environmental NGOs in China a less competitive situation in attracting more professionals working for them. At the same time, it also has hindered the Chinese environmental NGOs' capacity building in participation of the governmental decision-making process and social supervision of industrial pollution.

**Current Situations of Collaborations with Environmental NGOs in China**

With the development of NGOs in early 1990s, collaboration for environmental protection between citizen groups, governments, and private sectors evolved mostly in late 1990s. The collaborations between private sector and environmental NGOs currently are difficult and few in numbers; but meanwhile they are fast-growing and innovative in China. The collaborations began in the form of charity and many of the corporations have started seeking new patterns of philanthropy and engagement in communities.

However, in current China, multinational corporations are still the major participants in environmental collaborations. At the same time, environmental collaborations between corporations and NGOs often occur within international NGO initiatives and multinational NGOs (Turner 2004). There are multiple reasons why domestic corporations have not gotten involved in collaborations with environmental NGOs. First, China's environmental NGOs began to grow very late. There is still a significant demand for NGO to develop their technical or management capacity to monitor or partner with industry. Second, many Chinese local governments tend to shield domestic companies in their jurisdictions from environmental regulations to protect their basic revenue (Turner 2004). Third, socially responsible investment and environmental collaborations are still

newly emerged concepts to the leaders of domestic corporations and the wealthy class. The domestic rich class seeks status in terms of wealth rather than on any social grounds (New Beijing News 2005). This situation can be summarized by the result of World Wildlife Fund (WWF) survey of 182 Chinese companies conducted in 2004. The survey found that some of China's biggest and most important companies are intent on improving environmental standards and practices. 53 % of Chinese companies said they would be willing to engage with NGOs, but the idea of policy and collaboration with NGOs is new. They would like to discuss about how sustainable development can be promoted within their business with multinational organizations such as WWF. However, they still did not believe that the domestic NGOs can be key actors in current China (WWF report 2005).

Collaboration with environmental citizen groups began even later than the ones with private sector. Though environmental NGOs never stop pursuing support from governments, they did not begin any formal collaboration with the governments until 2003 (Beijing Weekly News 2006). In August, 2003, SEPA declined to sign on an agreement for dam construction at Nu River in Yunnan Province because the construction did not issued any legal environmental assessment, even though the construction would bring economic benefits to the other stakeholders such as local governments and the construction sector. In this event, several environmental NGOs started to provide their supports to SEPA by initiating lectures in the public and working with media. With the NGOs support and public attention, SEPA stopped the construction successfully. From this event, the governments, especially the environmental conservation sector started their efforts in collaborating with environmental NGOs. In April 2005, All-China Environmental Information for Public (ACEP) was founded by SEPA. This organization

aims to promote more environmental collaborations between NGOs and the governments. It also works for increasing public awareness and for improving Chinese environmental NGOs capacity building. In August 2005, ACEP initiated a survey cross the country in order to know the current situation for Chinese environmental NGOs (ACEP 2006). The research result and NGO inventory will be used as guides for the governments for future collaborations with those NGOs. In current situation, the collaborations between environmental NGOs and the governments still depend heavily on the interpersonal relationship among NGO leaders and governmental officials, rather than on regulations (Wang and Tong 2003).

### 3.3 Case Study— Better Environment Scheme

Royal Dutch/Shell Group of Companies (Shell Oil) is a major energy company in the world. In 2005, Shell Oil became the third largest corporation in the world with its revenues of $306.731 billion (Royal Dutch Shell Annual Reports 2006). The first Chinese office of Shell Oil was established in 1980 in Beijing. Now, the company has business in China, including exploring, producing, and retailing petroleum products, as well as petrochemical business.

Shell Oil is one of the most active corporations in China to most actively take initiative in social investments mainly covering environmental conservation, public education, and sustainable transportation. According to Liu Xiaowei, deputy director of external affairs at Shell China, sustainable development has become a core value of Shell Oil and part of its management process. All the company's businesses in China have adopted seven sustainable development principles, which are also accepted by Shell Oil, companies worldwide (Liu 2006). The following seven principles are incorporated in corporate strategy-making, implementations, budget submissions, training, and reward

systems.

- Generate robust profitability
- Deliver value to customers
- Protect the environment
- Manage resources
- Respect and safeguard people
- Benefit communities
- Work with Stakeholders

By the end of 2003, Shell Oil had committed over 2.4 million US dollars to eleven major social investment projects in China. The company has set up multiple environmental collaborations with local governments and non-governmental organizations. For example, in 1997, Shell Oil sponsored both a research expedition and a subconsequent booklet publication for a distinct species of camel in the Xinjiang Province by collaborating with environmental organizations. In addition, in a partnership with China Environmental Protection Foundation, it has sponsored environmental education publications, such as *China Green Map* for local schools and communities (Shell Oil China Company Website 2006). However, among these multiple initiatives, the Better Environment Scheme (BES) had the most successful social impact and was regarded as a flagship of the social investment projects implemented by Shell Oil China.

The primary goal of BES is to promote public environmental awareness on the community level in China. This program encourages schoolchildren to develop their own community or school-based environemntal projects. The BES program was first implemented in primary schools and middle schools in six cities of China mainland in 1996. Students are encouraged to participate in an annual competition by creating,

designing, and implementing environmental plans in their living communities for waste recycling, animal protection, greening, and other aspects of enviromental improvement. Eighty most outstanding plans are selected annually to win monetary rewards and more than ten percent of all submitted projects are sponsored by Shell Oil to be implemented. Since 1996, more than 350,000 students have participated in Better Environment Scheme, and a total of 30,000 environmental plans have been submitted under the scheme. (Better Environment Scheme Website 2006).

## Major Environmental Practice and Results

The BES program has been implemented in primary schools and middle schools in six cities of China. Students are encouraged to participate an annual competition by creating, designing, and implementing environmental plans in their living communities for waste recycling, animal protection, greening, and other aspects of environmental improvement. Eighty plans will be selected to win monetary rewards for the most outstanding. In this program, the students will have the opportunity to gain experience with team work, background research, and community survey during the process of both plan design and implementation. Students and their instructors in different cities can also exchange their ideas, experiences, lessons, and reports through quarterly newsletter for the program. Friends of Nature (FON), one of the most effective environmental non-governmental groups based in Beijing, which is also the major partner for this program in Beijing, organized regular workshop for school teachers. People from FON are also editing and finishing two publications as *Better Environment Scheme Planning Handbook* and *Outstanding Plan Collection.* Public environmental education is successfully achieved in this program through two effective channels. First, young students obtain environmental knowledge outside of their compulsory curriculum and get involved in community

participation. Secondly, the local residents are also important actors in these environmental plans proposed by the students.

Since 1996, more than 350,000 students have participated in Better Environment Scheme, and totally 30,000 environmental plans have been created, submitted, and implemented under the scheme (Better Environment Scheme Website 2006). In this collaborative program, various responsibilities were allocated among the different implementing partners. Shell Oil contributes its support primarily by providing the competition awards, and gains the primary benefit of an increasingly environmentally friendly reputation among the students and communities. Local Shell operating companies in the six cities fulfill their responsibilities by coordinating, communicating, and exchanging information. They also provide suggestions and media resources. At the same time, local governments provide their support in propaganda, coordination, and some financial support for the implementations of the plans. Local non-governmental organizations receive advantages in areas of education and voluntary human resources to effectively contribute to this program. For example, FON believes that there are three significant steps for successful environmental education: building passion for a better environment, learning new skills and knowledge, and realizing changes by implementation. While, the last step is most important, it is at the same time, the most difficult step to be achieved by the government (Li 2006). However, it will be easier to accomplish this step with the help of non-governmental groups because most of them are grass-root organizations and have more resources with community activities.

This environmental collaborative program distinguishes itself from another perspective. Though the same program was implemented in six different cities, the collaborative situation in each city varies. For example, in the city of Shanghai, Shell Oil

collaborated mostly with the local educational government. By contrast, in Beijing, the local government did not get involved. The citizen-organized non-governmental organizations and Shell Oil are the only actors in the program. In Nanjing, the local government and NGOs cooperated well together with Shell Oil.

The cooperation in Beijing between Shell Oil Beijing office and FON provides a good case for how collaboration has evolved. Actually, as early as in 1998, Shell Oil wanted to build up collaboration with FON because FON was one of the few environmental NGOs in China. However, at that time, FON was still on its infant stage with only no more than fifty members. Shell Oil simply provided financially supports to FON in publishing the newsletters and in compensating salaries for office staff. In the following few years, environmental movements grew up quickly all cross China. Some leading environmental NGOs, such as FON and Global Village of Beijing (GVB), not only expanded by size but also progressed in capacity buildings. At this time Shell Oil copied the program scheme which the company has already launched in Hong Kong successfully from 1996 and implemented this model in six cities in China mainland. In the beginning of this BES project in Beijing, Shell Oil took a leader position and was responsible for most of the decision-making. For example, in the early phase of this project, Shell Oil took full responsible in deciding and inviting the expert committee members for the plan competition among schools. FON provided help in managing volunteers and communicating with schools. As the FON improved not only by its own capacity building but also by obtaining more social recognition and supports for this program, the program shifted into its second phase around 2002. During this second phase, FON gradually took more responsibility from Shell Oil in the project operation. FON managed this program individually and Shell Oil has shifted its role from a project manager to

project consultant. Before each major public events of BES, the staff from Shell Oil Public Affair Division in Beijing office met with staff from FON to make agreements on event logistics, experts committee, and media strategies. After the meeting and agreement, the whole event would be run by FON entirely. Shell Oil concentrated its strength and contributed in providing marketing strategies and media resources in this program. Now the program progressed into a new phase in which the FON has taken more proactive initiatives into the collaboration. FON is responsible not only for the joint BES program in public, but also for organizing the trainings, lectures, and public activities for the employees in Shell Oil Beijing office.

## Motivation for Collaboration

Shell Oil's primary goal of BES is to promote public environmental awareness on the community level in China and improve the company's socially responsible reputation in the Chinese market. This program was successfully launched in Hong Kong in 1993. In 1996, Shell Oil China began to consider carrying out environmental protection activity in mainland China as well, because the domestic economic development there has been accelerated; meanwhile, the public awareness of the environmental improvement was still low. Because of the success in Hong Kong, Shell Oil China decided to copy the program model and launch it in mainland China. However, the company was aware in the beginning that the mainland is much larger than the city of Hong Kong. It would be difficult to copy both the model and its success if the program was addressed to the general public in mainland China as it was in Hong Kong. Therefore, the Shell Oil China company decided to start the program from a smaller group so that it will be easier to manage. The company chose schoolchildren as its target group first because the actions of schoolchildren will impact their parents, teachers, and surrounding living communities.

The idea of "Small Hands in Big Hands" has been the basic strategy for Shell Ol to implenment the BES program in schools in mainland China.

When evaluating and selecting a partner for its collaborative actions on social investment, Shell Oil China had a preference for environmental NGOs rather than local government or other stakeholders (Bi 2006). There are three major reasons for the preference. First, collaborating with grassroots environmental NGOs can help the company obtain adequate resources in implementing and managing the program because NGOs have the most extensive resources in volunteers, while still needing a considerable amount of financial support to survive. Second, the company needs to know more about the public concerns, demands, and priorities on environmental and social problems in order to identify the new direction and program for the company's future social investment. For Shell Oil, a grassroots NGO is the best resource to work with, because the company wants to obtain the community level information for their future investment in China. Third, Shell Oil believes that collaborating with NGOs is the best choice to earn a win-win solution. The supplementary advantages between a corporation and an NGO can optimize the mutual gains of the collaboration. NGOs, which are skilled at implementing community level actions, can complement the corporation's weakness in managing social activities. On the other hand, a corporation with a strong team of social investment professionals can provide NGOs with the actual help in capacity building and management improvement.

