

*Practice of Sustainable  
Development*

—Sustainable Shenyang Project Progress Report

China Environmental Science Press, Beijing

# CONTENTS

## **Strategy of Environment and Development**

Chapter 1	Preface	2
Chapter 2	Assumptions on The Strategy of Sustainable Development in Shenyang	8
Chapter 3	City and Sustainable Development	30
Chapter 4	Industry And Sustainable Development	51
Chapter 5	Sustainable Development in Rural Area	64
Chapter 6	Society and Sustainable Development	81
Chapter 7	Resources and Sustainable Development	95
Chapter 8	Environment and Sustainable Development	116

## **Process of Sustainable Shenyang Project**

Chapter 9	Resolution of City Consultation for Sustainable Shenyang Project	144
Chapter 10	Air Pollution Prevention Working Group	151
Chapter 11	Water Resource and Environment Working Group	216
Chapter 12	Solid Waste Working Group	285
Chapter 13	Analysis of Impact of International Environmental Convention Standard on Shenyang	326

1

*Strategy of Environment  
and Development*

## CHAPTER 1 PREFACE

The multicolored 21<sup>st</sup> century will see more swift and violent development of human economy, science and technology. The globalized pervasion of industrialization, boost of market economy and spread of science and technology as well as the influence of informatization are irresistible. However at the same time, environment problems are globalized. Ecological crises are popularized. Resource contention is incandesced and human conflicts are quickened. All these stand out. In order to coordinate relations between development and environment and solve such crises by grasping correct directions of future human development, the implementation of sustainable development strategy will become an inevitable selection in the 21<sup>st</sup> century. The sustainable development implies the overall transformation of society, a revolution of development of strategic thinking. The ideology of sustainable development stresses on the coordination between development and environment, the synchronization of economic growth and environmental quality improvement and also the development process inosculating with benign circulation of ecosystem and in accord with the healthy, fair, integrated and harmonious value orientation of human beings. The core of sustainable development lies in that such development not only meets with benefits of contemporary people, but also damages no profits of human development. Thus World Environment and Development Commission was founded by the United Nations in 1983; Entrusted by the United Nations, Brenteran Committee compiled and published *Our Common Future* in 1987, in which the strategy of sustainable development was first brought forth formally; In 1992 the Summit Meeting of Environment and Development was convened by the United Nations, on which such

important documents as *Rio de Janeiro Declaration on Environment and Development* and *Agenda 21* etc. were adopted. Governments of all countries attended the meeting promised unanimously that they would regard sustainable development as long term common development strategy in the future.

China is a nation well in the process of modernization acceleration. The upcoming 21<sup>st</sup> century demands to quicken our steps of development to squash into the world powerful nations so as to create another resplendence of the Chinese nation, for which we have sufficient confidence and resolution. However we must realize clearly that China is a nation with economic development lagging behind, resources per capita insufficient, population large in number but poor in quality, environment seriously polluted and continuing to spread, ecological environment being damaged shockingly with no effective control, and natural disasters happening frequent with huge losses. Therefore the situations encountered in the 21<sup>st</sup> century is rather austere. Under this situation of opportunity coexisting with challenge, it is the only correct selection to implement the strategy of sustainable development so as to shake off crises and create resplendence. Thus the Chinese government worked out and adopted CHINA'S AGENDA 21----WHITE PAPER ON CHINA'S POPULATION, ENVIRONMENT, AND DEVELOPMENT IN THE 21<sup>ST</sup> CENTURY in 1994. At the same time decision of implementing the strategy of sustainable development over the nation and localities is also worked out.

Shenyang lies in central Liaoning province, the hinterland of the development zone of Liaodong Peninsula. It is the largest center of politics, culture, transportation, finance, business and trade in the Northeast region. The city has jurisdiction over nine districts, three counties and one city with a total area of 12980 square kilometers and a population of 6.8 million. Liaoning is a province with relatively higher level of urbanization, therefore the economic circle and city groups in central Liaoning with

Shenyang being the center and Anshan, Fushun, Benxi, Dandong, Yingkou, Liaoyang and Tieling lying in the radius of 150 kilometers. There are in total 24 million population in the 8 cities in central Liaoning. Under the trend of regionalization and integration of global economy, the unique regional superiority of Shenyang expresses that future economy has great potential and superiority in its development.

