
Sustainable development in China: from knowledge to action

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Abstract: China has been at the forefront of initiatives designed to translate some of the outputs of the 1992 Earth Summit into reality. It was the first country to produce a national Agenda 21 (in early 1994). Since then, a conscious attempt has been made to integrate sustainable development considerations into the country's national development strategy. Little attention, however, has been given to the mechanisms through which China has attempted to move from debates on the meaning of sustainable development to practical actions that are intended to promote it. This paper discusses key elements in China's response to the imperatives of sustainable development and reviews the actions taken at the national level and in the case of Guangdong Province.

Keywords: China; sustainable development strategy; Guangdong Province.

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1 Introduction

China was the first country in the world to produce a national Agenda 21. *China's Agenda 21* was published in March 1994. Over the past decade, the Chinese government has actively engaged in implementing *China's Agenda 21*. Sustainable development has been adopted as a key element of the national development strategy, innovative

institutions are in place, and various socio-economic, sectoral and local action plans have been formulated and adopted across the country to pursue sustainable development. Lin [1] argues that the 1990s was a transitional period of environmentalism in China as the country moved from theoretical debates on sustainable development to practical action.

Sustainable development has attracted considerable attention from Chinese environmentalists, economists, politicians, legal experts and geographers since the publication of *China's Agenda 21* [1–4]. While literature on various aspects of sustainable development on the Chinese mainland can be found [4–10] few commentators have attempted to evaluate the transition from awareness and knowledge about the concept to specific actions and interventions that are intended to enhance sustainability in the People's Republic.

Bradury and Kirkby [11] provide an insightful critique into *China's Agenda 21*, pointing out deficiencies in the document and evaluating its usefulness and practicability in guiding the nation's development path. They focused on key barriers such as dilemmas associated with reconciling environmental and development imperatives, the natural resource base, financial constraints and limited human resources. Lin [1] provides a holistic review of the historical development of environmentalism in China and a concise account of *China's Agenda 21*. However, inadequate information limited his attempt to elaborate the process of '[i]mplementing sustainable development from national strategy to local action'. More recently, Wang [2] reviews the implementation of the Rio Declaration and Agenda 21 by China since 1992, including an overview of the relevant policies, laws, and institutions, as well as problems and possible solutions. His review adopts an environmental and legislative perspective, focusing mainly on legislation and institutional structures. The process of translating sustainable development initiatives into practice is not examined in detail.

The present paper aims to redress the balance by focusing on how sustainable development as a national development strategy is implemented at different geographical scales and in different sectors in the People's Republic of China. The Chinese way of institutionalising sustainable development is distinctive. It is basically pervasive, top-down and prescriptive.

This paper first discusses the meaning of sustainable development in *China's Agenda 21*, including its guiding principles, contents and strategic concepts, as well as the related policies and measures. The paper then examines how China incorporates sustainable development into national development programs and planning. The integration of sustainable development with the planning of different policy sectors and at different geographical scales is also discussed, with particular emphasis placed on emerging practice in Guangdong Province. The paper concludes by identifying key features in the promotion of sustainable development in China.

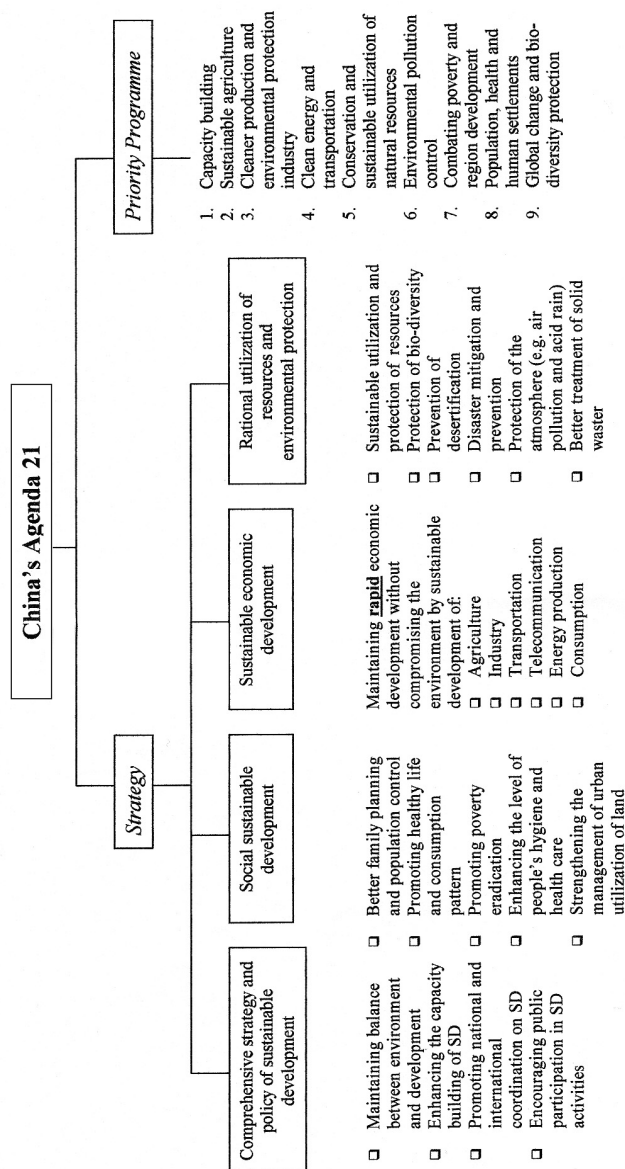
2 The meaning of sustainable development in China