**Challenges**

The challenges in Shell's collaboration with Chinese environmental NGOs came from two aspects. First, because the majority of Chinese NGOs have been established recently and civil society in China is only a small stakeholder in the environmental movement,

public recognition for both environmental NGOs and civil society is still low in Chinese society. Many people certainly do not understand the concept of NGOs and cannot easily get involved with NGOs activities smoothly. This low public recognition of NGOs has brought difficulties in the program implementation. At the same time, the local governments' recognition of both civil society and grassroots NGOs is also low. With low recognition from both the public and the government, Shell Oil and its partner NGOs have had to put more effort and energy in public communication and program adjustment. This is an obstacle for both of them in implementing the BES program smoothly.

Another challenge for Shell Oil in implementing this program in China is that it is difficult for the company to find appropriate local environmental NGOs as its collaboration partners. Among the six cities in which the company implemented the BES program, only in Beijing, Tianjin, and Nanjing, did Shell Oil collaborate with the local environmental NGOs. In Beijing, the company collaborated with FON and GVB, organizations that are also taking leading positions in the environmental citizen groups in China. In both Tianjin and Nanjing, Shell Oil has collaborated with the local offices of the Friends of Green, and organization that has a great deal of support from the FON and GVB in Beijing. In the other three cities, Shell Oil did not find an appropriate environmental NGO that has the capacity to lead the BES program locally. Therefore, the company chose to either collaborate with the local government directly or, through the government to contact and work with the small citizen groups. The lower capacity building of the environmental citizen groups is a limitation for further development and improvement of the collaborative programs.

### 3.4 Case Analyses

The case of BES addressed provided insights for analyzing the collaboration between environmental NGOs and private corporations. On one hand, the collaboration between environmental NGOs and private companies are mutual and promising in current China. The collaboration can help both of the two sides by exchanging human resources, management know-how, and community level information between them. Private enterprises benefit in building up a better environmentally friendly reputation in public meanwhile the environmental NGOs taking the companies' advantages of financial support and management experience.

Nevertheless, the limitations of these both sides make the collaborations with these two parties only less effective and efficient in current China. Now, not many private enterprises, especially the domestic small and medium sized enterprises, have shown much of their enthusiasm in the collaborations with environmental NGOs to improve their production behaviors and social reputation. Furthermore, the environmental NGOs in China still do not have enough capacity to attract enough social attention and industrial support by themselves to carry out their own agendas. Therefore, due to the limitations, collaboration between private sector and environmental NGOs in current China is not the best model for collaboration. A balanced collaboration among the three stakeholders—the government, private corporation, and environmental grassroots organization—is much better. From the case of BES, we can see that scholars and professionals in both the company and organization have pointed out that the government's attitude was so important for the implementation of the program.

# Chapter 4 Voluntary Actions -- Case Study II -- ISO 14000 in China

## 4.1 Background

The term ISO 14000 refers to a series of voluntary standards which help enterprises address environmental management issues. The standards were first published by the International Standard Organization (ISO) in September, 1996. Today, ISO 14000 is widely recognized and accepted worldwide. Compared with other environmental quality standards or emission limits, the standards included in the ISO 14000 series are for the Environmental Management Systems (EMS), environmental auditing, environmental labeling, performance evaluation, and life-cycle assessment (Morris 2004). The standards lay out basic rules for EMS or environmental certification.

The ISO 14000 series of standards encourages companies to voluntarily focus on environmental management (Cascio, Woodside and Mitchell 1996). Certified companies must minimize their harmful effects on the environment caused by their producing activities and achieve continual improvement of their environmental performance (ISO Website 2006).The ISO 14000 series is totally voluntary and does not include emissions limits or regulatory requirements. But these voluntary, mostly procedural, standards aim to improve corporate environmental performance by establishing a single, uniform set of internationally accepted measures by which firms can measure their environmental procedures (Gottlieb 1996).

The EMS implemented by businesses should be audited by third-party certification bodies to ensure compliance with the laws and regulations of their nations. The ISO standards are developed voluntarily through international consensus. The International Standards Organization has one hundred and fifty-six member countries all over the world (ISO Website 2006). Each member country develops its own set of standards,

which are submitted to other members for review. The countries then negotiate and draft a final set of standards to be voted on by all members. Within each country, various types of organizations can participate in the process. These organizations include industrial sectors, governments, non-governmental organizations, and other interested parties.

### 4.2 Brief History for ISO 14000 Certificates in China

Among all the voluntary programs, ISO 14000 has attracted the most attention both from enterprises and governments in China. In China's current environmental management regime, ISO 14000 is an important alternative tool to regulations and market-based incentives. However, the implementation of ISO 14000 in China is different from the situations in the other countries because ISO 14000 in China is managed centrally by the SEPA.

Under SEPA's supervision, the China Center for Environmental Management Systems (CCEMS) is the only institute that has authority to manage ISO 14000 in China. There are two individual organizations under direct supervision of the CCEMS. They are the China National Accreditation Board for Certifiers (CNAB) and the China National Certifiers Registration Committee (CNCRC). The latter is responsible for training internal ISO 14000 personnel who are interested in becoming internal auditors for enterprises. Pending State Council approval, CNAB will approve ISO 14000 accreditation agencies, which would then authorize qualified third-party organizations to certify individual facilities (Kamis 1997). In addition, the China National Cleaner Production Center (CNCPC) is partially under the management of CCEMS. This organization is responsible for training the enterprises internal auditors and ISO 14000 professionals, as well as providing ISO 14000 consultation services to enterprises.

**Administration Structure**

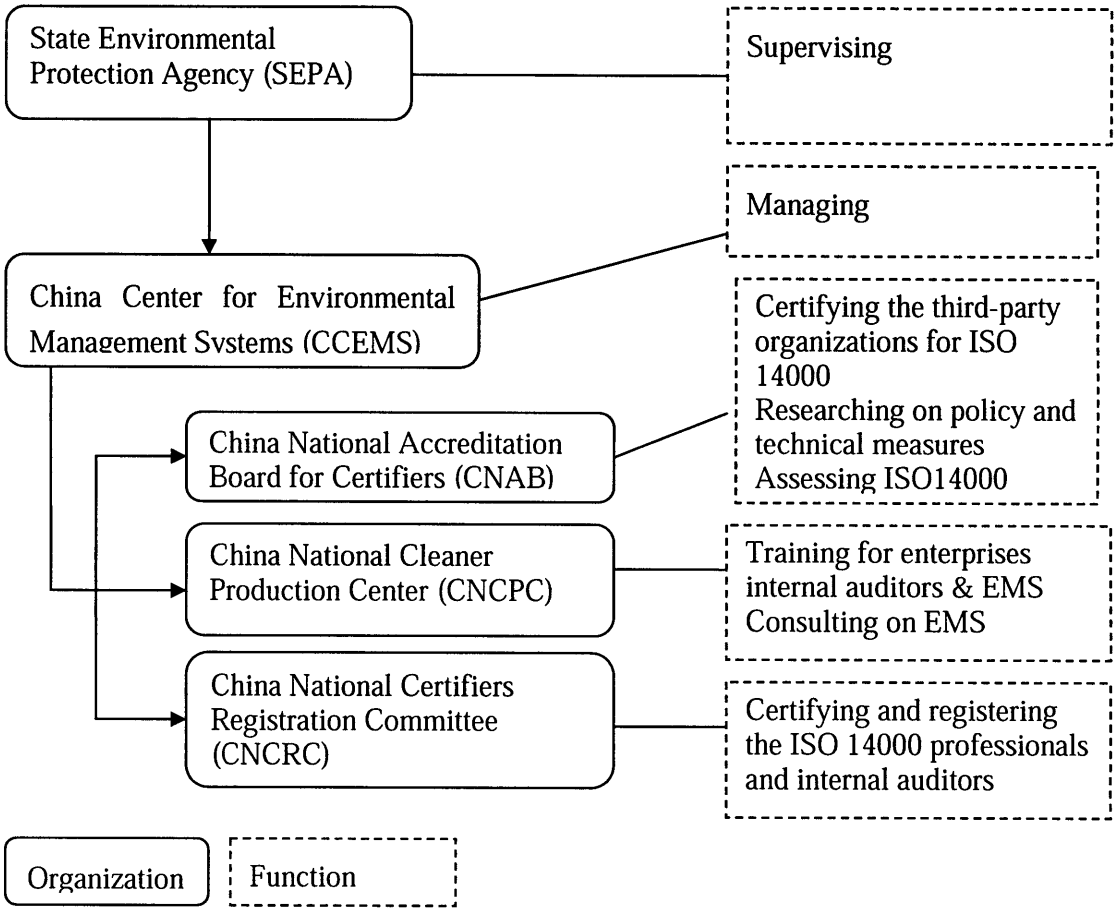


**Figure 2: Administration Structure of ISO 14000 in China (Source: CNCRC, CNAB, CNCPC Websites, 2006)**

There are three primary prerequisites for any enterprise in China to be certified with ISO 14000. First, the company should satisfy all the local Chinese environmental and taxable regulations. Second, the company should have a test implementation period of no shorter than three months. Third, the company should meet all the Chinese domestic emission and pollution limits for more than one year.

Both domestic and international companies operating in China have many reasons to consider this voluntary environmental program. First, a sign of environmental

management can raise corporate profile and reputation. Second, this program is positively supported by the Chinese government. The ISO 14000 standards can also help Chinese industrials improve compliance with domestic environmental laws and policies. Third, the environmental practices increasingly influence the competitiveness in important export markets. The ISO 14000 standards help the Chinese export industries deal with environmental challenges in foreign markets. Other motivations include standardization of the environmental management procedures for internal operations, obtaining social recognition and a better corporate image, gaining confidence from clients and costumers, enhancing the environmental awareness of subcontractors, and cleaner sites as a result of better industrial structures.

## Current ISO 14000 Situations in China

During the past decade, ISO 14000 developed in China rapidly with the following characteristics:

First, the ISO 14000 started in China late, but it has grown rapidly. ISO 14000 series was firstly released formally in October 1996 (Tang 1997). But this program developed very rapidly in China. In 2000, China firstly appeared on the list of countries with the highest growth of ISO 14000 certificates (ISO Survey 2000). By the end of 2004, China held second large number of certificated companies as 8862 (ISO Survey 2004).

