

AN INNOVATIVE ENVIRONMENTAL MANAGEMENT PACTICE: THE POTENTIAL AND DIFFICULTIES OF ISO 14001 IN CHINESE SMALL TOWNS

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ABSTRACT: The potential of ISO14001 (Environmental Management Systems – specification with guidance for use) to be adopted by Chinese small town governments with a hope to improve and enhance environmental management at town level and the difficulties in doing so are discussed in this paper. While ISO 14001 is regarded too difficult or even intangible for most of Chinese local enterprises, ISO14001 shows great potential to be implemented regional environmental management, such as a small town. It is believed that, different from other environmental management instruments, being on a voluntary basis, ISO14001 can be a force with countervailing advantages to direct regulations, market based incentives or information based approaches, and implementing ISO 14001 in Chinese small towns is a very important step before wide adoption of ISO 14001 by township and village enterprises (TVEs) in China, who form the majority of the Chinese Small and Medium Sized Enterprises (SMEs) and tend to concentrate more and more in small town areas. It could be more operational and effective to apply ISO14001 in small towns considering their unique characteristics and significant functions, and the implementation of ISO 14001 can contribute profoundly to the local sustainable development in a structured and systematic manner in a longer term.

Key words: ISO 14001, small towns, TVEs, environmental management, China

1. INTRODUCTION

Since the landmark report “Our Common Future” (WCED, 1987) introduced the concept “Sustainable Development”, great efforts have been made at both international and national levels to move towards this goal. From the Montreal Protocol in 1987 to the United Nation Conference on Environment and Development (UNCED) in 1992 (also referred to as the Earth Summit held in Rio de Janerio), a “global consensus and political commitment at the highest level” on how governments, enterprises and non-governmental organizations can co-operate to solve the crucial environmental problems of our time which threaten human life and society has been achieved and a blue print for the 21st century, Agenda 21 (World Bank, 1997), was drawn. At the national level, environmental issue has been put on the top of the Agendas 21 of various state nations. In order to “green” the traditional production and consumption modes which not only waste limited

natural resources but also damage the environment, various environmental policies and management measures have been introduced to manage natural resources and to control pollution, including environmental legislation, direct regulation, eco-labeling, market based and information based instruments, etc.

However, the differences in these above mentioned laws, regulations and standards are more and more becoming the technical barriers in international trade. To respond to this situation and the globalization trend, the International Standardization Organization (ISO) set up a Strategic Advisory Group on Environment (SAGE) in 1992 to study the feasibility of international standards on environmental management system. As a result, five ISO 14000 series of standards were brought out in 1996, which were encouraged by the World Trade Organization (WTO) as the “level playing field” as required by international trade agreements (CSBTS/TC 207, 1996).

It may be noted that ISO 14000 standards came as a result of three events – the Uruguay round of the General Agreement on Tariffs and Trade, the wide spread application of ISO 9000 as an instrument for facilitating international trade, and the Rio Conference. While the World Trade Organization (WTO) stressed the need for removal of technical barriers to trade by using international standards, Rio Conference received commitment from nations to protect environment. At the industry level, businesses who fail to comply to environmental norms may lose business partners, thus limit the ability for strategic alliance, reduce business dealings with suppliers, contractors, customers, banks, creditors and other parties. At the country level, companies are beginning to exert influence on their business partners in other countries. Country’s competitiveness drops and business opportunities are taken away by other countries if they can not comply with the standards. WTO encourages its member countries to use ISO 14001 for environmental protection (Sohrab, 1999). It is important to recognize that ISO 14001 has become a reality, regardless of whether it is liked or not.

It has been widely realized that sustainable development is not merely a technical issue. It is more a social issue (M. Bell, 1998; A. Mol and G. Spaargaren, 2000; Z.C. Liu, 1997). Economic construction is still the nucleus of modernization in China, but it must be based on ecological civilization concept. As it was stressed in “new environmentalism” that “management is more important than technology” (Steer A., 1996), ISO 14001 aims to provide a practical tool with a systematic and structured approach to consider environmental rationality when a project or a policy is decided instead of the remedial action after that. ISO 14001 also focuses on continual improvement. This is based on past experiences on end-of-pipe solutions, cleaner technologies, process control, life cycle assessment and the traditional management approaches. It is widely realized that the introduction of environmentally sound technologies alone will not lead to sustainable industrialization. Only a comprehensive and integrated environmental management system which takes into account: managerial commitment; the establishment of an environmental policy; data collection and documentation control; cost-effective technology selection and implementation; employee training; and program monitoring and certification, can make any meaningful impact in this regard. Environmental issues have increasingly important implications for organizations, including risks and opportunities. The environmental management system defined by ISO 14001 assists organizations to manage environmental risks and opportunities in a systematic manner (Sohrab, 1999).

China has been closely following the process of ISO 14000 series. The State Technology Supervision Bureau set up China Commission for Environmental Management Standardization Techniques to liaise with ISO/TC 207 and to study how ISO 14000 series can be transformed as national standards. Hereafter, publicity, training, education and experiments on certification have been carried out step by step to form the base for further actions. In order to promote the implementation of ISO 14000 in China, the State Environmental Protection Administration (SEPA) approved the establishment of Environmental Management System Audit Center in 1996 as the technical supporting body. In 1997, a Guiding Commission for Environmental Management System was approved by the State Council to coordinate at the ministry level and to guide the implementation of ISO 14000 series in China. Up to this point of time, there are 12 recognized ISO 14000 certification bodies and 58 registered consultancy services in China. The basic institutional framework has been shaped.