Shenyang is an old industrial base constructed with key investment during the period of "the first five-year plan". Its development almost represents the entire characteristics and process of China for the half century. After 50 years' construction and development, there are 382 industrial categories, 81% of the 539 categories in our state, of which more than 20 industries including the manufacturing of machine tools and power transformation equipment, the manufacturing of metallurgical and mineral equipment, aviation and spaceflight etc. have ever held leading positions in our country and it was entitled with the good reputation of the equipment department of the republic. A considerable number of large and medium sized enterprises in the city used to stand in the front list as cadre factories. Shenyang ever produced the first fighter plane, the first railway train, the first tractor, the first giant transformer, the first horizontal 10-thousand-ton extruder and the first under water robot in our country. In the past people in Shenyang has won more than 40 first places in the state.

However, while economy is growing at a high speed in Shenyang, severe historical arrears still exists in urban infrastructure and ecological environment protection. The resplendence of the old industrial base is obtained at a huge cost in sacrificing the environment. Because under the system of planned economy, we followed the route of "Production first then comes living", "Pollution first then comes the harnessing", "Stressing on manufacturing and disparaging management", which has brought many hidden troubles and problems on environment.

Since the reformation and opening to the outside world, economic

and social development has undergone a rapid speed, especially the tremendous changes of the outlook of Shenyang, the image, level, reputation and comprehensive strength of the city have been enhanced considerably. National economy continues to increase and the society progresses in all aspects. In 1998 Shenyang has realized GDP 94.1 billion yuan with an increase of 10.6%; The tertiary industry has realized an additional value of 46.6 billion yuan with an increase of 9.8%; The tertiary industry has exceeded the first and second industry as a historical breakthrough. In 1998 Shenyang has actually used a foreign fund of 1.02 billion yuan. In recent years, Shenyang has devoted great efforts and made outstanding achievements in improving people's living conditions and environment protection. Mu Suxin, the mayor as a representative of the city was awarded the "UN human service prize" for the year of 1998. Shenyang is no longer one of the top ten seriously polluted cities in the world. It was invited to attend the convention of global most competitive cities in May 1999. All these mean that efforts devoted to Shenyang in recent years have been acknowledged by international communities. Shenyang in the 21<sup>st</sup> century, besides self development also has the function and historical responsibility of exploring to develop Liaoning Province and the northeast regions in China. Sustainable development in Shenyang comes down in one continuous line with the sustainable development in Liaoning, the Northeast or even in the whole country. They inter-promote and inter-drive each other. The compiling of SHENYANG'S STRATEGY OF ENVIRONMENT AND DEVELOPMENT is the actual action taken to implement CHINA'S AGENDA 21. It is also an important measure to evolve sustainable development in China with main aims set at pushing forward the implementation and realization of the strategy of sustainable development in Shenyang, selecting correct strategic direction, development thinking and basic frames of implementation for Shenyang's development in the 21<sup>st</sup>

century.

Shenyang Municipal People's Government paid great attention to the implementation of sustainable development strategy. It signed the project document of Sustainable Shenyang Project jointly with UNDP and China International Economic and Technical Exchange Center on May 27, 1997, setting up specially "the leading group for sustainable Shenyang project". The aim is to absorb internationally advanced experiences and methods for reference by the implementation of Sustainable Shenyang Project to promote the implementation of sustainable development strategy in Shenyang. Under leadership of the leading group, Sustainable Shenyang Project Expert Consultation Team and Working Team pertinent to specific problems are established with experts, professors concerned and relative departments of municipal level organized for Sustainable Shenyang Project. A series of symposiums, especially the City Consultation held in May 1998 have further clarified main environment problems encountered by Shenyang at present and prior measures that should be taken, and compiled SHENYANG'S STRATEGY OF ENVIRONMENT AND DEVELOPMENT on its basis, which strives to further understand the new thinking of sustainable development by carefully carrying out the spirit of CHINA'S AGENDA 21 to show characteristics of Shenyang with combination of reality and practice. Emphasis is laid on the comprehensiveness but not every aspect with key point standing out and general coordination stressed to make SHENYANG'S STRATEGY OF ENVIRONMENT AND DEVELOPMENT become a guiding and applicable document.