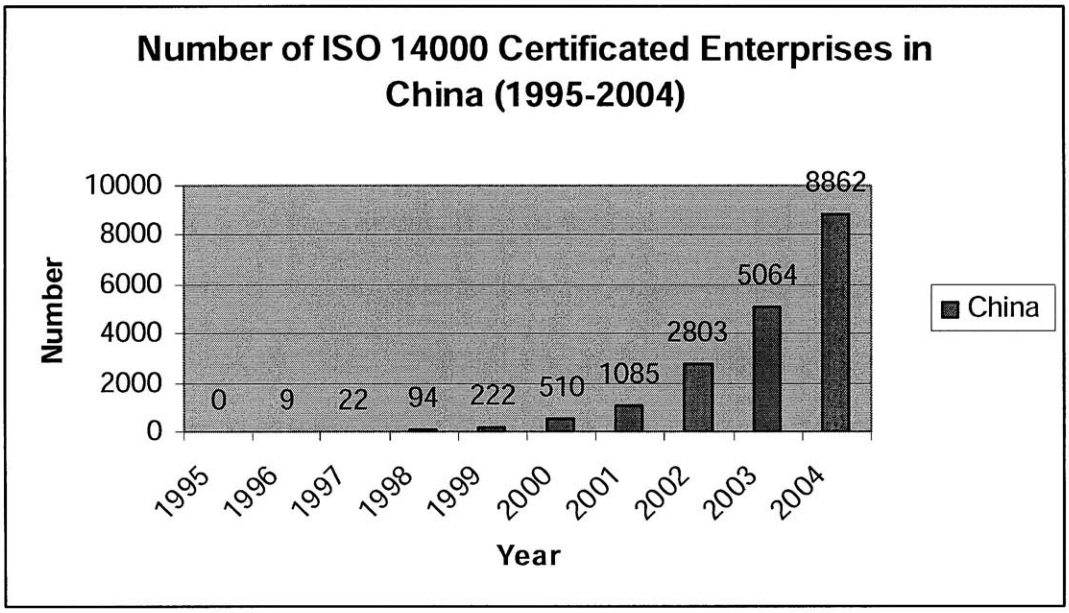


**Figure 3: The Number of ISO 14000 Certified Enterprises in China (source: ISO Survey, 2002&2004)**

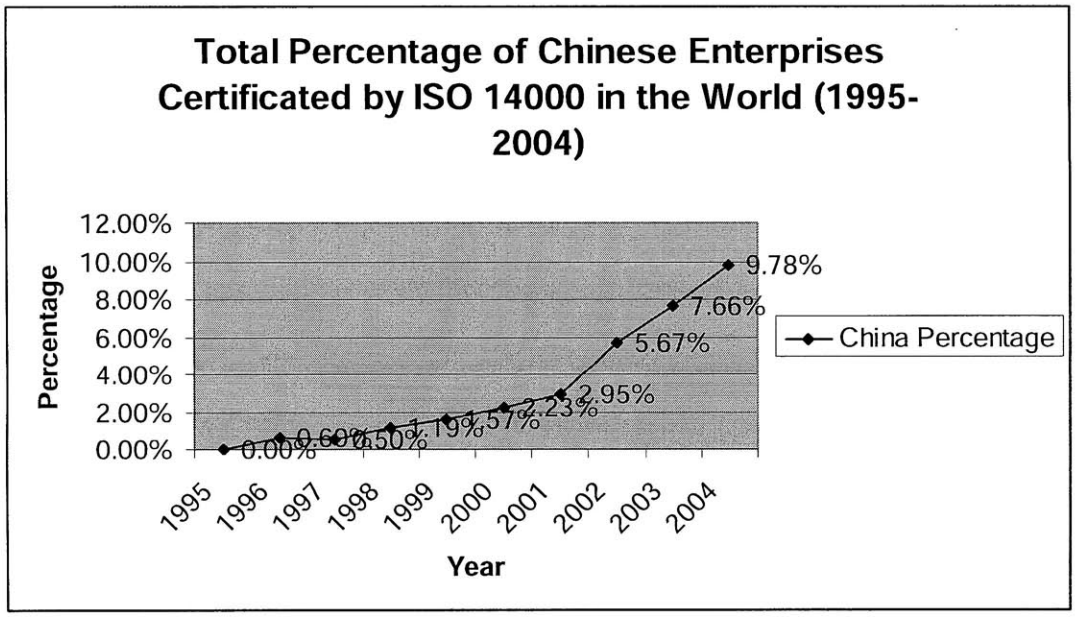


**Figure 4: Total percentage of Chinese enterprises certified by ISO 14000 in the world during 1995-2004 (source: ISO Survey 2002 & 2004)**

Second, the distribution among industrial sectors and locations are uneven. Although ISO 14000 standards have been widely used in all sectors and all conditions around the

world, there is still an uneven distribution among all industrial sectors in China. Among all the companies certified by ISO 14000 in China, more than half were in the electronics and household appliances industries (Hand 1997). From the 1996 survey made by the Science and Technology Department of SEPA, certified enterprises in electrical and telecommunication sector are 71 % of all the certified Chinese enterprises. In most of the sectors, except electrical and telecommunication, machinery equipment, and chemical product, fewer than 5 % of the enterprises are certified. Compared to the other sectors, such as construction and tourism, industrials involved with electrical products and household appliances are heavily export-oriented and are more conscious of their public image.

On the other hand, most of the certified enterprises locate on the East coast of China and big cities. The 1999 Survey from SEPA shows that 46 % of the certified enterprises are in Guangdong, Shanghai, or Beijing. The interior and western provinces have many fewer enterprises that have obtained ISO 14000 certificates.

**Industrial Distribution for ISO14000 Certificate Holders in China**

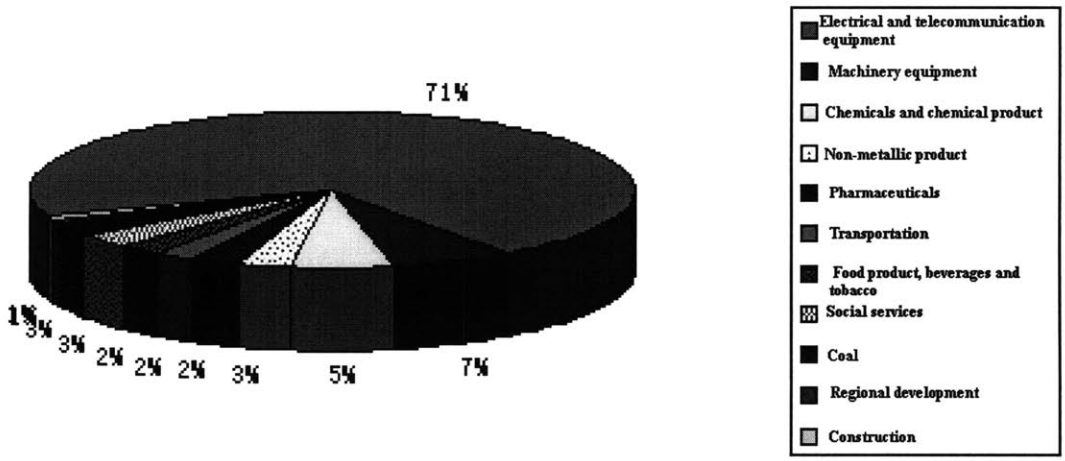


**Figure 5: Industrial distribution for ISO 14000 certificate holders in China (source: SEPA Science and Technology Department, 2006)**

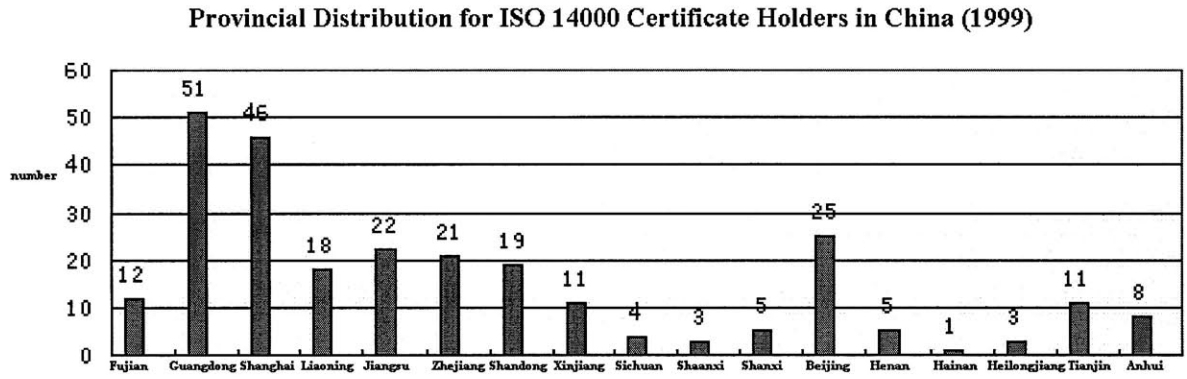


**Figure 6: Provincial distribution for ISO 14000 certificate holders in China (Source: SEPA Science and Technology Department, 2006)**

Third, the governments provide positive support to ISO 14000.The Chinese government has provided considerable support to ISO 14000 certificates in recent years. Now, the SEPA is taking the lead in improving the legal framework, encouraging training, and managing certified enterprises and the third-party organizations that have authority for the certificates. Local governments are responsible for providing financial support and regular monitoring examinations.

Fourth, the ISO 14000 in China is voluntary, but it is still highly market-driven. Though ISO 14000 is voluntary in China, it is still very market-driven. Export oriented business and the competitiveness with foreign enterprises on domestic markets are the primary motivation for corporations to implement ISO 14000. Customer demand, competitive advantage, and improving existing industrial structures are major motivations for Chinese enterprises to issue ISO 14000 certificates.

### 4.3 Case Study: ITT-Conan Tianjin Industrial Inc.

ITT Industries, Inc. is a global engineering and manufacturing company first founded in 1920 in the United States. ITT Industries had been doing business and investment in China for many decades. Now, the company has a total of 7,500 employees in its ten

facilities in eight cities in China with investment of more than $100 million (Zhou 2006). ITT-Conan Tianjin Industrial Inc (ITT-Conan) is one of these ten facilities. This company was founded in May 1995 in Beichen Economic Development Zone in the suburb of the city of Tianjin with focus on manufacturing electronic components such as plastic keypads for cell phones, remote controls, automobiles, and computers. Now the company has grown from its registration value of 3.8 million US dollars to its current total property of 15 million dollars, hiring more than 1,800 employees. The company covers a total of 10,000 square meters with 7,650 square meters in buildings and more than 2,000 square meters in green belts. Most of the company's employees, including top management and the workers, are Chinese, with one third of the employees from the local area, and two thirds of the employees from the surrounding provinces. Foreign managers from the headquarters in Singapore and the United States give supervision and advice to this local company. The ITT-Conan was certified by the ISO 9000 quality management system in 1996. It took the company a total of seventeen months to prepare the application and the company was certificated with ISO 14000 in November 2001.

**Motivation for Implementing an Environmental Management System**

ITT-Conan's business is involved with nearly one hundred customer companies in more than thirty countries, providing hundreds of types of products. The company has businesses with some large electronic groups such as Motorola, Philips, Siemens, Panasonic, and CEG in the global market. The major domestic customers of the company include Panasonic Beijing Company, Yamaha Tianjin Company, and Motorola Tianjin Company (Zhou 2006). Therefore, satisfactory environmental practice is one of the requirements demanded by the company's major customers to keep long-term business relationships. While progress had been made in the past, for example, the company spent

a total of ten percent of its investment on incorporating environmental treatment facilities, the company lacked a structure for its environmental management program and had no means to measure and demonstrate the progress to customers. Top management leaders at ITT-Conan recognized the necessity for a clear environmental policy, solid objectives with written procedures, training, and corrective action. These elements were similar to the ones in quality management system certified in 1996 and would help the company to manage its environmental practice (Zhou 2006).

## Major Procedures for the Application

The whole process for ITT-Conan to prepare its application for the ISO 14001 certificates includes six major procedures as the following:

1. Initial Decision-Making

It took the leaders of top management around two months to make initial strategy, build up EMS administration, and appoint professionals to work for ISO 14001 certificate applications. The internal auditors and managers responsible for ISO 14000 application have been trained professionally and obtained both ISO 14000 and the Occupational Health and Safety Management Systems (OHSAS) 18000 auditing certificates.

2. Employee Training

Once the ISO 14000 professionals and internal auditors have been appointed, the EMS administration group was responsible for organizing the training in the company. Training was mainly for top and middle level managers and the internal auditors within the company. Trainings lasted for two months.

3. First Environmental Self-Assessment

Before implementing environmental practice, ITT-Conan spent two months in self-assessment for environmental factors. First, the EMS professionals reviewed the

company's applicability with state and local regulations for both enterprises operation and environmental conservation. Then, all departments in the company started to specify and evaluate the environmental factors in their own departments. Environmental seminars were held among all the department managers to discuss these environmental factors, and significant factors were specified by EMS professionals after these seminars.