By the end of 1999, 232 enterprises in China had been certified with ISO 14001, of which about two thirds were joint-ventures or foreign funded companies, and 70% were in sectors like electronics, electric household appliances and office equipment. There were no any enterprises from more polluting sectors like paper making, metallurgy, chemical industry, coal mining, etc. (MOA, 2000). Export-orientation, requirement from the mother company in foreign countries or company image management strategy are the main motivation of these companies for ISO 14001 certification. Although the number of ISO certified enterprises jumped from 32 in June 1998 to 232 till the end of 1999, this was mainly the contribution from Multi-Nation Co-operations (MNCs). The reality of ISO14001 certification in China is that China still lags far behind the developed countries even though China started off at around the same time as developed countries, as Changxing Di (1999) illustrated. As correctly observed by Di, China is experiencing many obstacles in pushing forward and making progress with ISO 14001. Di also pointed out some of the challenges faced by Chinese enterprises in implementing ISO 14001 compared with those in developed countries, such as: greater cost, the bigger steps involved, the non-tariff trade barrier imposed on Chinese enterprises by ISO 14001, difficulties caused by low environmental awareness, incentives and excessive government intervention for the voluntary standard.

But, on the other hand, we see the Chinese Government has been very active to promote ISO 14001 certification. In order to gain experience, 13 cities/districts were selected in 1997 to experiment on ISO 14001 (Environmental Management Systems – specification with guidance for use) certification. Apart from the success in a few large state-owned enterprises, the China-Singapore Suzhou Industrial Park in Suzhou city of Jiangsu province became the first organization with regional ISO 14001 certificate in 1999. This successful story shows the feasibility and possibility to implement ISO 14001 in a region/zone and at the same time to integrate with the existing environmental management laws, regulations, targets and the governmental administrative functions. To further spread this experience, the vice director of the Certification Center for Environmental Management System said: “SEPA recently initiated a national program to promote ISO 14001 certification in Economic Development Zones, Industrial Parks and some tourist zones in 46 cities”¹. Normally, these zones have comparatively independent administration functions and established functioning institutions.

¹ Interview with Mr. Zhu Chaowei, the vice director of China Certification Center for Environmental Management System

Inspired by this program, I see the potential power of ISO 14001 in improving environmental management in Chinese small towns. This is based on the following facts:

- Further development of small towns as an instrument in the industrialization and urbanization of rural China has been adopted by the Chinese government as a national strategy;
- The development of Township & Village Enterprises (TVEs) and small towns has been interdependent. TVEs play a key role in the emergency and construction of small towns and in the industrialization of agriculture;
- According to the newly amended standards for classifying industries, 99.79% of the Chinese enterprises (excluding TVEs) belong to Small and Medium sized Enterprises (SMEs), not to mentioned TVEs who have only a few of exceptions but much larger in the number (MOA, 1999);
- As great as their contributions to the national economy, TVEs are responsible for much of the environmental pollution in rural China;
- Environmental management capacity both at town level and within TVEs remain either non-existing or rather weak;
- Reforms both for small town development and the upgrading of TVEs have been introduced for the implementation of this above mentioned national strategy, which provided more opportunities and possibilities to strengthen environmental management at the grass route level;
- Similar to an industrial park or an economic development zones, a small town has clearly defined boundaries and manageable scale. It is small but complete. As a typical social economic natural complex eco-system (R. S. Wang, 1995), it gives more room for creative solutions to TVEs' pollution control.

However, apart from the positive side of the coin, the difficulties to start the process should be well aware and measures should be taken to remove the obstacles. Although Di's (1999) article focused on the implementation of ISO 14001 in Chinese local enterprises, similar problems will likely face small towns as well.

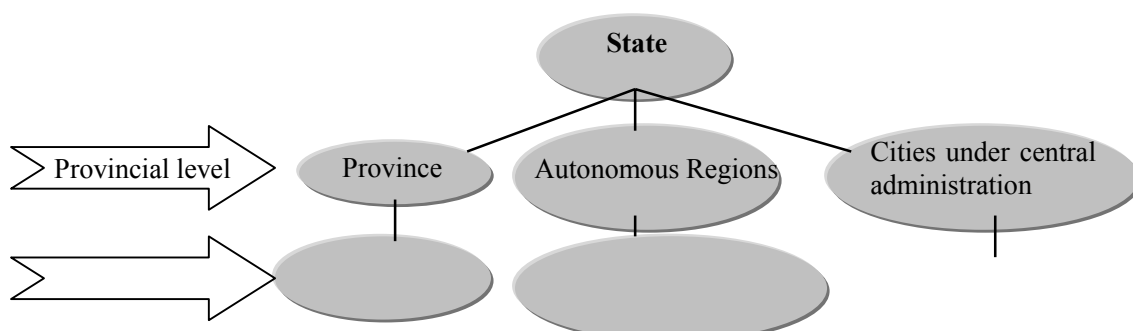
The following sections are devoted to discuss the issue of small town environmental management and to argue for the advantages of ISO 14001 to help with this situation and the existing difficulties small towns may face in their pursuit of ISO 14001 certification.