SHENYANG'S STRATEGY OF ENVIRONMENT AND DEVELOPMENT, after being discussed on the International Environment Strategy Symposium Shenyang China, modified and perfected, is reported to municipal government for approval. It will become the guiding document for future development in Shenyang in accord with the guiding



ideology of realizing the two basic transformations of economic system and means of economic growth as the guiding principle that should be observed in working on municipal international economy and social development plan and the medium and long term development program. In the future, various government and departments of municipal levels in the city should melt, incarnate and carry out the guiding ideology, strategy and principle, target and content of the agenda in working on five-year plan and medium and long term development program. Of course SHENYANG'S STRATEGY OF ENVIRONMENT AND DEVELOPMENT also needs to be modified, supplemented and perfected constantly in practice.

## CHAPTER 2 ASSUMPTIONS ON THE STRATEGY OF SUSTAINABLE DEVELOPMENT IN SHENYANG

### 2.1 INTRODUCTION

Sustainable development is a necessary strategic selection in the process of modernization construction in Shenyang. The precondition to Shenyang is development, i.e., keeping relatively higher speed of economic growth and enhancing the quality of economic growth to add to comprehensive economic strength and gradually raise people's living standard and quality and create necessary conditions and supporting ability to sustainable development. Therefore while economic development is accelerated, special attention should be paid to the coordination of population, economy, society, resources and environment to conduct reasonable exploration, application and protection of resources, controlling population growth, enhancing the quality of population with environment protection, urban and rural ecological construction well carried out to realize sustainable development.

From now to 2010, the aim for economic development in Shenyang is set at: on the basis of enhancing total economic volume, quality and benefits, gradually realizing the transformation of means of economic growth with GDP reached around 182 billion yuan (calculated on the basis of unchangeable price in 1990), 10% of average annual increase and GDP per capita reached approximately 120,000 yuan with the adjusted proportion of the first, second and tertiary industry of 3:40:57. The

contribution rate of science and technology progress to economic growth will reach over 60%.

Shenyang at present has not got rid of traditional mode of manufacturing and consumption. Economic growth depends mainly on the consumption of natural resources and energy. Thus the connotation of economic growth should be changed to reduce the dependence of economic development on natural resources and the damage caused to the environment; The consumption of energy and raw materials for unit product should be reduced to relieve the pressure on environment; Policies should be worked out to enhance the application rate of energy and strengthen comprehensive application of resources with natural resources and environment cost calculated in product cost to establish gradually the manufacturing and consuming mode of sustainable development adaptable to regional resource environment conditions.

The strategy of sustainable development in Shenyang should buck for the overall and coordinated development of the society. Family planning should be carried out continuously to control population, enhance competence amongst the population and improve the structure of population. The resident population is planned to be controlled at around 7.3 million with around 4.8 million urban population by the end of 2010. A fair and reasonable distribution system will be established, based on the principle of "to each according to his or her work" and taking into account both efficiency and fairness to encourage appropriate consumption; Perfect social service and security system should be established gradually; Social science should be developed to absorb the scientific and cultural quintessence of various countries in the world as well as the result of modern scientific civilization. National culture should be carried forward to explore and protect regional cultural remains continuously; Spiritual construction should be strengthened to improve political, social moral education and raise the ideological, moral, scientific and cultural levels to

nurture new generations with high ideals, good morals, better education and good sense of discipline. Urban housing will be built and living conditions in both urban and rural areas will be improved through the development of comprehensive social services and medical care. By the year 2010, the living area averaged by population in the city will reach more than 10 square meters; A heightened awareness of sustainable development will be fostered through broadly based public education to mobilize the active participation of all citizens of the city in achieving sustainable development. Particular attentions are to be paid to educating officials at all levels to improve their ability to promote sustainable development.