**Table 1:** Significant Factors for EMS in ITT-Conan

| No. | Environmental Factor | Activity Description |
|---|---|---|
| 1 | The potential risks in chemical raw material usage and management | Promoter, luminous powder, color paste, printing ink, gasoline, ethyl alcohol, toluene, and diluents are dangerous in use, storage, and transportation. |
| 2 | The discharge of common wastes | The discharge of the wastes includes the packing paper boxes, silica gels, used plastic materials from oil pressuring, used metals, wood materials, and used electric wires. |
| 3 | The potential risks in fire accidents | The storage for metals, raw materials, printing ink, oil, final products, and wasted goods, have potential risks for fire accidents. In addition, the facilities for sulfuration, ultra-infrared drying, and spreading include organic chemical compounds which are dangerous for fire accidents. |
| 4 | The emission of oily smoke | The central dinning kitchen of the factory emits oily smoke daily. |

-- **(Source: ITT-Conan Environmental Assessment Report, 2003)**

4. Strategy Design

The EMS administration group in ITT-Conan spent around three months compiling and editing an environmental practice handbook and other necessary documents. The handbook was contributed by all the departments and was an internal guidance for the employees.

5. Test Period with Self-Assessment

The company took around ten months in testing its ISO 14000 standard implementation. The tests basically focused on the significant environmental factors specified in the first environmental self-assessment.

**Table 2:** Environmental Management Goals and Practices for Self-Assessment and Test in ITT-Conan

| **Environmental Factor** | **Environmental Management Goals** | **Environmental Management Practices** |
|---|---|---|
| The potential risks in chemical raw material usage and management | The accident rate reaches zero | 1.Internal employee trainings<br>2. Monthly Check |
| The discharge of common wastes | 1. To reduce the discharge by 30 %.<br>2. Classify all the discharge of common wastes<br>3. The recycle rate reaches 70 %. | 1.Internal employee trainings<br>2. Estimate the discharge of different wastes<br>3. Analyze the discharges and estimate recycle rates |
| The potential risks in fire accidents | The fire accident rate reaches zero. | 1.Monthly Check<br>2. Input 40,000 US dollars to take place the paper plates by iron plats for the drying procedures<br>3. Input 1,250 US dollars to make regular inspection for electric wires and electronic facilities. |
| The emission of oily smokes | 1. To reach the national standard for oily smokes emission.<br>2. The smoke density is lower than 2.0 mg/ m3.<br>3. Purification rate is no lower than 60 % | 1.Internal employee trainings<br>2. Input 7,500 US dollars to install smoke purification facilities |

---- **(source: ITT-Conan Environmental Assessment Report, 2003)**

6. Final Implementation before Approval

From September to November 2001, ITT-Conan organized the final round of environmental self-assessment before its official ISO 14000 certificate approval. Internal auditors evaluated different aspects of the environmental standards and management implemented within the company. In November, 2001, the company was successfully certified with ISO 14000 by a third-party organization under the surveillance of local government.

**Environmental Protection Practice**

The company's primary environmental liability includes sewage discharge, pollution gas emission, and limited chemical hazardous disposal. Major pollution emission includes odorous hydrocarbon compound and benzene class gases. The waste water discharge is not a significant pollution for ITT-Conan. The facilities only produce sanitary sewage. Chemical hazardous disposal mainly includes silica gel, silica films, and plastic films. The ITT-Conan has spent up to ten percent of its total investment on incorporating new environmental treatment facilities, including twenty-eight pollution absorption devices and biological treatment for wasted water. (See Appendix II for more details of the core processes of the company's environmental protection treatment)

**Quantifiable Results**

By the end of 2004, ITT-Conan achieved its environmental practice goals as the following (ITT-Conan Report 2004):

-Waste water discharge reduced to 70 % of the previous discharge level.

- Solid waste disposals were classified and the total recycling rate reached 70 %. The recycling rate for silica gel, the major waste disposal is 100 %.

- The oily smoke purification rate was 60 %.

- The violation rates of the national polluted gas emission standard, waste water discharging standard, and the hazardous disposal standard were zero.
- The environmental accident rate was zero.
- The fire accident rate was zero.

**Benefit Analyses**

ITT-Conan believes that there are numerous potential benefits associated with effective ISO 14001 certificates. First, from the environmental perspective, all the polluted gas emission and sewage water discharges have kept meeting both ISO 14000 standards and national standards since the company was certificated. The total investment on environmental facilities has been up to ten percent of all of this company's investment. At the same time, the recycling rate for materials and product wraps has risen since the company implemented the ISO 14000 standards. The company monitors polluted water four times per year, and monitor polluted gas twice per year.

From the economic point of view, the company experienced benefits related to ISO 14000 standards from the following aspects: First, ITT-Conan stabilized its current major customers by assuring them the environmental management system with ISO 14001 certificate. Customer orders increased and long-term relationships with major customers were improved. Second, the implementation of the environmental management system accelerated the adjustment of the company's internal industrial structure. The company achieved cost optimization in many aspects such as saving raw materials and energy resources by increasing clear product usefulness and cost-effectiveness. For example, the costs for materials decreased because of the rising recycling rate for product packaging. In order to meet the environmental emission standards, the company improved its utilization of the side-products and made part of the waste disposal useful and profitable.

This action successfully decreased the company's energy costs. Third, implementing ISO 14000 helped the company to lower its risks in environmental accidents. Because the environmental management system improved the company's pollution and hazardous waste control, the potential civil and criminal liability for environmental emergency and accidents or pollution has been reduced.

## Challenges

The biggest challenges that ITT-Conan encountered in implementing an environmental management system were new technology usages for pollution prevention and control. In order to get certified by ISO 14000 standards, the company improved their practices for pollution prevention and successfully reduced its costs, both in production and pollution control processes. However, due to the limits of incorporating new technologies for pollution prevention and control, the company could not keep improving in the environmental practices in these areas. In order to keep the total environmental performances, the company had to make more effort in other aspects. For example, in order to reduce the hazardous disposal, the company implemented recycling programs for their product wraps and chemical raw materials.

## Roles of the Government

The local government provided its support to ITT-Conan's ISO 14000 application mainly in regular technical monitoring and examining. For example, the local environmental protection agency within the Beichen economic development zone where ITT-Conan (Tianjin) is located established a professional working group to provide enterprises the guidance in ISO 14000 application. There is also an office for cleaner production in the agency that provides technical training and consultancy to the local enterprises. In the May, 2001, this economic development zone was praised by the SEPA

as a regional pilot development zone for the ISO 14000 implementation (Zhou 2003).All the enterprises with ISO 14000 certificates in this economic development zone pay tax for 0.9 billion US dollars per year which is a total of 74.8 % of the taxes paid by all the enterprises in this area. From the company environmental manager's view, the local government was responsible and credible in monitoring polluting emissions and auditing environmental assessment reports (Zhou 2006). The government plays an effective role in information disseminating and technology supporting. However, the lower administration efficiency in local government is still an obstacle for local enterprises to overcome in issuing ISO 14000 certificates.

**4.4 Case Analyses**

Although ISO 14000 is a voluntary environmental management program, it still has its advantages in attracting domestic and international enterprises. The cost for ISO 14000 is higher than other voluntary programs but it is necessary for international business because ISO 14000 can help the enterprise to satisfy the demands of consumers and regulatory agencies at the same time for corporate environmental accountability (Zhou 2006).

ISO 14000 can help enterprises to achieve economic benefits by reducing raw material costs and energy costs, and optimizing the industrial structure within a short period of time. However, for the long-term consideration, sustainable economic benefits from implementing ISO 14000 still depend on new technologies and governmental regulations.

Because the industry is located in economic development zone which industrial clusters keeps distant from cities, the public awareness and recognition can hardly be achieved by ISO 14000 certificates. Economic benefits and environmental benefits are far more easily achieved than the social benefits.

From the perspectives of internal auditors and managers in ITT-Conan, trainings are very important for the company to succeed in ISO 14000 certificate applications. Employees' environmental awareness within the company and environmental management capability for department and top level managers are significant for the success of implementing ISO 14000.

Some obstacles still remain along the path for ISO 14000 developments in China. The barriers include the financial burden for some industrial sectors, poor rates of return for firms, low environmental public awareness, and inadequate legal enforcement. It is still very unclear in the near future that whether the government will incorporate ISO 14000 into national legal system and domestically make it regulatory policy in China.

# Chapter 5 Information-Based Approach—Case Study III—China Environmental Labeling Program

## 5.1 Background

Environmental labeling or eco-labeling is a voluntary scheme designed to encourage manufacturers to supply products and services with good environmental performance. This scheme also provides a convenient means for consumers to recognize products which are more environmentally responsible. The products carrying environmental labeling must meet specific criteria through their "lifecycle" which includes production, use, and disposal. The environmental labels work as information vehicles to notify the customers that the labeled products are more environmentally friendly than other similar products (OECD 1994).

The first environmental labeling in the world, called "Blue Angel" was initiated by Germany in 1977. In the late 1980s, the United States, Canada, Japan, and countries in North Europe established their own environmental labeling programs. Other countries followed by launching environmental labeling programs in the early 1990s. These labeling programs range from governmental supported to private systems (Cason and Gangadharan 2002).

The "Blue Angel" program in Germany is a voluntary and government sponsored program which was created and managed by three participants—the Federal Environmental Agency (FEA), Environmental Labeling Jury (ELJ), and the Institute for Quality Assurance and Labeling (RAL). ELJ and RAL are third-party NGOs that are composed of more than one hundred private organizations. On contrast, the labeling program called "Green Seal" in the United States is run entirely by NGO, an independent labeling organization. It receives no governmental sponsorship though its administrative

and operative procedures are similar to these of governmental schemes.

### 5.2 Brief History of China Environmental Labeling Program

The China Environmental Labeling Program (CELP) is a voluntary third-party products certification program developed primarily from the international labeling procedures initiated by OECD. China initiated the program in 1993 mainly following the scheme used in Germany (Zhao and Xia 1999). CELP aims in assisting the Chinese consumers to become more environmentally responsible in their everyday life, as well as to assist enterprises in reducing their costs such as using resources and non-renewable energy by encouraging the development and production of green products that are friendly to the natural environment in the production process and not harmful to human beings.

CELP was initiated in the early 1990s in China for many reasons. First, the early 1990s was when many countries began to develop their own environmental labeling programs. For example, Australia and Austria initiated their environmental labeling programs in 1991. The European Union established the eco-labeling program in March 1992 and the Netherlands and France followed in the middle of the same year (Xia 2000). Under the general background of the international environmental labeling movement, labels as an information vehicle have became more and more important in influencing the consumer choice in a global market. The CELP was created under competitive pressure from this labeling movement that sprung up across the world in the 1990s. On the other hand, it was the early 1990s when the Chinese governmental met great pressure on environmental issues, both internationally and domestically. After the United Nations Conference on Economic Development in 1992, the Chinese government attached great importance to the integration of environment and development. The government wanted

to improve corporate environmental management in order to reduce the social tensions from environmental degradation. As a result, the Chinese government defined the development of the environmental industry and of environmentally friendly products as one of the country's priorities (SEPA 2006). Finally, some of the Chinese domestic enterprises expected the government to establish the environmental labeling program because they met difficulties in the international market, such as in the wallpaper and refrigerator sectors. In the early 1990s, China's foreign trade expanded steadily. In 1995, the total value of exports was 148.8 billion US dollars, with 22.9 percent increase over the previous year (Fifth Conference of CCICED 1996). Export has been an important aid to strengthen China's economy. The enterprises gave pressure to the government to take initiatives to not only eliminate non-tariff barriers for their exports but also allow them to expand their domestic market shares. With China's entrance to WTO and the consequent large potential market for green products and green consumerism, CELP had helped Chinese domestic enterprises to gain competitiveness in international marketplace and to overcome the green barriers posed by WTO requirements (Chen 2003).

Now, the State Environmental Protection Agency (SEPA) is the only authority to conduct third-party certification of the China Environment Labels. No private or foreign organization can issue environmental labels in China yet. In May 17 1994, the China Certification Committee for Environmental Labeling (CCEL) was founded jointly by SEPA and the State Bureau of Quality and Technical Supervision (SBQT) to administer the CELP. CCEL includes experts from SEPA, SBQT, research institutes, and government-oriented groups. CCEL Secretariat is the principal unit within the CCEL representing the government to deal with certifying, administering, and supervising issues.