2. SMALL TOWNS BYG ISSUE

“Small town”, which has become a commonly used term, refers to a kind of newly developed rural community in China. Two types of officially designated urban places are recognized in China: cities (shi) and towns (zhen). A city is the larger in population and is definitely higher in the Chinese administrative hierarchy than a town (see Figure 1). Towns are ‘small’ compared with cities, and this is where the term of ‘small town’ (xiao cheng zhen) came. At the bottom of Chinese urban system, small towns are the interfaces of the rural and urban and have become the most dynamic areas for economic growth (T. Li, 1998). Broadly defined, small towns in China refer to statutory towns, which are approved by relevant government authorities according to certain criteria, and those non-statutory towns and townships, which are between the statutory towns and villages and function as

gathering places for local commercial activities. Statutory towns are the grass-root administration units of China urban system. By year 1996, there were 666 cities (D. Q. Shen, 1997), 18,200 statutory towns, and the number could be around 55,000 if the non-statutory towns and townships were included (Li, 1996). The average urbanization level in China was 29% to date (D. Q. Shen, 1997). Of which, the number of small towns grew the fastest. According to the statistics of 1997, a population of 190 million lived in these statutory towns (T. Li, 1998). Adding the non-statutory towns, about one third of the total rural population habitats in small towns. China has about 900 million rural population. If 600 million farmers need to make life in cities, it means 60 cities as big as Beijing need to be built. This is obviously unrealistic. However, there are 2,600 counties in China. If each county can develop 10 small towns and each small town can absorb 30,000 people, then the problem is self-solved.

With over 70% of its total population involved in agricultural sector, the issues of farmers, rural communities and agricultural production (San Nong Wen Ti) have to be well addressed if China is to ensure overall sustainable development (China Today, 1998). The emergence and flourishing of small towns have been changing the traditional pattern that used to separate urban and rural areas and have been forming the most dynamic areas for Chinese economic growth. Therefore, this issue is highly prioritized in Chapter 11 of China's Agenda 21 (ACCA21, 1994) on Sustainable Agriculture and Rural Development. One of the program areas of China's Agenda 21 is on the development of TVEs and construction of rural centers. Urbanization is needed to increase farmers' income, to improve the living conditions of the rural communities, and to realize agricultural modernization. Urbanization in rural China has to rely on small town development instead of expansion of existing big cities. Small towns again rely on rural industrial development, which refer to TVEs in China. It was stated explicitly in China's Agenda 21 (ACCA21, 1994) that the development of TVEs should go hand in hand with the development of village and town centers so that combined efforts can be made to enhance the sustainable development of both. Further development of small towns has been adopted by the Third Plenary Session of the 15th Chinese People's Congress (CPC) Central Committee in 1998 as a national strategy to promote economic and social progress in rural China (The Decision of the CPC Central Committee on Several Major Issues Concerning Agriculture and Rural Work).



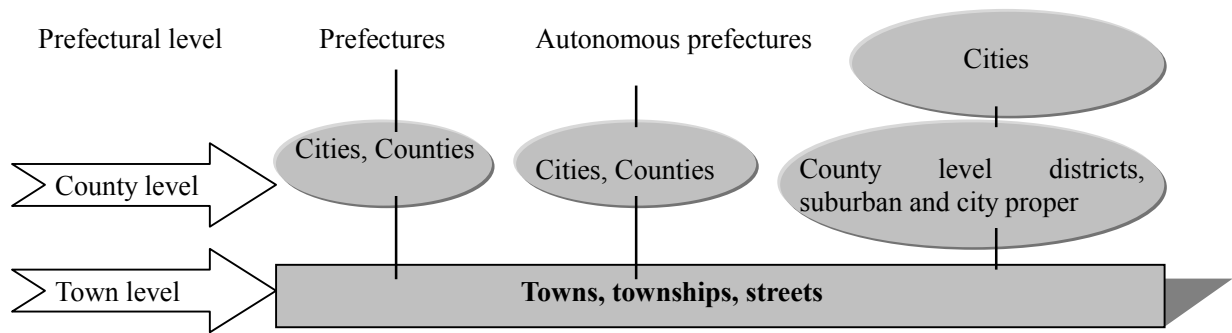


Figure 1. China's spatial administrative hierarchy in the post-1983 era: a generalized schema (source: Chan, K.W. 1994)

Historical review shows that synchronism exists in the development of small towns and rural industries or TVEs, in terms of time and spatial location (See Figure 2). These small towns are the homes for most of the Township & Village Enterprises (TVEs), which constitute a significant share of Chinese economy. Chinese TVEs include community enterprises owned by townships and villages, multiple cooperative enterprises, joint ventures and individual and privately owned enterprises. TVEs evolved out of the commune and brigade enterprises in the late 1950s, which aimed to improve local, rural welfare. For this historic reason they fall under the administrative responsibility and support of the Ministry of Agriculture (MOA). In 1995, TVEs numbered up to 22,026,700 and employed 128.61 million workers (MOA, 1996). TVEs contributed with almost one third of the national GDP, and about half of the national industrial added value in 1997 (Zhu, 1998). TVEs are the results of the economic system reforms in China since the market mechanism was introduced. TVEs have been the most rapid growing part of China's economy in the past two decades. Based on a rough calculation, every 3 -5 percentage increase or decline in TVEs industrial added value will lead to one percentage change in Chinese National GDP. That means the growth rate of TVEs need to keep above 18% if China wants to remain a economic growth rate above 8% as it was set in its "9th Five Year Plan" (Zhu, 1998). The Chinese Government considered it instrumental in further deepening the rural reforms and improving the life quality of rural population.