The environment target of Shenyang for 2010 is: By the year 2010, natural ecological and environmental quality will be improved prominently to the degree up to the standard for various environmental quality. Basically the coordinated sustainable development of resources, environment, economy and society will be realized with efforts made to create blue sky, clear water, green land and quiet environment. An urban environment characterized by clean, quiet and comfort will be created for the citizens to meet the target of turning Shenyang into a modernized and internationalized metropolitan of high-tech, mass production and vast circulation.

The general target of sustainable development in Shenyang is: Realize the two basic transformations economic system and means of economic growth. Construct the economic system, the social system, resource and environment supporting system. Realize the coordinated development of economy, society, population, resource and environment to construct primarily Shenyang into a modernized and internationalized city of high-tech, mass production, and vast circulation.

The major policies which will ensure the realization of the above-mentioned targets must include:

(1) Focusing on economic development and deepening the reforms and openness to expedite the development and perfection of the system of socialist market economy.

(2) Strengthening the foundation for building capacity for sustainable development, mainly including by establishing a policy framework for developing social and economic norms for sustainable development, by outlining strategic objectives for sustainable development. It will be necessary to establish a comprehensive natural resources and environment monitoring and management system, and to develop planning, statistics and information support systems for social and economic development issues. It will also be necessary to raise awareness of sustainable development issues throughout the country and develop domestic capabilities for implementing sustainable development practices etc..

(3) Implementing family planning, improving the competence levels amongst the population, controlling population growth and improving population structure.

(4) Optimizing the structure and distribution of industries. Guiding resources to be allocated reasonably to reduce pressure on environment caused by economic development. Establishing structure of industry and regional system in accord with local resource environment conditions.

(5) Vigorously promoting cleaner production technologies; working hard to minimize the production of wastes and to encourage recycling; introducing, developing and spreading key environmental pollution control techniques and equipment to develop mainly clean coal technique. Vigorously develop reproducible clean resource. Organizing the development and spread of key environmental pollution control techniques and equipment to develop actively the industry of environmental production.

(6) Strengthening the protection and treatment of Hunhe River and

Liaohe River in Shenyang. Establishing natural reserves to expand green land coverage and protect diversity of species, life-forms and scenery. Improving the quality of regional ecological environment to protect farming land and earth ecosystem. Reasonably allocating land resources to raise productivity of the land.

(7) Perfecting the layout of urban areas. Accelerating the construction of safe living engineering and comfortable houses. Fathering comprehensively urban environment to improve living environment conditions of rural and urban residence.

SHENYANG'S STRATEGY OF ENVIRONMENT AND DEVELOPMENT is a strategic framework for long-term, integrated, steady sustainable development. It is a good starting point for Shenyang as it moves towards the 21<sup>st</sup> century and strives for a better future. The implementation of SHENYANG'S STRATEGY OF ENVIRONMENT AND DEVELOPMENT requires unified leadership of the Municipal Government working in coordination with various sectors and regions. It is necessary to formulate and put into effect laws, regulations and policies relating to sustainable development. Significant actions must be taken in certain areas or for certain programs, especially during transition period to a socialist market economy. It is particularly necessary that the macro-regulating role of the government for population growth, protection of natural resources and the environment should be strengthened and that comprehensive decision-making, management and monitoring systems be introduced. It is essential to have the untiring participation of all the citizens in this work. Support and instruction from the central government and provincial government as well as from international communities is also necessary.

The overall objectives and major initiatives identified in this chapter are closely related to other upcoming chapters. They are designed to provide a guide to other chapters. The specific objectives and actions

proposed in chapter 3--8 are derived from these overall objectives and major initiatives.