China's Agenda 21 [12] was adopted as the national development strategy on 25 March 1994, just two years after the United Nations Conference on Environment and Development – the Earth Summit in Rio. This not only reflected China's wish to engage more fully in international affairs, but also the country's desire for more balanced socio-economic and environmental development within the context of socialist market reforms [11].

China's Agenda 21 is a comprehensive document, which comprises a series of far reaching strategies, as well as practical measures (Figure 1). In total there are 20 chapters, organised around four themes, namely:

- comprehensive strategy and policy for sustainable development
- social sustainable development
- sustainable economic development
- rational utilisation of resources and environmental protection.

Figure 1 National strategies and programs for sustainable development in China



Source: synthesised from [13]

Associated with the strategies are Priority Programs covering nine areas. These were designated by the Central Government based on their potential to assist in the implementation of *China's Agenda 21* in those areas with the most urgent needs. The Programs cover a wide range of issues, including legislation, policies, education, agriculture, environment, energy, transportation, regional development, population, health and global climate change research. *China's Agenda 21* reflects the country's own understanding and interpretation of the concept of sustainable development. It comprises, essentially, four elements:

- Economic development: the economy is considered to be the cornerstone of sustainable development, and priority is given to the primary task of developing the nation's economy to alleviate poverty and improve the living standards of the people. Economic development is considered essential to raise social productivity, improve the competency level and living standards of the people, and achieve sustainable management of natural resources and protection of the environment. Economic development is regarded as the material foundation for any key initiatives in the country and a fundamental mechanism to achieve coordination between population, resources and environment.
- Rational utilisation of natural resources and environmental protection: this is considered a strategic task and a fundamental national policy involving protection of the natural resource base on which humans depend, such as air, freshwater, oceans and forests, from environmental pollution and ecological damage.
- The principle of satisfying present needs without compromising the interests of future generations: the traditional mode of development and consumption is considered unsustainable. Two major transformations are necessary: transforming the planned economy into a socialist market economy, and changing the pattern of economic growth from an extensive mode to an intensive one.
- Changes in attitudes and behaviour: a holistic understanding of the relationships between humans and nature is essential before people change their behaviour. The traditional patterns of production and consumption must be replaced by a new awareness of the concept of sustainable development.

The Chinese government has also attempted to refine the meaning of sustainable development by providing a number of 'position statements'. To the Chinese government, economic growth is, as noted, at the heart of sustainable development. Sustainable development of society and the environment cannot be achieved without 'rapid economic growth'. The government set a target for annual average GNP growth rate in the range of 8–9% from the mid-1990s onwards. This has been justified on the basis that:

“[b]ecause China is a developing country, the goals of increasing social productivity, enhancing overall national strength and improving people's quality of life cannot be realised without giving primacy to the development of the national economy and having all work focused on building the economy.”
[12, Ch.1, Sec.1.2]

It is noteworthy that official statistics indicate that these target rates of growth have been consistently achieved in recent years although there is debate externally regarding the veracity of published figures.

China also admits that sustainable development cannot be achieved unless the shortage of resources is resolved. China faces a variety of problems including overpopulation, environmental degradation, natural hazards, institutional shortcomings, and limited management capacity. *China's Agenda 21* has defined sustainable development in line with the country's specific circumstances, and has highlighted certain concerns.

China's Agenda 21 provides a national strategic framework and guidance for the implementation of sustainable development. The document aims to establish:

“a sustainable economic and social development system and corresponding environmental and sustainable resources bases as the overall objective, in order to bring about economic prosperity, social progress, and ecological security.” [13]

Specifically, it aims to:

- promote economic restructuring and improve the quality of development while maintaining economic growth
- re-invigorate the country by relying on science and technology, and by integrating science, education and the economy
- promote moral and ethical development and strengthen democracy and legal systems
- control population growth and constantly improve the human resource base
- adopt policies that give equal attention to the utilisation and the protection of natural resources
- rely on law enforcement in protecting and utilising the nation's resources, including land, freshwater, the oceans, forests, grassland, biological resources, and mineral resources
- improve the ecological environment by controlling pollution and preventing soil erosion
- enhance efforts in implementing the 'Help the Poor' programs with a view to eliminating the nation's poverty by the end of the 21st century
- establish, step by step, the nation's policy and legal system for sustainable development, as well as decision making and management coordination mechanisms that promote sustainable development.