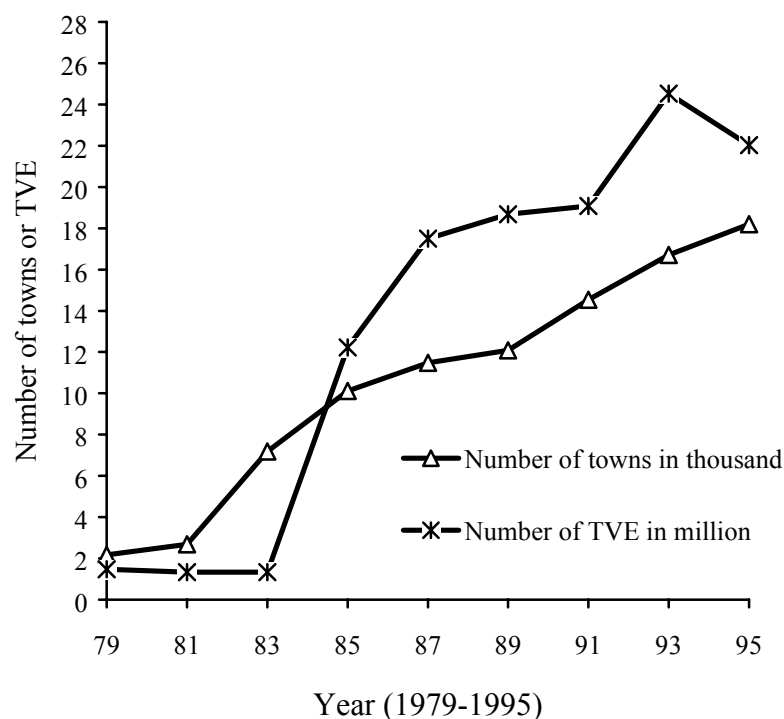


Figure 2. Development trends of small towns and TVEs 1979 - 1995.
 (Source: TVEs Year Books of various years)

Vigorous development of small towns and TVEs is instrumental in speeding up China's urbanization and industrialization processes, in realizing the modernization of the national economy, and in narrowing the rural and urban disparities. TVEs in small towns have been functioning as the income generators for the local governments and the farmers, the job creators. Small towns absorb surplus rural labors on the spot (about 26% of the rural labors are working in TVEs, *China Economic Times*, No.836), which in turn can mitigate the social pressure brought about by the 'migrant workers wave' in big cities. The development of small towns and TVEs are indispensable. TVEs have been and are still the driving forces of the economic prosperity of small towns, and small towns are the carriers of TVEs. Towns and townships will become a major force for the next wave of economic development in China (J. M. Courtney, 1995).

The other side of this 'small town phenomenon' is, however, the increasing pressure that the rapid urbanization and industrialization put on environment. Apart from agricultural pollution (7 to 13 million hectares of farmland are directly affected by fertilizer or pesticide contamination each year, or about 1/5 of the total farmland have been contaminated to some extent, according to China's Agenda 21, 1994), industrial pollution of all kinds generated by numerous TVEs, especially Township & Village Industrial Enterprises (TVIEs), became intolerable. TVIEs dominate in both numbers and output value (75% of the total TVEs output value, according to *TVEs Year Books* of various years). A recent study done by World Bank found that an often neglected polluting source is TVIEs, who contribute around half of the total pollution load of the country (China Environment Report, 1997). Table 1 gives the details. Many small towns are growing at the expense of

environmental quality, and that, in turn, became one of the major factors constraining their economic and social development.

Table 1. Surveys on TVIE pollution sources in 1989 and 1995

Items	1995		1995/ 1989
	Quantity (ton)	Percentage of the national total (%)	
Industrial waste water	5.91 billion	21	2.3
COD	6.113 million	44.3	3.9
SO ₂	4.441 million	23.9	2
Smog & dust	8.495 million	50.3	2.8
Industrial solid waste	180 million	88.7	11

(Source: China TVEs Environmental Bulletin, 1997)

Due to the fact that many TVIEs are located in towns and townships and this concentration trend will continue, TVIEs are one of the main pollution sources in industrial small towns. Furthermore, the lack of effective environmental management at town level leaves the polluters opportunities to escape from their environmental responsibilities. Considering the development trend of small towns and TVEs, it is highly urgent to look for innovative environmental management strategies for small towns to hold back the deterioration of environment. However, this is indeed a formidable task due to the complexity of this issue and the chaotic characteristics of societies in transition: from centrally planned economy to market economy, from rural society to urban society, from traditional life style to modern lifestyle, etc.

3. ENVIRONMENTAL MANAGEMENT IN SMALL TOWNS

Many factors contribute to the poor environmental management in small towns. The most important is the lack of systematic and operative environmental management systems, both at enterprise level and town level.

Local Chinese policy makers ascribe problems regarding environmental management of TVEs to their rapid growth (the annual output value growth rate has been above 25%), mere large numbers (up to 20 million, of which half are TVIEs), their dispersed activities (most in the rural areas in China), small-scale of operation (only about 5 employees on average), complex composition (including almost all polluting industries), low level of production technology, poor operation and management (very few technical staff with college professional background), lack of financial resources (the average annual profit of enterprises is only 5,000 RMB), and the lack of environmental awareness among the entrepreneurs and employees (J. M. Wang, 1997).

Among many other external factors, the following ones are considered important for environmental degradation in these small towns: macro-policies which overweigh the economic goals to environmental protection, very limited environmental management capability at town level (no formal environmental agencies at town level and insufficient qualification of environmental staff, see Box 1), lack of experience in effective management of TVEs, rather limited natural environmental carrying capacity, lack of financing for environmental protection, no environmental protection consideration in town

construction and planning (Box 2), etc (L. Zhang, 1997).