Five program areas are identified in this chapter:

- ◆ Sustainable Development Strategies and Major Initiatives.
- ◆ The Formulation and Implementation of Regulations in Relation to Sustainable Development
- ◆ Expenses and Capital Mechanism for Sustainable Development.
- ◆ Competence Construction for Sustainable Development
- ◆ Regional and International Cooperation for Sustainable Development.

## 2.2 PROGRAM AREAS

### 2.2.1 A Sustainable Development Strategies and Major Initiatives

#### 2.2.1.1 Basis for action

Shenyang is the center of politics, economy, culture and information in Liaoning province. It is the largest economic center and transportation hub in the Northeast, an important economic base in China. However at the same time, the overall level of economic development in Shenyang is not rather high. Industrial structure and the structure of industry are still not very reasonable, neither are the structure of layout of the city and energy. Environmental pollution is rather serious and ecosystem is still weak. As the largest city in the Northeast, implementation of sustainable development strategy in Shenyang will have important active impacts on the economic development and ecological environment construction in the Northeast or even in the whole nation.

Shenyang has entered the stage of accelerating development of industrialization and urbanization. If continuing to follow traditional mode of non-sustainable development, various conflicts of the population,

resources, environment and society will constantly being intensified, which will be rather hard to meet the request of sustainable development. Therefore the ideology of sustainable development should be fully expressed and incarnated in working on the strategy, target and major initiatives of development to realize the coordinated development of population, economy, society, resources and environment.

The Municipal Government of Shenyang paid great attention to the problems of population, resources and environment in local economic construction. Such basic national policies as family planning and environment protection are implemented resolutely and moreover are included in local national economy and social development plans. In recent years while in transition to market economy, large amount of unemployed population and those resigned or retired comes out tremendously. Unreasonable structure etc. is puzzling Shenyang. In such a process, Shenyang Municipal Government organizes all citizens to overcome various difficulties, creating actively "State Healthy City", implementing a series of engineering including "three-four-three", "the grand Second Ring", "six-two-one", "water system running hundred of kilometers around the city" and so on. Great efforts have been devoted to such aspects as environment protection, raising of people's living standard etc. with successful experiences drawn, which has greatly encouraged citizens of Shenyang.

Shenyang must maintain a relative high speed of economic growth and higher quality of development to have more competence and conditions for the development of social culture, the treatment of environment so as to ensure various major strategies and key initiatives for sustainable development to be implemented and realized.

#### **2.2.1.2 Objectives**

Establish local economic and social systems conducive to sustainable development and the mechanisms whereby these systems can be adapted



to meet the evolving requirements for the sustainable use of resources and the environment. The main objectives by the year 2010 are:

(1) While maintaining rapid economic growth, relying on scientific and technological advances and improvements in the quality of labor to continually improve the quality of development so as to realize basic transformation of means of economic growth from extensive to intensive.

(2) Promoting the overall development and progress of the society and establishing the social basis for sustainable development;

(3) Controlling environmental pollution and harnessing, improving the environment and protecting resource base for sustainable development;

(4) Gradually establishing policies and legal systems in support of sustainable national development and establishing integrated decision-making, coordination and management systems to promote sustainable development.

### **2.2.1.3 Activities**

Placing SHENYANG'S STRATEGY OF ENVIRONMENT AND DEVELOPMENT on strategic and guiding position. Gradually including it in economic and social development plans for the whole city. Including and actively implementing the strategic ideology of sustainable development in comprehensive decision-making.

In establishing socialist market economic system, the following economic measures should be utilized to realize sustainable utilization of resources with environment protection merged into economic policies, objectives and tasks.

(1) In accord with the principle of compensating for the use of natural resources, strictly following relative regulations and policies promulgated by the state or the province. Investigating and implementing various policies of compensating for the exploration and utilization of resources and environment.

(2) Gradually integrating consideration of natural resources and the