President Jiang Zemin made a high-profile speech on sustainable development at the Fourth National Conference on Environmental Protection in 1996 and various directives for the further implementation of sustainable development were subsequently issued, including:

- economising on water, land energy, materials, cereals, and other resources, and promoting the development of agriculture with high yield, high quality, high efficiency, and low investment, and all industries should place emphasis on the quality of products, on low energy consumption, and on economic and social benefits

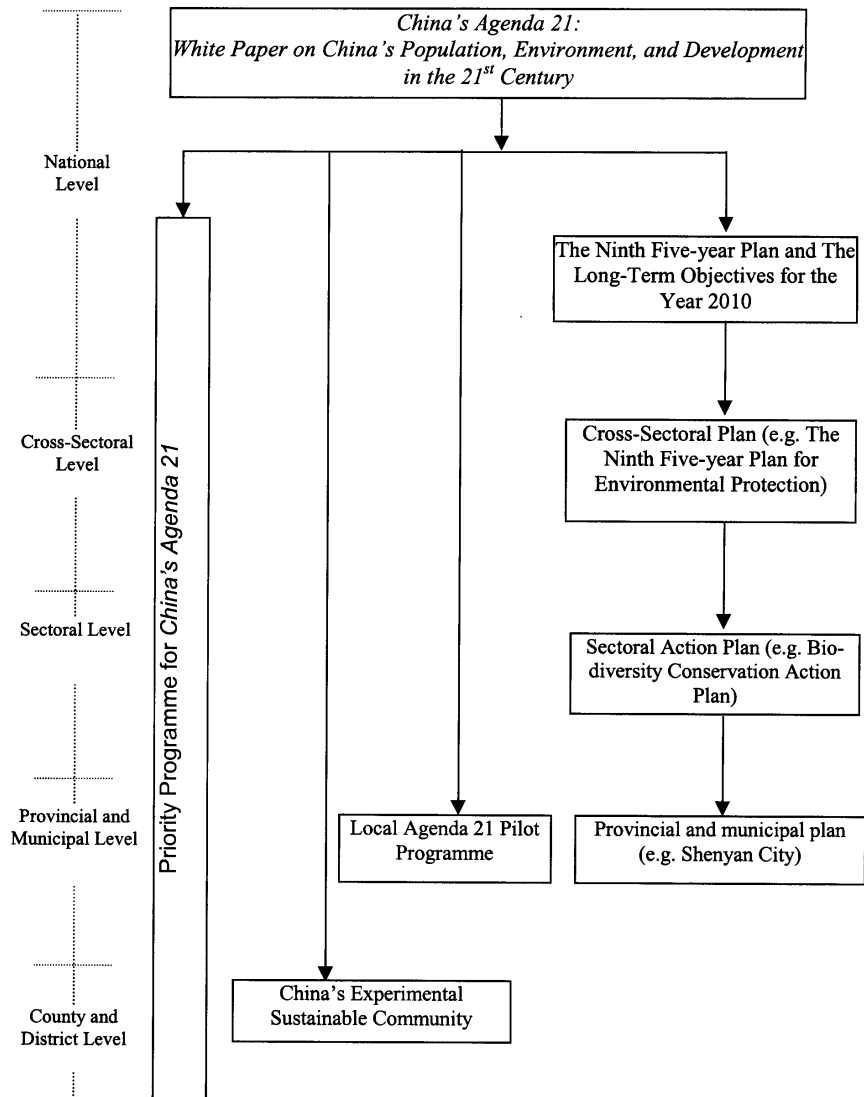
- continuing with efforts to control pollution and to enhance the quality of the human resource base
- working for the rationalisation of the structure and patterns of consumption, which should be conducive to environmental and resource protection as the nation's productivity level cannot sustain wasteful consumption
- promoting publicity and education in environmental protection to enhance people's awareness of and participation in protecting the ecological environment
- halting and reversing trends in ecological deterioration and damage to natural resources in certain parts in the country.

The strategic concept of sustainable development was translated into policies and measures, but *China's Agenda 21* then was still no more than a list of statements. Putting them into effect has been a major challenge for the government. China's approach has been to incorporate its sustainable development strategy into the national Five-year Plan process. It is explicitly stated that '*China's Agenda 21* will function as a guiding document for drawing up medium and long-term plans for economic and social development. Its goals and contents will be embodied in the Ninth Five-year Plan (1996) and the Plan for 2010' [12, Ch.1, Sec.1.10].

3 Integrating sustainable development with national development planning

The implementation of *China's Agenda 21* has been characterised by the heavy involvement of government at the national and sub-national levels [1]. Sustainable development in China is a top-down initiative, and the process of integrating these considerations into development planning is primarily government-led. The integration has been supported by a number of interrelated measures (Figure 2): an administrative office has been established and capacity building programs held while the sustainable development strategy itself has been incorporated into the national Five-year Plan and other development plans for different sectors and at different geographical scales. Through this process, China has attempted to involve key government institutions and agencies at various levels within the strategic framework of sustainable development.