Box 1. China environmental management capacity at town level

In China, environmental management responsibility of TVIEs rests on the Environmental Protection Bureaus (EPB)/Agencies at county/town levels and the environmental protection division of local TVEs' Bureau. However, the institutional capacity and resources can hardly allow them to perform effective management to TVIEs. According to the statistics in 1994, among 2,148 counties, 2,005 (93%) established their EPB, 1,808 (84%) had their Environmental Monitoring Stations, and 1,348 (63%) had Environmental Supervision Stations. The average number of staff per EPB was 9. Environmental Protection Agencies did not exist at town level at all (48,075 small towns in 1994). Considering that more than 20 million TVE located in about 50,000 towns and 800,000 villages, one can imagine how uncontrolled the situation was. Although the situation is improving over years (in some small towns, an assistant for environmental protection is put at the position to assist the regulation agencies), it is far from enough.

(Source: China Environmental Year Book, 1994)

Box 2. Environmental Planning of Chinese small towns

Although overall planning was formulated in 34,315 small towns (73% of the total number), the quality and implementation of these plans could be questioned (X, Z.W., 1999). In most of the construction or development planning of small towns, environmental consideration was not there. In some cases, even no planning at all. This led to the scattered layout and lack of environmental infrastructure in these small towns. Polluting factories are often founded located in the wrong places and without any waste treatment facilities. Water, electricity, gas and communication systems are not compatible with each other, which increased the construction cost unnecessarily. The landscape and environment of small towns were left unprotected. In few cases, environmental planning was made, but it is hardly integrated into the overall planning and no enabling mechanisms in place to guarantee the implementation of the planning.

(Source: project document of UNDP-China project (CPR/96/507) for Capacity Building of Small Town Development, 1999, Beijing)

These above mentioned internal and external factors make the environmental improvement of TVIE in small towns a very complex and ticklish work. The contradiction between environmental objectives and economic growth demand faced by all these small towns make sustainable development more or less intangible at the first sight. However, recognizing the problems and the relation between them is half of the solution. And the question is of course to what extent and how these problems will be enlarged or solved, in the ongoing process of economic transformation, and maybe in the more distant future political transformation.

4. ISO 14001: A FRESH IMPETUS TO REGIONAL ENVIRONMENTAL MANAGEMENT

Although the implementation and certification of ISO 14001 is still at its initial stage in China and most of the certified companies and organizations are either foreign-funded or state-owned big ones, we have good reasons to expect that more proactive and environmentally conscious organizations/companies in China will finally follow the ISO 14001 standards if proper policies and incentives are in place. Smaller ones like TVEs are, for no reasons, out of the picture, considering the external environment and the internal needs of Chinese small towns.

Looking around, Chinese small towns are more and more exposed to the outside. A town can no longer develop as a closed system. Technological development, communication technologies in particular, increased its possibilities to exchange information, resources and energy with the outside. With the globalization trend of the market, the production and consumption activities taking place in a small town are affected by not only the local or national regulations, but also the international rules and standards. Consequently, the growing attention to environmental protection worldwide also adds to this influence. As Arthur Mol (1999) pointed out, “although it remains a set of ‘piecemeal arrangements’, the expanding number of multi-literal environmental agreements (MEA) are increasingly moving to common denominators formed by, among others, legal and policy principles (via spill-over and other mechanisms), showing growing relevance for building the foundations for universal international environmental law and policy.” The appearing of ISO 14000 series is one of the latest examples.

Obviously, it is not simple to meet the standards set in ISO 14001. The ISO 14001 standard requires that an organization's policies include commitments to compliance with relevant laws, regulations and other voluntary requirements; to prevention of pollution; and to continual improvement of its management system. It is not realistic to expect that the majority of the Chinese organizations will meet the standards in a short time, but it is possible to work first with the innovators – like those companies who adopt company image strategies (CI company) and are often more advanced in terms of technological development, management capability and ideology, to set good examples, as Z. X. Ruan, (1998) argued. Although ISO14001 targets mainly on enterprises, who are the driving power of the economy and at the same time the resource consumers and environmental polluters, the standards have been written to be applicable to all types and sizes of organizations and to accommodate diverse geographical, cultural and social conditions. Similar to the role of CI companies, small town governments can be the potential innovators for ISO 14001 certification as a region, especially those more developed small towns in the eastern coastal areas of China. In this study, *regional certification of small towns* refers to ISO 14001 certification of the town governments with a purpose to plant a complete environmental management system and build up the required management capacity within the governmental organizations and their functions so that environmental protection will become an integral part of the regional planning. Although TVIEs are not directly forced to comply with the standards, the implementation of ISO 14001 by the town governments as governmental behavior will have direct impact on TVIEs’ environmental performance.

It is not by accident that small towns are recommended here for regional ISO 14001 certification. Because, on one hand, environmental management is not existing at all or rather weak in most of the small towns although their environment quality is increasingly

threatened with the growing industries and population; on the other hand, the dynamic and changing feature of small towns provides opportunities for the introduction of ISO 14001, and small towns may become the pioneers towards sustainable development in China, I would argue. The following paragraphs will go further on these points.

First, small towns are the focuses of urbanization, industrialization and modernization in China. All the contradictions and difficulties one may encounter during these processes face small towns. As Z.C. Liu (1996) argues correctly, to move to sustainable development of small town includes a complex system engineering with science & technological development, institutional capacity building and increasing public participation in one. Sustainable development can not be fulfilled without institutional innovations, especially ecological/environmental management system. ISO 14001 guides organizations to install such an environmental management system so that all the potential environmental impacts can be taken into consideration. Similar to Economic Development Zones or Industrial Parks, small towns have their comparatively independent administration functions and functional positions although they still need to be further completed and strengthened to meet the needs of the local development. Given the fact that environmental regulatory agencies are not existing at town level, ISO 14001 certification offers the town government a perfect opportunity to penetrate environmental concerns into the overall planning and management, and this will generate lot of immediate and indirect rewards, including good reputation and image of the government, improved environmental quality, more support from the public, more environmentally friendly culture and behavior of the community, a more attractive environment to investors and clients, and the consistency of the local development strategy.