**Figure 7:** The logo for China Environmental Label is composed of signs for the sun, mountain, and river, which jointly mean the natural environment. Around these three characters are ten closely linked rings, which represent that the environmental improvement needs collaborations from all participants of the society. Therefore,

In 2003, the CCEL reorganized to develop a set of technical criteria for each product category of the program. Each product has to be independently assessed by undertaking on-site inspection and sample product testing. The test results will be subjected to review and approval. This reform has adopted international standards and fulfills the technological requirement of environmental products specified by the national government. At the same time, CCEL Secretariat was divided and evolved into a smaller Secretariat Office and the China Environmental United Certification Center Co., Ltd (CEC). The Secretariat Office is in charge of category proposal, application achieves, and information dissemination. Meanwhile, CEC operates as a for-profit company under the supervision of SEPA. It was authorized to completely issue the environmental labels by undertaking work of technical assessment, labeling conferment, and supervision (CEC Website 2006). Currently, only the CEC has the authority to issue environmental labels to enterprises and their products, and fifty third-party organizations have the authority to give on-site inspection and sample product testing.

Though China's environmental labeling program is organized and managed centrally by SEPA, the local governments still play important roles in the entire program. Their responsibilities include investigation, pre-review, surveillance and regular checking. The local governments should make product investigation in their own provinces and write proposals to CCEL Secretariat for the sake of identifying new labeling category. When a product category is approved finally by SEPA and SBQTS, the Secretariat will entrust a

third-party organization to develop criteria for the product. The Secretariat will also organize experts and manufacturers to provide comments and changes. SEPA has the final authority to approve and release the new category as well as its criteria. Criteria considerations basically focus on whether the labeled products satisfy with the relevant national requirements in quality, safety, and hygiene. The applying enterprise must also meet the national standards of pollution discharges and limits. At the same time, the criteria should be easily understood by the public consumers.

In 1994, seven categories of products were approved to be eligible for environmental labels in China and were released to the public. They are low-CFCs refrigerator, non-CFCs aerosols (such as hair gels), unleaded gasoline, water-based paint, napkins and toilet paper, silk textiles, and rechargeable mercury-cadmium-lead-free battery. Since 1994, assessments were conducted within fifty-four categories. Now, more than 1100 enterprises and 21,000 products have been awarded the environmental label. The total revenue for these products is 11.25 billion US dollars. According to the marketing survey conducted by SEPA's Science and Technology Department in 2004, all the labeled products have earned increased market shares, ranging from 5 % of increase to as high as 93 %. Among all the enterprises who have obtained the Ten-Ring labels for their products, more than 30 % of the enterprises have achieved an increase of market share which is higher than 70 % (SEPA, STD Survey 2004).

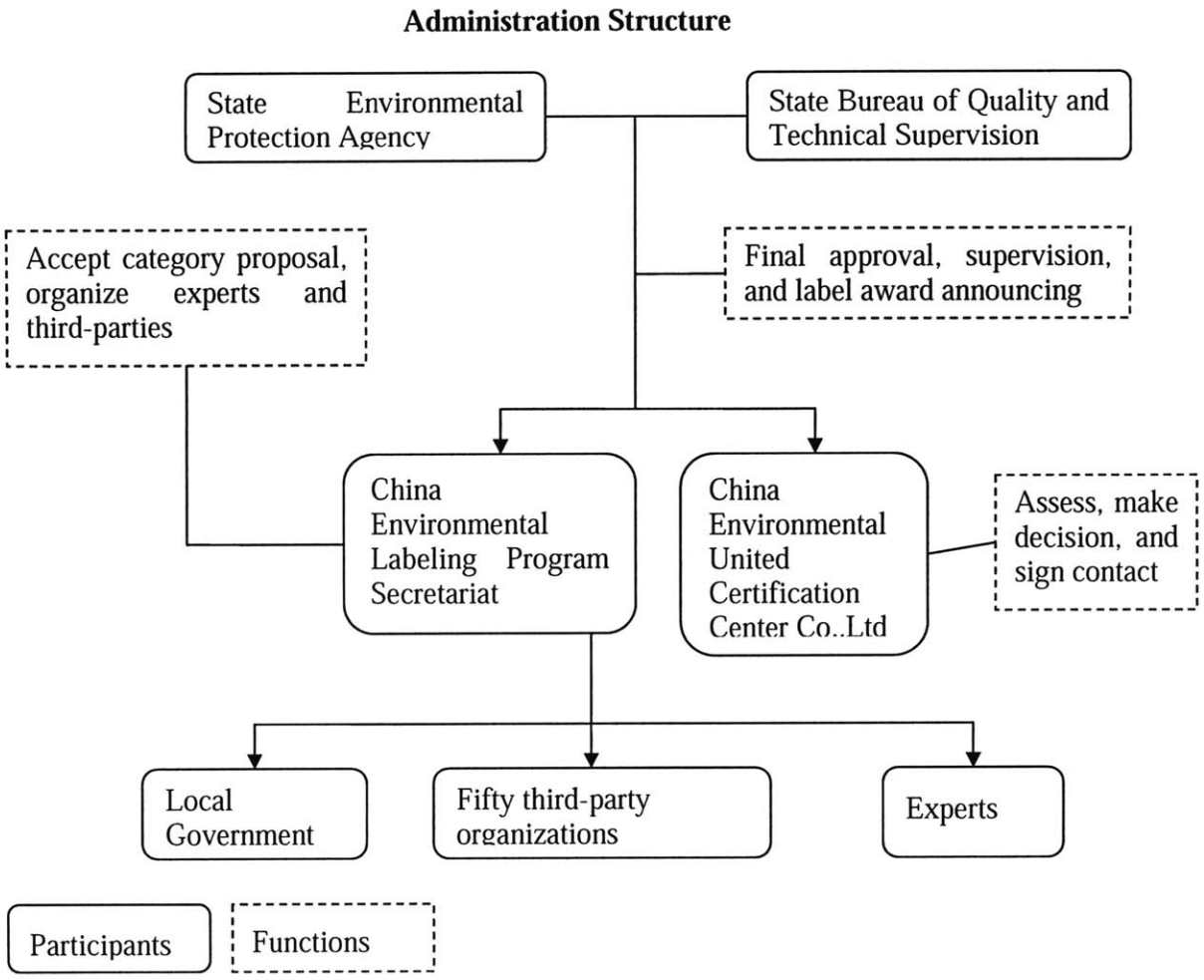


**Figure 8: Administration Structure for China Environmental Labeling Program**

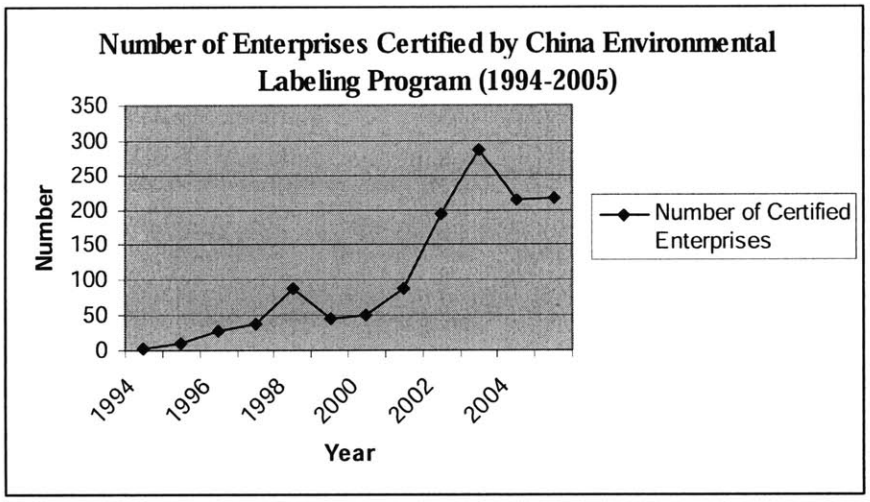


**Figure 9: The number of enterprises first time certified by CELP in each year, 1994-2005 (source: CELP website www.10huan.com)**

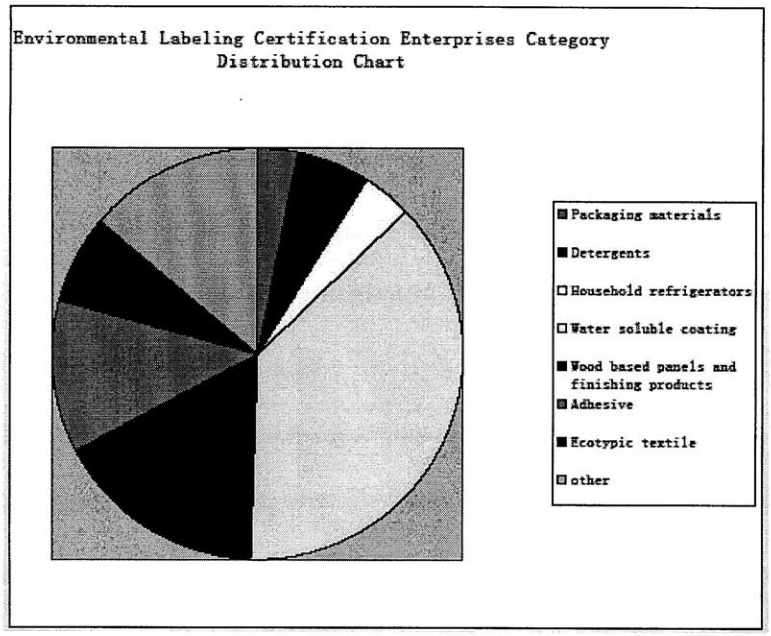


**Figure 10: Industrial distribution for China Environmental Labeling Program (source: CELP website www.10huan.com)**

## Major Procedures

Any manufacturer in China can apply to the local government for Environmental Labels for their products. Once the local government preliminary have reviewed and approved the application, the enterprises can apply directly to CCEL Secretariat. The CCEL Secretariat is responsible for organizing a team and entrusting a third-party organization to give both on-site investigation and sample checking in order to make sure that the products possess superior quality and the enterprise implements environmental performance. After comprehensive assessment, CEC has the final authority to make the decision and the decision should be approved by both SEPA and SBQTS. Annual inspection and random sample checks will be carried out to ensure that good standards are maintained at all times.

## Category Focus and Selection

In China, any individual, enterprise, or local government can write a proposal to the CELP Secretariat to recommend a new product category for the environmental labeling

program. Although any product manufactured in China can be nominated for environmental labeling, the current labeled product fall into six major categories. These focused areas are consistent with China's environmental protection urgencies and economic development emphases.

First, CELP helps the Chinese government to fulfill its responsibility in global environmental protection and international treaties. For example, the Chinese government signed the Montreal Protocol in June 1991 to reduce the production and consumption of CFCs. Consequently, twenty-eight enterprises that produced the green household refrigerator were awarded the Ten-Ring certificates in China.

Second, Environmental Labeling Program is a tool for the government to treat white pollution, which means the one-off products. The labeling program encourages comprehensive treatment measures, such as recycling, substituting, and decomposing to reduce the use of one-off products. Those enterprises that produce plant fiber, one-off tableware, paper, and degradable material are encouraged to obtain China's Environmental labels for their products.

Third, the Environmental Labeling Program focuses on regional environmental problems such as river or lake pollution. In order to assist the national environment protection projects of treating three rivers and three lakes treatment, CELP has disseminated the information regarding the environmental benefits in laundry detergent to the public, encouraging more than twenty detergent powder enterprises to produce phosphate-free laundry detergent.