In July 1994, immediately after the adoption of *China's Agenda 21*, the State Council issued a directive calling on each province, autonomous region, municipality and local government to do three things. Firstly, they should regard *China's Agenda 21* as an overarching strategic guideline for the formulation of medium- and long-term socio-economic development plans at the national and local levels. In particular, *China's Agenda 21* should be used to guide the formulation and finalisation of the Ninth Five-year Plan (1996-2000) and the Long-term Objectives for the Year 2010. Secondly, they should implement *China's Agenda 21* at the level of day-to-day management in local and sectoral governments and endeavour to promote public awareness so that decision makers and the general public voluntarily implement the *Agenda*. Thirdly, they should further promote international cooperation and attract foreign capital and technologies for environmental protection projects [13].

Figure 2 Process for the integration of sustainable development considerations into development planning in China (national level)

Source: synthesised from [14–17]

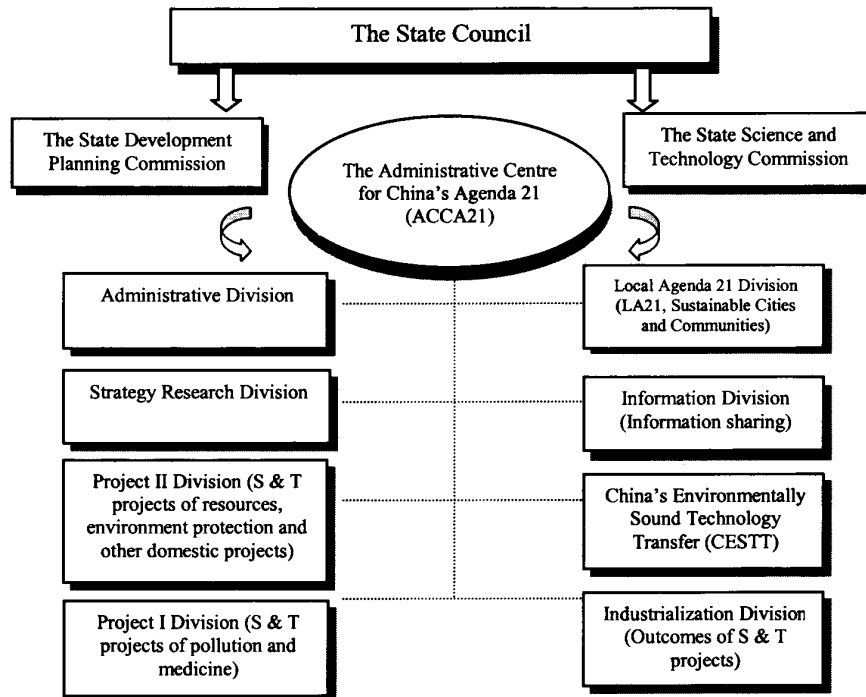
The State Planning Commission (now the State Development Planning Commission) and the State Science and Technology Commission also issued a directive requiring that sectoral and local governments achieve a better understanding of the overall strategy of *China's Agenda 21* to integrate the principles of sustainable development into their Ninth Five-year Plans and Long-Term Targets for the Year 2010. The Administrative Centre for China's Agenda 21 was entrusted with the responsibility for coordinating the implementation of *China's Agenda 21* and the Priority Program, and providing technical

and advisory services. The decision to promote implementation of *China's Agenda 21* was further confirmed in May 1995 when the Central Committee of the Communist Party of China and the State Council approved 'The Decision to Promote Progress in Science and Technology' [13].

Implementing *China's Agenda 21* was also streamlined by the establishment of new and innovative institutions. A Leading Group, co-chaired by a deputy minister of the State Science and Technology Commission (SSTC) and the State Planning Commission (SPC), was set up in August 1992 for the formulation of China's Agenda 21. It was supplemented by a working group, which drew representatives from 52 ministries and more than 300 experts from different agencies. The terms of reference for the Leading Group were to organise and guide the formulation of China's Agenda 21 and its associated Priority Programs. At the same time, an administrative office, titled the Administrative Centre for China's Agenda 21 (ACCA) was established for the day-to-day work of implementing the Priority Programs. Accordingly, the mandates of the ACCA [14] include:

- advising the Chinese Government on sustainable development strategies, policies and programs
- participating in international sustainable development activities as representatives of the Chinese Government
- serving as a clearing house for sustainable development priority projects in China
- promoting sustainable development in Chinese Experimental Sustainable Development Communities
- providing consulting services to the industrial sector on environmentally sound technologies
- developing and hosting in China the UNDP-sponsored Sustainable Development Networking Program (SDNP)
- providing training for government agencies and industry
- conducting strategic research and publishing educational materials in support of sustainable development.

Given its functions, the ACCA is very important in terms of maintaining the momentum of sustainable development (Figure 3). The ACCA is an independent body specifically responsible for the implementation of the Priority Program. Although it is only an administrative office, it has a significant role to play in promoting *China's Agenda 21*, including the task of coordinating different agencies, sharing information, raising funds, bringing in foreign investment and maintaining the momentum of sustainable development initiatives. Most importantly, the ACCA21 has been duplicated by many local governments, which has helped to facilitate and simplify the process of integrating sustainable development at the local level. By giving guidance and training, ACCA21 helps shape the sustainable development policies of local governments.