For these above-mentioned reasons, the town leaders may likely be motivated to pursue ISO 14001 certification. Only when this becomes their own initiative, full commitment from the local authorities can be expected. Different from but also complement other conventional environmental management approaches (e.g., command-and-control or legislation), ISO 14001 appears as an attractive tool to build up globally recognized organization's image, which enhance the organization's reputation and competitiveness. Compared with the existing "Environmental Targets Responsibility System"², which rests the responsibility for environmental protection to the heads of governments at all levels as administrative orders only, ISO 14001 certification can overcome the difficulties to "add" the environmental planning (if there is such a planning in that town) to the overall development planning due to the lack of coordination and support among other departments. Instead, ISO 14001 requires the top manager of the organization to make commitment to its environmental policy and turn it into collective actions. The performance of each function will be evaluated based on objective evidences against documented indicators through environmental auditing by a recognized certification body, which is professional, transparent, fair and is free from political power and personal relationship influence. Non-compliance leads automatically to the cancel of the certificate.

² 'Environmental Targets Responsibility System' is one of the eight systems for environmental regulation in China. Its legal basis is Chapter 16 of 'Environmental Protection Law of China': People's governments at all levels should be responsible for the environmental quality in the area under their jurisdiction. Since 1991, this system has been introduced to all the governments and polluting units with a hope to integrate environmental responsibilities into their overall functions. The idea is to define the boundaries of environmental responsibility for each unit and the person in charge, to set environmental targets and quantitative indicators for the evaluation of their performance. This system has been practiced in more than 20 provinces and cities, where it is one of the bases for government performance evaluation. However, the effectiveness of this system largely depends on how much the governments or organizations are willing to commit themselves and how feasible the targets are. It lacks legal enforcement.

This may offer incentives to those leaders who are pursuing achievements in their official career. Actually, political wills among the town leaders to improve environmental quality have been observed by the author during numerous interviews with them.

Second, broad public participation is required by ISO 14001. The relatively small scale of towns is an advantage for direct involvement of their community members. According to a sample survey across the country by the State Statistics Bureau (1997), the average population of statutory towns was 16,300, and the average build-up area was 1.76 square km. About half of the population was non-agricultural population and the other half was involved in farming. As the root units of the urban system, the power triangle in small towns is the most flat one. Town governments have almost direct influence on their residents. And the more interesting thing is that this influence may work in another way around. Public participation often involves decentralization and democracy. China's democratization process actually took place first in rural areas – direct election of village committees. Village elections originated with the “Law on the Organization of the Village committees of the People's Republic of China (Trial Implementation)”, passed by the National People's Congress Standing Committee on November 24, 1987. The law stipulates that directors, deputy directors and village committee members will be elected directly by villagers for three-year terms. According to the Basic-Level Political Power Construction Department (subsidiary to the Ministry of Civil Affairs), the direct elections finally became common in 1997 (F.G. Li, 1998). This move has its far-reaching significance. Although the town governors are still pointed by the upper level authorities at this moment, the democratic election in villages gave farmers chances to exercise their democratic rights and these experiences laid important foundation to increase the degree of democracy in towns.

In addition, The town residents and villagers are normally in close relationship in one way or another, although they may be identified differently as urban population or rural population under the *Chinese Household Registration System*³. Actually, the workers in TVEs are farmers at the same time. Rural community members are usually more concerned about what is going on around because that is their 'home'. When their incomes depend largely on TVEs and they make homes in small towns, then environmental protection becomes their own business. This implies that ISO 14001 can expect more active and cost-effective participation in small towns and the implementation of ISO 14001 can improve the relationship between the governments and the communities the other way round.

Third, although some may argue that there are many constraints in the existing systems of small towns, the reforms going on right now offer a good opportunity to introduce ISO 14001. Experiments on new policies have been carried out in selected towns with a purpose to move off the policy and institutional barriers and to improve the external environment and internal mechanism for small town development. For instance, reform on household registration system, which gives more possibilities to rural residents to move to towns; reform on tax system, which gives more incentives and delegate more responsibilities to small towns; reform on land use system, which allows more rational

³ The Chinese Household Registration System was established under the old central planning economic system. This system caused the separation of the whole population into two big main groups, namely urban and rural population. The way one was registered decided many things in his/her life, such as food supply, education, health care, jobs, houses and social security rights. The ossification of this system has been the constraint impeding the small town development and the urbanization process, and restricted the movement of the rural surplus labours. This system is now under reform to facilitate small town development (Zhang, L. 1998)

planning and use of the land. ISO 14001, again, provides a systematic approach to achieve social, economic and environmental effects.

Furthermore, after ups and downs in the last two decades, TVEs are challenged for the second surge of development now. Different from its initial stage of development, today's TVEs need to readjust themselves to suit a new environment - socialist market economy instead of central planning system. During the "Forum on Science & Technology Based Town Development Strategy" held in December 1999 in Beijing, all the experts agreed with the conclusion that the about 10 years fast growing period of TVEs is over. Quantitative growth should give place to qualitative growth now (Wang, Y.X., 1999). Restructuring the composition of TVEs, the competence of TVEs entrepreneurs and small town construction are regarded as the most important areas for improvement. To do so, institutional innovations are needed. The introduction of modern enterprise institutions will not only change the internal organization structures and forms, but also a revolution on production and consumption concepts, including the old resource-and-energy intensive and environmentally harmful production modes and conceptions. Adopting more environmentally sound, energy efficient and sustainable production and consumption modes is the main content and goal of modern enterprise institution. Adopting ISO 14001 is part of this strategy.