Fourth, the labeling program considers the products that are closely related to public health and people's daily life. Telecommunication devices, televisions, and personal computers produced with new technologies to decrease the electromagnetic radiation are

selected for China's environmental labeling program.

Fifth, with the rapid urbanization in China, construction became an industrial sector and more people prefer DIY decoration for their housings. Low toxicity and low pollution construction materials, such as water-soluble coating, ceramic for construction, furniture, compose a major category of the product. In order to reduce the in door air pollution caused by construction material and decoration, assisting the implementation of 10 national standards of product pollutant discharges, CELP established and revised eleven environmental labeling product standards.

Sixth, this labeling program encourages the rational use of energy and promotes the production processes with less or zero energy waste. Various paper products and construction materials are selected because their raw materials can be recycled during the production processes.

**Characteristics of the Program**

This labeling program in China was designed to compatible with the Chinese own social characteristics. The entire program was directly managed and regulated by the central government. SEPA is the absolute authority to make the final decision or any change on the certificate. All the other executive organizations, such as CELP Secretariat and CEC are also supervised by SEPA. However, the execution and evaluation are implemented in separated institutions. CELP Secretariat issues and certifies the third-party organizations for the evaluating, measuring, monitoring, and other technical works. The government plays a role responsible for the issuance the whole process only. The most reason for such an administrative structure is that China is still on the early stage of market economy and is currently experiencing the economic transition. Credit system is sill under construction and the market competitions are not well regulated. Therefore, the

government's central management is necessary for CELP that with uniform standards in each industrial sector.

Furthermore, in current China, environmental management is still a new concept for both the public and private sectors. So, environmentally friendly features of the products cannot be separated from the features of high quality. In CELP, Chinese government stresses on its implementing strategy as "Double Excellence", which means that the company who is certified with CELP certificates should necessarily be a company with high product quality. The reason for this strategy is that the government has been aware that energy saving is important for the sustainable development of China and lower quality of manufacturing will waste energy for the country. Moreover, in China, the standards and criteria for CELP certified enterprises include that the companies must meet all environmental standards and their product must meet the recycle standards. Environmental performance is not only within the whole production process but also in the entire lifecycle of the products. In order to achieve this goal, the government adopted quantitative methods for monitoring and measuring the criteria for most of the program standards.

**Challenges**

First, though the environmental labeling is a good information disclosure strategy for the enterprises, China's environmental labels cannot provide detailed or specific information about the difference in the environmental impacts and effects between labeled products and the products without labels (Zhao and Xia 1999). For example, among the refrigerator factories, the environmental labels are the same for both non-CFC and low-CFC refrigerators. On the other hand, among different product categories, the product criteria are vague and not uniform. For example, criteria for toilet paper, low

CFCs refrigerator, unleaded gasoline, water-based paint, and mercury-free batteries are based on single factor criteria. However, criteria for silk are based on the life-cycle of the production.

Second, consumers' awareness of environmental labeling has increased during the past decade; however, the Chinese consumers still lack guidance in how to use the information to make decisions. Purchasing behaviors were changed in only a few particular industrial sectors, such as household construction materials and refrigeration. Compared to other countries, the consumers' recognition for environmental labeling in China is still low. According to the survey from SEPA, fifty-nine percent of Chinese consumers are willing to pay ten percent more money to buy environmentally friendly products. However, there are eighty percent of consumers in Canada and eighty-five percent in Sweden are willing to pay more than ten percent for labeled products (SEPA Survey 2004).

Third, China's Environmental Labeling Program still lacks the mutual recognition in international market because the transparency of the program is still low. The Ten-Ring labels cannot provide foreign producers and consumers with enough opportunities to be aware of existing environmental situations with the product. At the same time, environmental labeling criteria and specifications between developed countries and developing countries are different because of their different economic bases. For example, the labeling criteria for low CFCs refrigerators are different in China and in some European countries. If a Chinese refrigerator enterprise wants to access the European market, the company has to apply a local environmental labeling there (Fifth Conference 1996). Now, the Chinese government has only cooperation with Japan and German governments for environmental labeling. Bilateral and multilateral recognition and

cooperation are necessary for the Chinese government to develop its environmental labeling in the future.

### 5.3 Case Study ---- Painting Industry in China and Nippon Paint (China) Co. Ltd

For the purpose of this study on the practice of environmental labeling in China, coating industry has been selected for further investigation and analysis. This industry is chosen because with the economic development in China and a rising standard of living, there is a rapidly growing market for architectural and household construction. Driven by the rapid urbanization, the developing strategy in Western China, and the Olympic Games in 2008, the market demand of related construction and painting materials is increasing each year in China (Xu 2004).The current construction chemical industry in China is worth around 4.6 billion US dollars and it was forecasted that the Chinese demand for on-site construction chemicals will grow 10.5 percent yearly through 2009. Coating and sealers will remain dominant among the fastest growing product groups (Freedonia Group 2006). Currently, China has more than 8,000 coating manufacturers with annual total output of nearly 2 million tons (Xu 2006). Most of these manufacturers are located in highly developed economic areas, such as the east coast and Pearl River Delta.

At the same time, people care more intensely about the indoor pollution and their health than before. Tougher Volatile Organic Chemicals (VOCs) and toxic compound restrictions have been implemented by the Chinese government with the increasing market demand and competition. Currently, about thirty companies producing more than hundred types of water-based coating have earned the China Environmental Labels from SEPA (Xu 2004).

Now in the coating market, water-based paint and emulsion paint are the major

products. These products usually include voltaic organic chemical compounds, organic chemical pigments, and disinfectants which are hazardous to both the environment and human health. People with long-term exposures to these hazardous compounds are at high risk of having serious diseases in the blood, nervous system, and kidney. Under illumination, these hazardous chemical compounds will also decompose into ozone and other pollutants, which significantly contribute to photochemical smog. Photochemical smog is a type of serious air pollution causing the damage to vegetation. On the other hand, some of the raw materials for water-based or emulsion painting come from the petroleum. Over-production and usage of these paintings will lead to energy drain.

Because the quality of painting products in China's current market varies largely, the CELP has set strict criteria for these products, focusing on their impact on human health (CELP Handbook 2000). The criteria are based on the following principles:

- The raw materials for these paintings cannot include benzene, toluene, xylene, benzene hydrocarbon, and halogenated compounds.
- The raw materials for water-based painting cannot be mixed with any raw materials for organic painting during the entire production process.
- Any toluene, halogenated compounds, and fragrant hydrocarbon are banned in the production process.
- The final painting products cannot include any lead, cadmium, chromium, and their related compounds.
- The VOC of the product should be lower than 250g/L.

**Nippon Paint Co., Ltd and Its Companies in China**

The Nippon Paint Co., Ltd is one of the leading competitors in China's construction chemical market (Freedonia Group 2006). The company was first founded in Japan in

1881 and is now a Singapore majority-owned corporation. Nippon Paint is the largest paint manufacturer in Asia, producing water-based paint and coating for automobiles industry, manufacturing sector, construction decorating, and household usage. Currently, Nippon Paint owns more than twenty manufacturing plants in Asia and the company operates its business worldwide. In 2005, Nippon Paint's net sales were 202.85 million dollars. The net income was 66.29 million dollars and the company's total assets were 2.14 billion dollars (Nippon Paint Annual Report 2005).

In December1994, Nippon Paint expanded into Chinese market and the first manufacturing plant was established in northern China. In the following few years, Nippon Paint (China) Co., Ltd. developed in China rapidly. Now the company has thirty offices, four wholly owned factories, and one joint venture in China (Jiang 2005). The factory in the Shanghai Pudong district is the major production facility with an annual production capacity of 140,000 tons. The company has also invested 34.66 million US dollars to expand the production capacities in the two factories in Langfang and Suzhou to 160,000 tons per year totally and in the Guangzhou factory, whose production capacity is 70,000 tons per year. Nippon Paint (China) has a nineteen percent of the total coating market share in China currently (Xu 2004).

**Motivation for Implementing CELP**

Nippon Paint (China) was driven to implement the labeling program mostly because of the marketing difficulty the company met in the Chinese painting market. During the early 1990s, the Chinese government sped up its economic reforms in many aspects including the real estate market. Since the housing reform, more resources and higher quality housing became available for households, causing housing demand to soar. Wallpaper was the most frequently used material by the Chinese people for decorating

their homes in the 1980s. However, wallpaper is made from polyvinyl-chloride, an organic chemical compound that releases toxic fumes indoors, and is also made from plastic materials with lower permeability. Due to these weaknesses and the inconvenience of redecorating, more and more Chinese customers were willing to paint their homes with emulsion paints. The Nippon Brand of emulsion paints became very popular in the coating market because it was made with a water-based solvent and decreased the risk of indoor air pollution. However, the coating market in China expanded rapidly before the government could create adequate regulations for this increasing market. As a result, more and more companies selling low quality products entered the coating market. These companies overused formaldehyde because it also functions well as an anticorrosive. Formaldehyde, a volatile and poisonous chemical, did reduce production costs.

Complaints about construction materials used in new housing facilities increased in the early 1990s. A rise in casualties from housing collapses and illnesses caused by indoor air pollution forced the Chinese government to pay more attention to quality issues, such as the materials being used in the housing market. According to a 1999 national survey for product quality, only 64.4 % of sold construction materials met the national quality standards. The survey of on-site inspection of 15,000 construction projects also showed that more than 23 % of materials used were inferior (People's Daily 1999). Extensive media reports on these quality issues and casualties resulted in a decline of coating paints sales. Consumers began to choose other types of paint because of media stories highlighting problems with the coating market. However, the problems were being caused by only a few irresponsible companies. Nippon Paint (China) tried various marketing strategies to demonstrate the safety of their products. It also sought any agency or certificate program to demonstrate their product quality to the public. Though the

CELP has been implemented by the government since 1994, neither the customers nor enterprises, including Nippon Paint (China) were well aware of this program. Instead, they worked with outside agencies to show that their products were safe. For example, in 1997, Nippon Paint (China) issued a report on indoor air pollution with Beijing Health and Epidemic Prevention Station. The report indicated that Nippon's products contained an acceptable amount of formaldehyde, phenol, chloroethylene, lead, mercury.

However, this report did not save the marking sales of Nippon Paints (China) successfully because this report with scientific conclusion could not be easily understood. The company had to put more effort into marketing and information disclosure to the public. They contacted the Chinese Center for Disease Control and Prevention for a toxicology experiment. The result indicated that the toxin of the emulsion paints from Nippon Paint (China) was on the lowest level, which means the safety intake amount of the product for a white mouse is higher than 5,000 mg per kilogram. This result was used by the company in their marketing because it was more easily understood by the public. However, the downside of this information disclosure strategy was that it was difficult to make any comparison between this product and the complimentary products in the market.

In 1999, SEPA revised the labeling program and put more effort into information dissemination for this program. The symbol of the environmental label on products—the ten rings in green-- was easily remembered by customers. With the increasing public recognition of the labels, Nippon Paint (China) finally decided to implement this program as its principal marketing strategy for the environmental and healthy safety of its products. Since 2001 when Nippon Paint (China) was certified by CELP, the company's marketing sales have kept increasing yearly.

## Environmental Practices

Nippon Paint (China) believes that environmental protection is more than a final result, but a consistent process of efforts (Duan 2006). The company has been certified with ISO 14000 Environmental Management Systems since 1997. In 1999, the water-based painting products from Nippon Paint (China) were certified with the Green Construction Materials Certificate in China. In 2001, China's National Department of Construction awarded Nippon Paint (China)'s products with another Recommended Products Certificate. Finally in 2002, the company successfully obtained the Ten-Ring label for its products from the China Environmental Labeling Program. According to Xia, Qing, the director of CCEL Secretariat, Nippon Paint China is a leading company in this labeling program (Ten-Ring Website 2006).

The environmental practice in Nippon Paint (China) aims to clean the production process follows five guidelines.