Figure 3 Institutional structure of the Administration Centre for *China's Agenda 21* (national level)

Source: synthesised from [12]

In addition to the ACCA, the State Development Planning Commission (SDPC), the State Science and Technology Commission (SSTC) and the National Environmental Protection Agency (NEPA) (now the State Environmental Protection Administration – SEPA) also play a pivotal role in implementing *China's Agenda 21*. SDPC and SSTC are the authorities dealing with nationwide macro socioeconomic development planning, while SEPA is responsible for the cross-sectoral issues of environmental protection, including the tasks of legislation, planning, management and enforcement. Unlike the SDPC and SSTC, SEPA is a non-ministerial agency but it has been given ministerial power. All these agencies are critical to the formulation, adoption, enforcement and monitoring of sustainable development policy in China, but the SDPC performs the crucial role of coordination.

China's approach to the implementation of Agenda 21 has placed a strong emphasis on capacity building. In July 1994, the SDPC, SSTC and UNDP signed an agreement to integrate *China's Agenda 21* into its socio-economic development plans at the national and local levels. They reached a consensus on the following issues [13]:

- rationale and significance of integrating *China's Agenda 21* into socio-economic plans
- what to integrate at different levels
- methodologies for integration
- international cooperation for integration.

The meeting drew together representatives from various government ministries, and the completed study report served as a guide for sectoral policy makers and local governments to formulate their own sustainable development strategies. In addition, a series of sustainable development training courses sponsored by SPC, SSTC and UDP were held. These training courses were organised by ACCA21, the Chinese Society for Sustainable Development and China's International Training Centre for Sustainable Development (CITCSD), and involved planners and director generals from various ministries, provinces and cities. These national training courses were followed by similar provincial and local workshops.

The integration of sustainable development considerations into the national Five-year Plan can be considered as a crucial step in the entire process as the Five-year Plan is one of the most significant documents that guides China's socio-economic development within a given period of time. On March 17, 1996, the Fourth Session of the Eighth National People's Congress (i.e. Parliament of China) adopted the 'Outline of the Ninth Five-year Plan for National Social and Economic Development and the Long Term Objectives for the Year 2010' [18]. The Outline clearly sets out two important strategies: 'sustainable development' and 'reinvigorating the country through education, science and technology'. It also required 'two fundamental shifts' in the economic structure and the mode of economic development. The Ninth Five-year Plan also placed particular emphasis on the following aspects that are related to the national sustainable development strategy:

- dealing with the problems of unsustainable development resulting from economic development, through science and technological development;
- raising the overall education and competence level of the population;
- insisting on family planning and population control; and
- reinforcing environmental and ecosystem protection and exploiting the natural resource base rationally.

The Ninth Five-year Plan was the first national plan produced according to China's sustainable development strategy. More importantly, its adoption was followed by the formulation of development plans in other sectors and localities, thereby translating sustainable development considerations into a policy network embracing the entire country (Table 1).

4 Integrating sustainable development among different sectors and at different geographical levels

According to statistics published by the State Council, up to December 1995, there were 14 government agencies that had developed their own leading groups for the implementation of *China's Agenda 21*. Nineteen sectors had formulated their own sectoral Agenda 21 and action plans. Figure 4 shows some examples of sectoral sustainable development policies formulated by different government agencies. This infusion of sustainable development considerations into different policy sectors reflects the nature of a former centrally planned economy and highlights the endeavours by the central government in resolving conflicts between different sectors and localities. In order to facilitate the implementation of *China's Agenda 21*, a national conference was