The last but not the least, as soon as a small town government decided to prepare for ISO 14001 certification, the process in itself is already a great achievement. Through discussion, training, education activities, people get aware of the environmental issue and taking actions is just a matter of time.

4. ISO 14001: INDIVIDUAL ENTERPRISES VERSUS SMALL TOWNS

Up to this point, it may be easier to understand why the obstacles facing individual local Chinese enterprises, TVEs in particular, can be better dealt with in a small town. Corresponding to the six challenges pointed out by Di (1999), the arguments on 'small town advantages' are presented below. Compared with MNCs in developed countries regarding implementing ISO 14001, individual local Chinese enterprises face:

- *Greater difficulties due to much lower starting level. Without EMS in place, local enterprises in China have had to start from scratch. Huge efforts need to be made for initial environmental review that requires complete past records and other information. The lack of technical support to do this can stop the enterprises starting.*

In case of a small town, environmental protection has been part of the functions and responsibilities of the town government. For those who have enjoyed the economic benefits and suffered from the industrial pollution, they are eager to find solutions. Many small towns are inviting professional planners, consultants and experts to help them to make planning for more sustainable development. According to Chinese standards, initial environmental review is an integral part of the town overall planning, so it will properly not cause too much extra investment for ISO 14001 purpose. While it is difficult to obtain historical data from small TVEs, it is possible to obtain data for the whole town area or even the whole county through governmental channels. And this review will also be

valuable later for individual TVEs in this town. This is often the positive side of government intervention in China.

- *Higher cost for consulting, certification and ‘hardware’⁴. This is because that Chinese enterprises have to start from scratch and they need the whole package of consulting and certification services from external parties. In practice, this can be unaffordable for a Chinese enterprise although the consultancy fees (RMB 3,000 per day per person, about US\$ 360) do not look too high.*

But, the similar services can be paid in a more cost-effective way due to economics of scale. Apart from the town government staff, more people from the relevant parties, including the TVEs’ representatives can attend the same training delivered by the invited experts. The cost for each participant can be reduced largely. A town government may cover the costs involved in implementing ISO 14001 with normal financial allocation for environmental protection. In case that any equipment purchase or construction are required, the town government can also negotiate with their TVEs for co-financing because all the TVEs will also benefit if they belong to an ISO 14001 certified town. This is also a good way to gain participation and commitment from TVEs for the implementation of ISO 14001 by the town government. The purpose of these training is not to train professional ISO 14001 auditors for the town government or TVEs, but to explain the logic and the contents of the standard so that they are able to fulfil the tasks in every required positions.

- *Much higher pressure of environmental trade barriers faced by local enterprises in China. ISO 14001 requires the organization to have an influence over its contractors and supplier. As a result, suppliers and contractors will be on the passive side of the market. Since local enterprises are less environmentally aware, this type of control becomes one-sided and biased.*

Exactly for this reason, regional ISO 14001 certification of a small town can better protect its TVEs in case that they are also looking at international market. The case of China – Singapore Industrial Park offers a good example of this: one of the companies in this Park could have lost its American client because it was not ISO 14001 certified. But its products were finally accepted for export after it proved it was from an ISO 14001 certified Industrial Park. This is extremely important for those export-oriented towns.

- *Bigger step in their actual environmental performance in the implementation of ISO 14001. Although ISO 14001 is an international standard, in reality the ‘double standard’ still exists between MNCs and Chinese local enterprises in terms of absolute environmental performance.*

To local enterprises in China, TVEs in particular, meeting the local regulatory requirements is already a difficult task. ISO 14001 is a more stringent standard for them, while MNCs in China can take the lower local requirements as an advantage. A good regional environmental management system can help reduce the cost at individual enterprise level by applying regional total control and system engineering.

- *Since the environmental ‘green’ market differs between developed countries and China, the environmental concept, regulations and the mitigation costs are also*

⁴ Environmental protection facilities and equipment.

different. Hence, the effect of implementation differs as well.

It is true that some of the positive results of implementing ISO 14001, such as relief of pressure from consumers and reduction in costs of production, may not be obvious in China or other developing countries, at least in the short term. However, in case of a small town government, their major motivations may also be for other positive effects that are attractive to the government, such as: building a good public image, more attractive to foreign investment, profound contribution to the local ecological culture construction, greater popularity, more harmonious relationship with local citizens and enterprises, etc. If we believe that an environmentally responsible enterprise is a reliable enterprise, then an environmentally responsible government must be a reliable government.

- *Excessive governmental interventions have created more burdens for Chinese enterprises in implementing ISO 14001, than for small towns.*

Leaving the *pros and cons* of governmental interventions in this issue non-discussed here, I first want to point out that the four documents⁵ required for the approval to conduct audit do not apply to a town government. In other words, there are no existing restrictions for small town governments to start preparing for ISO 14001 certification.