1. The company excludes raw materials with benzene and formaldehyde from its painting formula, as they are volatile chemical substances that harm human health.
2. The raw materials used in Nippon Paint's products are from manufacturing suppliers that have good environmental reputations, such as DuPont and Rohm& Haas.
3. For the benefits of employees, Nippon Paint (China) adopted new technologies in its entire air purification process including ingredient mixing, dispersing, modulating, filtering, and product packing. It is assured by the company that there is no dust and minimal noise during the whole production process.
4. Nippon Paint (China) adopted new technologies for its waste treatment facilities, such as the negative pressure operation for the ingredients. After subsiding,

biochemical processing, and filtering, the waste water discharged from the production process not only meets relevant national standards, but also is used to raise ducks in order to beautify the factory environment.

5. The dust from both the raw materials and the sacks they come in are recycled for papermaking.
6. The final painting product meets and surpasses the national standards for VOC, benzene and other hazardous chemical compounds that are harmful to human health.

Besides the environmental practices on pollution treatment within Nippon Paint (China), the company also got involved with the process of formulating and editing the program standards. For example, some experts from Nippon Paint (China) had participated in the committee discussion for the standards of coating industry which was released in 2002. In late 2004, experts from the company proposed a new recommendation to the CELP Secretariat about the measuring technique of VOCs which are emitted as gases from certain solids or liquids. In the 2002 version of standards, the methods for measuring the VOCs are adopted from the regulations of the Environmental Protection Agency (EPA) of the United States. The EPA defines VOCs as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions (EPA 2006). At the same time, the method CELP adopted to measure the VOCs was also from EPA. However, this physical methodology was not consistent with the definition from EPA because the error during measurement was high and unavoidable. Nippon Paint (China) proposed to CELP Secretariat to make a change for both the definition and the measuring method. With an entire year of investigation,

discussion, and research, the CELP Secretariat accepted the company's proposal in 2005 and began to use the World Health Organization's definition for VOCs. This new definition excluded the compounds with boiling points higher than 250 degrees Celsius. Chromatograph method was also adopted to measure the VOCs so that the errors could be controlled under an acceptable range. The standard for VOCs with these new methods of defining and measuring became stricter and more scientific to help avoid the free riders for the standard.

### 5.4 Case Analysis

In this case, the Nippon Paint (China) utilized the environmental labeling program as an effective marketing strategy to protect its benefits from irresponsible competitors. The labeling program also helped consumers to be more rational and environmentally friendly when choosing items on the market. Compared with the previous two cases, we can see that the information disclosure program in China is not conflicting with the voluntary programs and collaborations between NGOs and private sector. On the other hand, it has its own advantages in regulating and influencing consumer behaviors. However, the success of implementing this program heavily depends on the governmental support and public recognition.

# Chapter 6 Discussion and Conclusions

## 6.1 Discussion

The three cases in this study showed how these innovative environmental measures have been implemented within specific enterprises in China. We can see that the emergence of the innovative environmental policies stems from the need to meet the demand to compensate for the deficiencies of the conventional environmental instruments. These corporate demands can hardly be met within the traditional policy system. Moreover, corporate adoption of the innovative policy measures calls for rethinking how the Chinese government should play its role in the entire environmental movement.

### Comparison within Three Innovative Policy Measures

The three companies chosen in this study have different reasons to adopt the innovative policy measures. For example, Shell Oil (China) is a large multi-national company and it wants to stabilize its business in China for long-term considerations. At the same time, Shell Oil Company has been involved with socially responsible investment for many years and has accumulated a considerable amount of experience in many locations in the world. The company has its own models and experience when working with local community-level organizations. Therefore, for Shell Oil (China), collaboration with influential environmental NGOs in China could effectively meet the company's demand for collecting information from local communities for future strategy.

However, for Nippon Paint (China) and ITT-Conan, their demands vary from Shell Oil (China)'s, and thus their adoption strategies are different. The largest reason for ITT-Conan to adopt the environmental management system was that the company experienced great pressure in the global market to improve environmentally. In order to retain its major customers, which are large multi-national companies; this middle-sized

company needed evidence to show the high quality of both its production process and management capacity. ISO 14000 became the company's first choice because this program established the international standards and has been recognized in the global market. Since ITT-Conan's customers are major companies rather than individual consumers on the market, the company pays more attention to the production process and the industrial supply chain than to the consumer behaviors of the final market.

Nevertheless, Nippon Paint (China) faced difficulties in the paint market from companies with unhealthy practices. The company's priority demand was to distinguish its own products from the products with lower quality. Therefore, individual consumers' preferences and choices had a great impact on the company's success. The China Environmental Labeling Program was chosen by Nippon Paint (China) basically as a marketing strategy. Since the government has given a great deal of support to this program, the product labeling helped Nippon Paint (China) to achieve its business goals effectively.

**Table 3:** Corporate Motivations for Adopting Innovative Policy Measures and the Effectiveness of the Policy Adoption

| Policy Measures | Program | Corporate Motivations | Effectiveness |
|---|---|---|---|
| Collaboration | Collaboration with Environmental NGOs | -Long-term development in China<br>- To collect community level information | Influence community and grassroots organizations |
| Voluntary Approach | ISO 14000 Environmental Management System | - To deal with international customers<br>- To enhance competitiveness in the global market | Influence the industrial production process and management |
| Information Disclosure | China Environmental Labeling Program | - Marketing strategy<br>- To confront unhealthy competition | Influence consumption behaviors and the markets |

As these three innovative policy measures work most effectively for different aspects

of the entire social movement to meet the goal of sustainable development, they have various levels of benefits and are challenged by different factors. For example, the collaborations between different stakeholders can benefit mostly by enhancing the involvement of lower level social organizations and communities. However, the collaboration programs are more likely to be randomly creative and incremental processes only, rather than long-term strategies that can be spread to each industrial sector and the whole society. On the other hand, new technologies are major hurdles for enterprises in implementing voluntary measures due to the high costs of technology diffusion. Voluntary measures may be more welcomed by large industrial corporations than by small enterprises because of the capabilities of incorporating new technologies. In order to improve the current level of environmental management further, ITT-Conan needs a considerable amount of investment in new pollution treatment technologies. For Nippon Paint (China), this company could successfully use in the China Environmental Labeling Program only after the government had first put a great deal of effort to marketing the program. The success of this labeling program heavily depends on governmental support and public recognition. Though this program works effectively in regulating consumer behavior, the social acceptance and attention are still significant prerequisites.

**Table 4:** Comparison of Social Benefits and Challenges for the Innovative Policy Measures

| Policy Measures | Social Benefits | Challenges |
|---|---|---|
| Collaborations | - Help to enhance capacity building of grassroots organizations<br>- Enhance community level involvement | - Incremental process only, rather than overt, long-term ,and systematic change |
| Voluntary Approach | - Reduce risks and avoid environmental disasters | - Technology diffusion and the companies' capacities to |

| | | |
|---|---|---|
| | - Boost regional economy | incorporate new technology |
| Information Disclosure | - Regulate consumer behaviors<br>- Increase product quality | - Public awareness and recognition<br>- Governmental support |

## Comparisons with Traditional Policies

Despite previous attempts, the current state of environmental policy-making in China leaves much to be desired in terms of incorporating innovative approaches into the conventional decision-making process. Existing policy structures and instruments are either not fully equipped in terms of capabilities, or they lack the funding to be effectively implemented. These innovative environmental measures can complement the conventional approaches in the following ways.

First, these innovative environmental measures can help to enhance public acceptance of environmental protection. Without widespread public acceptance and support, policies may not succeed to achieve the sustainable development goals. The traditional instruments, no matter the commands or incentives, stress the fact that the burden of the policy should fall on those who are responsible for causing the pollution problem in the first place. The traditional policy approaches aim to change economic participants by changing their input and output behaviors and the approaches mostly focus on pollution control and elimination. The government and industrial polluters are the major players when implementing the traditional policy instruments. However, with environmental problems getting more and more severe, only efforts from the polluters and governments are inadequate. The innovative measures stress on changing the industrial behaviors by wide social participation. It brought in a broader circle of stakeholders into the environmental protection process.

Second, although the innovative environmental measures mentioned in this study are

voluntary, they are able to generate public pressure and promote new technologies. The voluntary measures are good complements for command and control measures for corporations to not only control pollution behaviors but also improve their environmental practice. The innovative measures provide more alternatives for the industrial sectors to arrange their environmental practices. Incorporating new technologies for the environmental improvement, enterprises can also benefit the company by building better social reputation, enhancing marketing strategies, and connecting more closely with the local community. Innovative measures can more easily be considered within the cost and benefit analysis process of the enterprises' investment decision-making.

Third, conventional approaches stress the process of changing the production process more but less on the consumption process. The innovative measures provide both the enterprises and the public to focus on some environmental improvement beyond the production process. For example, the dissemination of information regarding industrial behaviors cannot only help the enterprises to change their practice, but also guide the consumers to improve their purchasing patterns.

Fourth, in the traditional policy structure, the government is the absolute authority to manage the regulations and commands. All the enhancement and implementations flow from the top to the bottom. The industrial enterprises usually receive and execute the environmental policies reactively. However, the innovative measures encourage individual corporations and organizations to create their own protection agenda. The actions, collaborations, and improvements are from bottom up and are more adoptable for corporations.

**Table 5:** Comparison between traditional policies and innovative policies

| Traditional Policy Measures | Innovative Policy Measures |
|---|---|
| • Government Vs. Industry<br>• Government—Absolute authority<br>• Regulation<br>• Pollution Amount Control<br>• Re-active<br>• From top to bottom | • Broader Circle of Stakeholders<br>• Government- Service Provider<br>• Interaction<br>• Promote Creativity<br>• Pro-active<br>• Bottom up |

## Limitations

This study provides a picture of how innovative environmental measures have been implemented in specific companies in China, but there are still some obvious limitations for future improvement. First, the situations and characteristics of the innovative measures discussed in this study are restricted to mainland China only. For Hong Kong and Taiwan, where the economic and social structures are significantly different from mainland China, there must be some variations for these environmental measures. Second, the three enterprises selected as cases in this study are all local corporations invested by foreign companies. These three companies are selected simply because of their excellent performances and leading positions in the specific policy measures. However, there must be some variations among these foreign companies in China, local state-owned enterprises, and small and medium-sized private enterprises on their performances of innovative environmental measures.

### 6.2 Conclusions

There is no doubt that the Chinese government will continue to rigorously enforce the existing environmental policies since the protection scenarios are currently not optimistic. The emission standards will doubtlessly be stricter and more specific regulations will be announced. The traditional environmental policies will keep their leading roles in reducing pollution and achieving the sustainable development goals. However, China's

experience in recent years also made it very clear that the participation of government and private sectors are not enough to solve the existing and emerging environmental problems in this country. The entire society favors a broader circle of stakeholders and more alternatives for the environmental protection. Newly emerging innovative measures, such as the collaborations, voluntary approaches, and information disclosure mechanisms, will never entirely replace the existing conventional policy structure in current China. But, fast economic growth and social changes make these innovative measures good complements for the traditional policy instruments.

Since the economic reform, the Chinese government has adjusted its functions in market control. It is not only the trend but also a central decision that the government will keep getting smaller. It is undoubtedly clear that the role of the Chinese government in environmental protection will continue to shift from that of a central manager and regulator to that of a supervisor and service provider.

Under such a severe environmental scenario with both dynamic economic and social transmitting processes, the Chinese government should not only take advantage of these innovative measures, but also make a better legal and economic environment for the development of the new policy instruments. The legal basis for public participation is important for the development of innovative environmental measures in future China because the nascent civil society in this country needs more legal guarantees for its growth and capacity building. On the other hand, private enterprises also need legal basis of the economic incentives for them to make socially responsible investment which includes the investment in environmental protection, such as their collaborations with citizen groups.