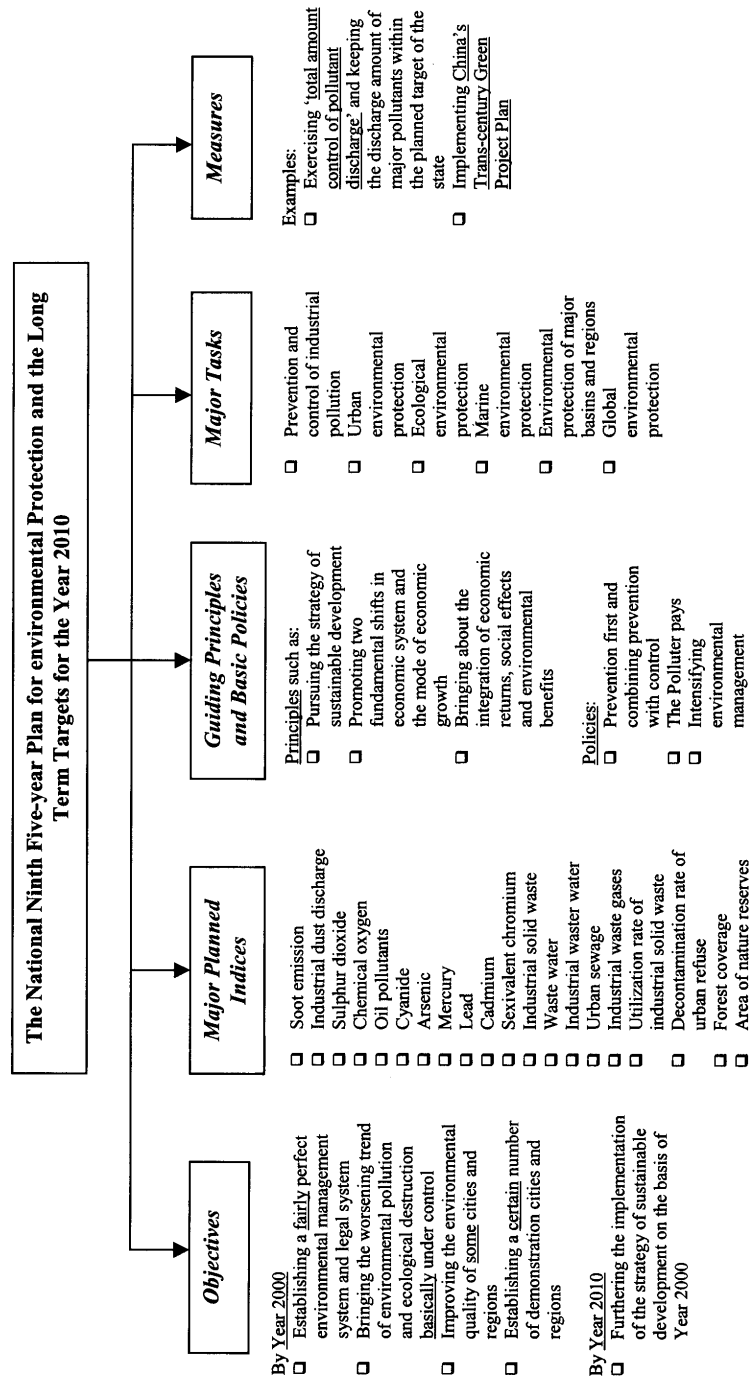
held on 27-28 December 1995. It was reported that 254 representatives from 47 provinces, municipalities and autonomous regions and 52 ministries of central government participated in the meeting [14]. The national conference served as an important arena for dialogue between the central and local governments, which helped facilitate the implementation of *China's Agenda 21*.

Table 1 Examples of sectoral sustainable development plan

<i>Name of Agency</i>	<i>Action Taken</i>
Ministry of Chemical Industry	The Ministry of Chemical Industry's plan for the integration of China's Agenda 21 into the Ninth Five Year Plan was formed, and the stated objective of which was to 'achieve harmony between development of the chemical industry and the environment. Measures taken includes: <ul style="list-style-type: none"> • Invigorate old enterprises, promote technological progress, reduce consumption and discharge • Identify a clear direction for cleaner production • Limit the number of small-scale chemical enterprises • Adjust irrational distribution and inefficient structures of production • Install relevant equipment to recover and recycle secondary resources from wastewater, waste gases, and solid wastes
Ministry of Metallurgical Industry	A plan (1996–2000) for the iron and steel industry to integrate China's Agenda 21 into its future development. It aimed to reduce energy consumption to less than 1.45 tones of coal equivalent per ton of steel.
Ministry of Construction	It has published a book, titled Sustainable Human Settlement, which formed part of its plan to promote sustainable development.
Ministry of Forestry	'Forestry Action Plan for China's Agenda 21' was formulated in accordance with Agenda 21, the Statement of Principles for Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests, and China's Agenda 21. The Plan was approved by the Environmental Protection Committee under the State Council on 21 March 1995.
National Environmental Protection Agency (NEPA)	<ul style="list-style-type: none"> • It has developed three plans for the implementation of sustainable development policy, namely, 'China's Environmental Protection Action Plan (CEPAP)', 'NEPA's Action Plan for China's Agenda 21' and the China Bio-diversity Conservation Action Plan (CBCAP). • CEPAP – focusing on natural resource conservation and environmental protection in the urban construction, energy, industry, agriculture, forestry, water, ocean and geology sectors. • CBCAP – forming part of the Country Programme for fulfilling its commitment to the United Nations Convention on Bio-diversity.
Ministry of Agriculture	It has also formulated its own plan for the integration of China's Agenda 21 into the Ninth Five-year Plan for Agricultural and Rural Economic Development. Specific measures included: <ul style="list-style-type: none"> • Protecting cultivated land, • Promoting increased grain yield, and development • Developing the rural economy
State Administration for Building Material Industry	Its plan for the integration of China's Agenda 21 into building material industry called for the following: <ul style="list-style-type: none"> • Emphasizing the energy, land and water-saving quality of building materials • Speeding up scientific and technology development • Innovating medium- and large-scale enterprises

Source: synthesised from [19]

Figure 4 Components of the National Ninth Five-year Plan for environmental protection and the long term targets for the year 2010



Source: synthesised from [20]

Among other sectors, the plan for environmental protection is of particular importance. As an essential part of the National Five-year Plan, 'the National Five-year Plan for Environmental Protection and the Long Term Targets for the Year 2010' was formulated under the auspices of the SEPA [20] (Figure 5). In the Plan, sustainable development was given priority in the task of environmental protection for the period of 1996 to 2000. Accordingly, the guiding principles for the Plan include:

- adhering to the basic state policy of environmental protection
- pursuing the strategy of sustainable development
- carrying out the guiding principle of synchronised planning, implementation and development in terms of economic development, urban and rural construction and environmental protection
- vigorously promoting the two fundamental shifts in the economic system and the mode of economic growth
- bringing about the integration of economic returns, social effects and environmental benefits.