Furthermore, all the TVIEs are required to meet the national wastes discharge standards by year 2000 (SEPA, 1997). However, most of the TVIEs have difficulties to meet the legal requirements, not to mention the ability to meet more and more stringent regulations. If an environmental management system is successfully installed in a small town government, these problems can be better dealt with at a regional level (D. H. Wang, 1998). Total control, central waste treatment, industrial ecology or other alternative solutions can be considered to benefit everybody. This would not be possible to achieve at individual level. In addition, as the relevant parties in this environmental management system, in the ISO certification and implementation process, TVIEs have chances to be informed and consulted about the issue and to increase their environmental awareness. This is a very import step to prepare individual TVIE for their own ISO 14001 certification in the future.

Apart from the advantages of implementing regional environmental management system we discussed above, we should be aware that there are still several issues need to be addressed before the concept of regional ISO 14001 can be properly introduced to small towns. China needs to adjust its strategy for ISO 14001 promotion. This has the following aspects.

First, instead of monopoly of SEPA, the market for ISO 14001 consulting and certification should be open to both Chinese and international ones. The situation in China is that there are too few, not too many, consulting and certification services. Only market competition will help to reduce the cost and improve the quality of the services for the benefit of Chinese enterprises and organizations (Di, 1999).

Second, the governmental authorities like SEPA and its local network should work more

⁵ In China, no certification body is allowed to conduct an audit without approval from local Environmental Protection Bureaus when a company is ready for acquiring ISO 14001 certification. A company has to prepare four documents: (I) Environmental Impact Assessment statement; (ii) 'Three Synchronization' certificate. (iii) Certificate for meeting total emission standards; and (iv) proof that the enterprise has no environmental fines before certification.

on information dissemination, training and seminars to the target groups, researches on how to combine ISO 14001 and Chinese environmental regulations and what kind of enabling measures should be taken, etc. Other channels, like TVEs' Bureaus, Chinese TVEs Daily, Chinese TVEs' Association, China Center for Small Town Development, China Center for Environmentally Sound Technology Transfer and its local branches, China Center for Clean Production, local Foreign Trade and Economic Commissions, various industrial sectoral associations and environmental social groups, can also be motivated to work for information dissemination.

When the resources are limited at the initial stage, it is wiser for China to prioritize the target groups for implementing ISO 14001. Small towns and TVEs should not be neglected since they are significant at national level in number, economic contribution and environmental impact. In my view, implementing ISO 14001 by some small town governments can be a good approach to influence TVEs environmental performance. Of course, more studies on the barriers and merits for TVEs and how to help TVEs and other SMEs for ISO 14001 certification should be put on the Agenda of the Government.

Difficulties in implementing ISO 14001 in SMEs can be observed in both developed and developing countries. Even in Japan, who has been taking the leading in ISO 14001 certification, only a few SMEs are implementing the system although tremendous numbers of publications have been produced and distributed for SMEs (UNCRD, 1999). I believe that promoting regional certification in small towns is an effective approach to have total control of TVEs' pollution first and then prepare TVEs for individual certification afterwards. Some successful experience from Japan can be considered in small towns, including: conducting seminars for enterprise and governmental officers; producing publications such as pamphlets or posters for distribution; using the 'top manager' convince approach; assigning model projects for demonstration as 'success story' (UNCRD, 1999). This is the third aspect: set model towns for implementing ISO 14001.

Of course, not all the small towns are ready for ISO 14001. There are several types of small towns with different functions. For instance, towns provide various services, towns based on industries, towns as commercial centers, towns as the hubs of communication, towns for cross-board trade and towns for tourism. Obviously, industrial towns are more likely facing severest industrial pollution by TVIEs. Only the most motivated and financially capable towns should be approached first. Given the fact that none of the towns has done this in China, programs initiated by upper level governments for demonstration purpose will be very important. Fortunately, the implication of ISO 14001 for regional environmental management has been more and more recognized. ISO 14001 has a great responsibility to build an effective regional environmental management to harmonize the soul of sustainable development (UNCRD, 1999). This small town strategy is in accordance with the Government's programs focusing on Economic Zones, Technological Zones and Tourist areas. Small towns will learn from their experience.

Finally, I fully agree with Di (1999) on his suggestion to China and other developing countries: not to pursue the new system blindly, but to acquire a comprehensive understanding of the circumstances, and tailor the application of ISO 14001 to the needs of local situations. Chinese Government should negotiate with ISO for the interest of Chinese enterprises and organizations and try to mitigate the negative effect imposed by this standard on China.

5. CONCLUSION

As it is correctly pointed out in a World Bank working paper (World Bank, 1999), it is no longer possible for China to replicate the economic achievements in the same manner as how it did in the past two decades as many underlying conditions have changed. Future productivity gains will come from efficiencies, stimulated by market forces, and improved productivity of scarce water and land resources, through resource conservation and new technologies. To achieve the aforementioned transitions in conception and practice towards a more sustainable future in small towns, integrated management and planning at regional level is the most important mechanism to guide the local development and to coordinate social, economic and environmental objectives.

We should never forget that the ultimate goal of ISO 14001 is to achieve regional and global environmental improvement in the far distance. Due to the differences of the starting points and other conditions between the developed and developing countries, China should take different strategies to help the local Chinese enterprises to grasp this opportunity and at the same time to reduce the negative effects. The ongoing reforms and changes regarding small towns and TVEs are in favor of ISO 14001 promotion in Chinese small towns. For those town governments who see the opportunities and are willing to commit themselves to the implementation of ISO 14001, ISO 14001 can provide a framework and procedure to develop a community-building scheme to cooperate with all the stakeholders. ISO 14001 can also be used as a tool to promote sustainable development in line with the objectives of the Local Agendas 21. If ISO 14001 can be appropriately implemented in small towns, win-win situations can be an expected end.

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