In addition to the legal basis to protect the rights of civil society, a society-based

supervising system and a healthy trust system in the society are also necessary. Environmental protection yields social benefits, requiring government support through funding not only from central budget directly, but also from private investment channels and the social credit market. Government institutional agencies should accelerate the establishment of a stable and healthy investment credit system as well as social trust system to enhance the generation of funds for environmental protection. At the same time, media supervision and public participation can all share the burden of the government. The scope for involving the media, nongovernmental organizations, and community-level citizen groups at large in environmental enforcement should also increase in China.

My last policy recommendation is that the Chinese government should encourage more social groups get involved with the implementation of the innovative policy measures. Worker unions, industrial associations, consulting groups, and other types of grassroots organizations can share not only the benefits, but also some part of service responsibilities in the entire environmental protection process. A broader social participation can help the government to utilize and integrate more social resource in environmental protection.

There is no doubt that the innovative environmental policy measures will develop rapidly in the near future of China. The successful implementation of these policy measures will not only benefit China's environmental protection movement, but also contribute in improving the entire Chinese society—more stakeholders, social capitals, and human resources will be brought into the environmental protection process.
In all of these three cases in this study, participants beyond governments and the private sectors have been involved in the programs to provide environmental services. More and more social participants will join environmental protection as a trend for the future China.

Private enterprises are expected to be more deeply involved in social investments, including environmental concerns. Furthermore, some other social powers, such as the citizen groups or monitoring institutes composed of experts will share some conventional responsibilities of the government in the near future of China.

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## Appendix I—Interview Questions

Background Questions

1. How long have you been working in this company? How long have you been in charge of this program in the company?

2. How long have this program been conducted in your company? Could you please tell me some overview information for this program in your company?

3. Who made the decision to implement the environmental measure in the company? How was the decision made?

4. What are the specific duties in the company in regards to the environmental program?

Detailed Questions

1. What are the primary environmental benefits of this program, such as, in environmental, economic, and public relations aspects? Do you have any data that shows the program is successful working? If not, how long before you have data?

2. What steps did your company take to implement the progress? Have you achieved any milestones?

3. Describe some of the environmental practices your company has conducted in order to achieve its goals for the program. What types of practices did you have before the program?

4. What changes were made in your company as a result of the program?

5. What challenges has your company faced since the initiation of the program, such as increased costs, layoffs, changing management practices or procedures?

Motivation Questions

1. What are the reasons for your company to start this program?

2. What barriers prevent the future growth of this program, such as governmental, legislative, and international barriers?

3. Which is more important to your company, the environmental impact of this program or the social impact?

4. What kind of resources, such as technology support, management strategies, or governmental incentives, etc., does your company need to improve the performances of this program?

5. Are there any other improvements your company could make in the future to enhance and develop this environmental program? What changes if any, are planned? When will they be implemented?

Other Questions:

1. How does the company know the approaches are successful?

2. Does the company expect more businesses will adopt these approaches in the future?

3. What has the government done to encourage corporations to adopt these approaches? Or reward businesses with environmentally friendly practices?

4. How aware is the company of the other innovative approaches mentioned? Did the company consider implementing any other approaches? Why not or if yes what happened?

**Appendix II—Core Processes of Environmental Protection Treatment in ITT-Conan (Tianjin)**

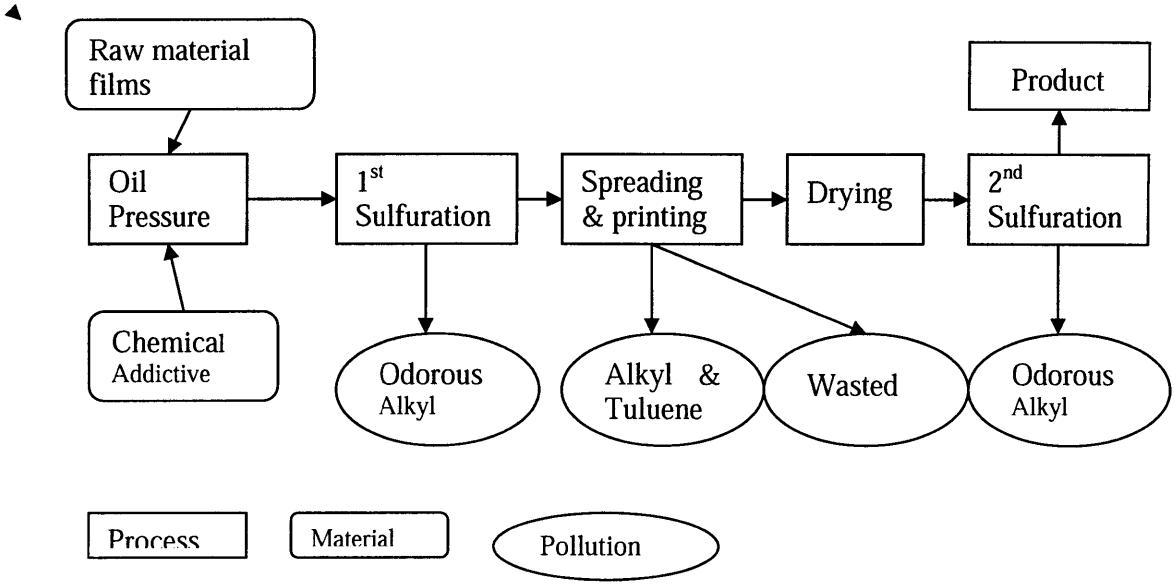


**Figure 11: Polluted Emissions during the Core Production Process (source: ITT-Conan Environmental Assessment Report, 2003)**

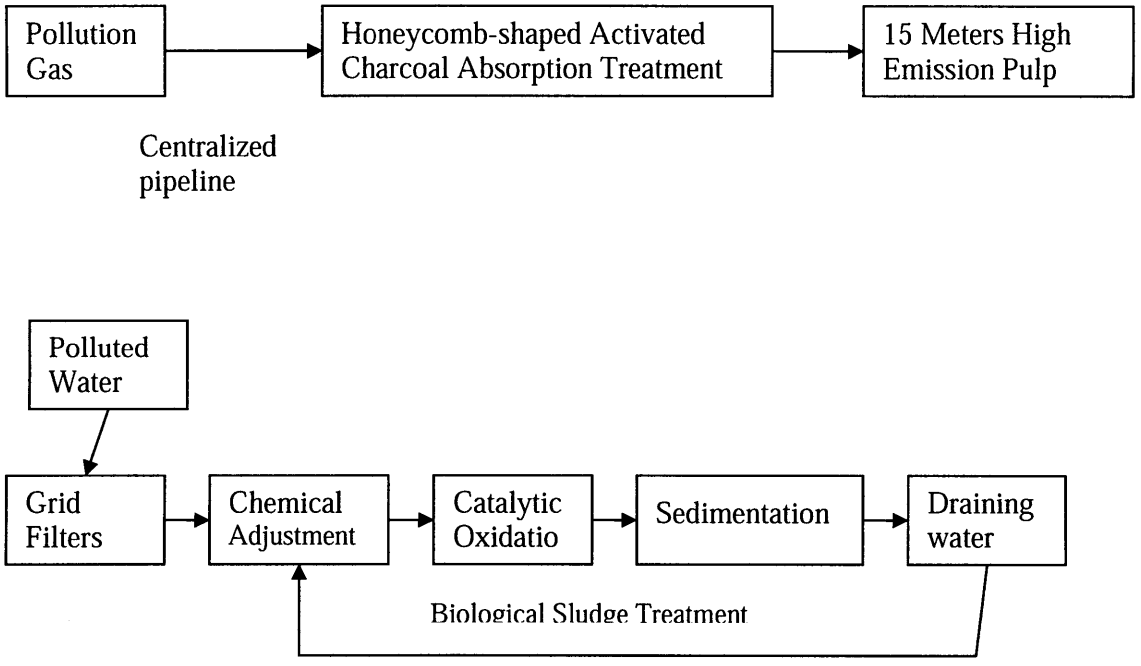


**Figure 12: Core Environmental Protection Treatment Process (source: ITT-Conan Environmental Assessment Report, 2003)**

**Appendix III— Core Processes of Environmental Protection Treatment in Nippon Paint (China)**

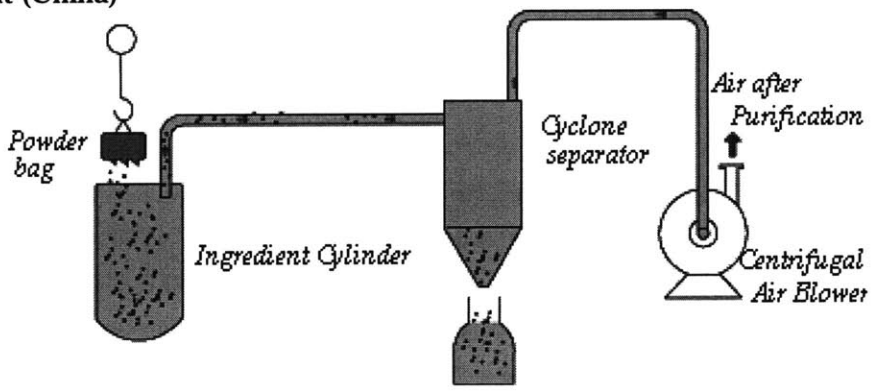


**Figure 13: Air Purification Process for Nippon Paint (China) (source: Nippon Paint [China] Website)**

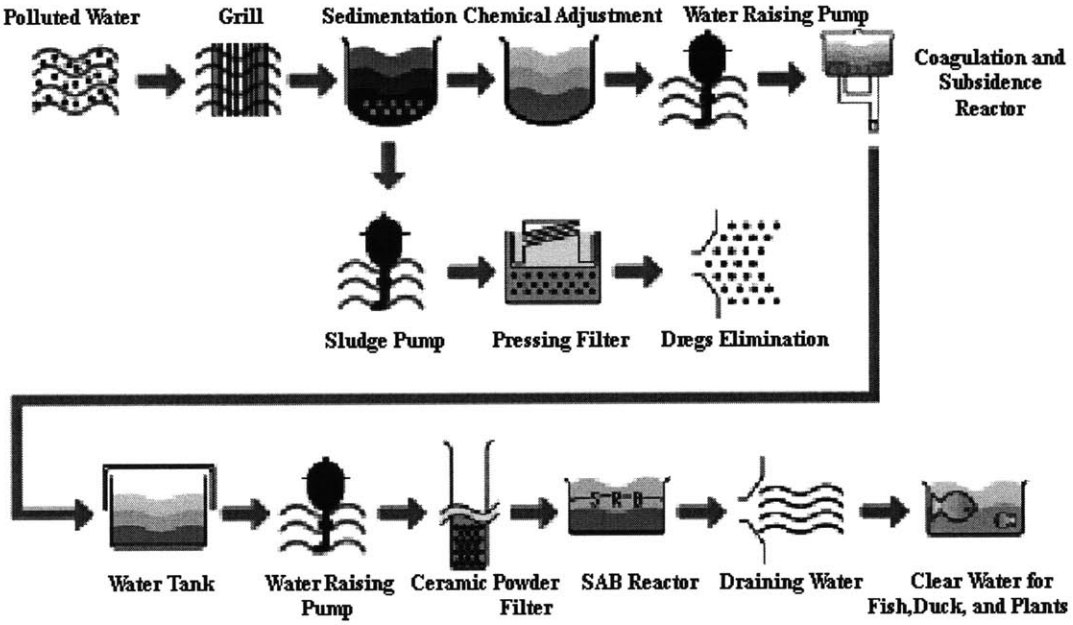


**Figure 14: Waste Water Treatment Process for Nippon Paint (China) (source: Nippon Paint [China] Website)**

**Appendix IV—Application Procedures for China Environmental Labeling Program**