The Plan also put forward a series of measures to combat environmental degradation. For example, 'China's Trans-century Green Project Plan' [21] and 'the Control of the Total Amount of Pollutant Discharge' [22] are being undertaken to bring environmental protection in line with the national economic plan and to attain the national objectives of environmental protection for the Ninth Five-year Plan period and the Year 2010. The former is a plan with specific projects and key areas designed to organise the relevant departments, localities and enterprises to carry out a series of projects with regard to some key areas, major basins and vital environmental problems (Table 2), while the latter is a measure administered by the central government which distributes and assigns the planned control targets to various local governments and enterprises (Table 3).

The implementation of *China's Agenda 21* has also proceeded in local government. In July 1994, the State Council issued a notice to all provinces, autonomous regions and municipalities encouraging them to implement *China's Agenda 21*. The notice emphasised that local governments at different levels should incorporate *China's Agenda 21* in economic and social planning, promote public awareness of sustainable development, and endeavour to seek international cooperation. Following the notice, the State Council also put forward its 'Opinions for Further Implementation of *China's Agenda 21*' in 1996, laying down four requirements for local authorities:

- Formulating detailed local action plans for realising sustainable development in accordance with the local socio-economic situation, population characteristics, available resources, environmental conditions, major difficulties and obstacles.
- Selecting and implementing pilot projects relevant to local sustainable development, and to disseminate the experience drawn from them.
- Facilitating information flow and exchanges of experience in implementing Agenda 21; guiding the construction of cities and towns in line with the concept of sustainable development; and creating comprehensive experimental communities for sustainable development in medium- and small-sized cities or districts of large cities as models.

- Setting up proper administrative organs with strong leadership for united implementation of *China's Agenda 21* and providing them with the necessary facilities.

Table 2 The classification of specific projects of China's Trans-century Green Project Plan (first stage)

<i>Contents of control</i>	<i>Number of projects</i>	<i>Remarks</i>
1 Control of water pollution in 7 major river basins	650	
Huaihe River Basin	282	
Liaohe River Basin	30	
Haihe River Basin	56	
Songhua River Basin	44	
Yellow River Basin	69	
Pearl River Basin	36	A total of 801 projects for prevention and control of water pollution
Yangtze River Basin	133	
2 Control of water pollution in 3 major lakes	35	
Dianchi Lake	13	
Chaohu Lake	7	
Taihu Lake	15	
3 Control of water pollution in major coastal cities	99	
4 Control of water pollution in other cities	17	
5 Major acid rain pollution control regions	109	
East China	9	
Central China	36	
South China	28	
Southwest China	36	
6 Control of air pollution in major cities	219	
7 Control of solid wastes pollution	272	
Industrial solid wastes	118	
Hazardous wastes and radioactive wastes	85	A total of 328 projects for prevention and control of air pollution
Disposal of urban domestic refuse	69	
8 Ecological environmental protection	118	
Ecological environmental restoration and protection	54	
Rural ecological protection	37	
Construction of nature reserves	27	
9 Actions related to global environmental issues	69	
Greenhouse gases control	28	
Ozone layer protection	14	
Biodiversity conservation	27	
10 Capacity building of national environmental supervision and management	3	
Total	1,591	

Source: synthesised and modified from [21]

Table 3 Plan for the control of the total amount of major pollutants discharge during the Ninth Five-year Plan Period

<i>Project</i>	<i>1995</i>	<i>2000</i>	<i>2000vs.1995 (+or %)</i>
The amount of soot emission (10,000 tons)	1,744	1,750	0.37
The amount of industrial dust discharged (10,000 tons)	1,731	1,700	-1.80
The amount of sulphur dioxide emission (10,000 tons)	2,370	2,460	3.82
The amount of chemical oxygen demand discharged (10,000 tons)	2,233	2,200	-1.49
The amount of oil pollutants discharged (ton)	84,370	83,100	-1.5
The amount of cyanide discharged (ton)	3,495	3,273	-6.4
The amount of arsenic discharged (ton)	1,446	1,376	-4.8
The amount of mercury discharged (ton)	27	26	-3.7
The amount of lead discharged (ton)	1,700	1,670	-1.9
The amount of cadmium discharged (ton)	285	270	-5.4
The amount of sexivalent chromium discharged (ton)	670	618	-7.7
The amount of industrial solid wastes discharged (10,000 tons)	6,170	5,995	-2.9

Source: synthesised and modified from [22]

According to official statistics, as early as 1996 two-thirds of the 30 provinces, autonomous regions and municipalities had organised their respective Leading Groups and established working offices to implement their Local Agenda 21 [14]. By the end of 1999, over three quarters (25 out of 31) of the provinces, autonomous regions and municipalities had set up leading bodies for Local Agenda 21 whilst over half of provinces, autonomous regions, municipalities and 20 per cent of prefectures and cities had already formulated or were formulating their LA21s or action plans [18,23] (Table 4).

In addition to the new institutions and policy tools, the implementation of Agenda 21 has also built on existing mechanisms. The Pilot Regions for Comprehensive Social Development, which were originally set up for the purpose of achieving socio-economic development were renamed China's Sustainable Development Experimental Communities. These were first established in 1986 with support from 28 ministries. By 1996, there were 26 national and 45 regional projects being implemented across the country. Because of the popularity of the program, in 1997 the State Council proposed to make use of these experimental communities as bridgeheads for *China's Agenda 21*. China's Development Experimental Communities are the closest to the grassroots that can play a vital role in publicity campaigns and the mobilisation of public participation [24]. Their stated objectives are:

- to strengthen capacity building for sustainable development
- to promote the realisation of sustainable development
- to accelerate economic restructuring and social reform
- to promote municipal planning and construction

- to create a favourable environment for production and living
- to accelerate the development of social welfare
- to develop communal organisation and culture
- to create favourable social conduct and ethical standards.

Table 4 List of Local Agenda 21 in China

<i>Level of Governance</i>	<i>Name of the Local Government</i>
Provincial	<ul style="list-style-type: none"> • The Action Plan of the Implementation of China's Agenda 21 for Jiangxi • China's Agenda 21 – the Action Plan for Shanghai City • The Outline of Action for China's Agenda 21 in Jiangsu • China's Agenda 21 – the Action Plan for Hebei • The Outline of Action for Fujian Province's Sustainable Development • The Outline of Action for Anhui Province's Sustainable Development • The Action Plan for Implementing China's Agenda 21 in Guizhou – Challenging Poverty • Shandong Province's Agenda 21 • The Agenda 21 of Sichuan • The Agenda 21 of Shanxi • The Agenda 21 of Xinjiang (Uigur Autonomous Region)
Municipal	<ul style="list-style-type: none"> • The Action Plan of the Priority Programme of Sustainable Development for Harbin • The Plan of Priority Programme for Nanyang City's Agenda 21 • The Outline of Environmental Management Strategy for Wuhan City • Tongchuan City's Agenda 21 • Fujian Changtai's Agenda 21 • Changzhou City's Agenda 21 • Wujin City's Agenda 21 • Beijing's Agenda 21 • Chengdu City's Agenda 21 • *Guangzhou City's Agenda 21 • Tangshan City's Agenda 21 • Benxi City's Agenda 21 • Zhangping City's Agenda 21
County	<ul style="list-style-type: none"> • Yunnan Province Luliang County's Agenda 21

* Note: Guangzhou was designated as one of the local agenda 21 pilot authorities in 1997

Source: translated from [12]

In 1998, it was reported that 29 national and 60 provincial communities had been established in 24 provinces, municipalities and autonomous regions, covering the prosperous southeast, the rapidly growing central region and the resource-rich western part of the country. The program areas included capacity building on sustainable development; sustainable township development; sustainable agriculture and rural

development; optimum utilisation of resources; and ecosystem restoration and environmental protection. Given its base in localities, the potential of the Experimental Communities program in promoting sustainable development and public participation could be further developed.

5 Integrating sustainable development in social and economic planning: the case of Guangdong province

Guangdong Province in the southern part of the country was among the first to actively engage in the promotion of sustainable development. In April 1995, a leading group of 28 organisations and 77 experts under the leadership of the Guangdong Provincial Planning Commission and the Guangdong Provincial Science and Technology Commission was set up. In April 1997, 'The Study Report on the Implementation of *China's Agenda 21* for Guangdong Province' (*zhong-guo-er-shi-yi-shi-ji-yi-cheng-guang-dong-sheng-shi-shi-fang-an-yan-jiu-bao-gao*) was published [25]. This set out a sustainable development strategy for Guangdong. The structure of the Report is similar to *China's Agenda 21*, consisting of four sections and 15 chapters (Table 5). It is a comprehensive sustainable development strategy covering environmental protection, natural resource conservation, sustainable economic development and sustainable social development. In addition, there are 77 priority projects divided into 12 program areas.

In July 1994, the State Council issued a circular to urge local governments to 'incorporate the basic tenets of China's Agenda 21 into local plans for economic and social development during 1996-2000 and through the year 2001, into government decision making and the regulatory process'. In response to the circular, the Guangdong provincial government incorporated a sustainable development strategy in 'The Ninth Five-year Plan for Economic and Social Development' [26]. In the Plan, sustainable development was taken as one of the 10 guiding principles for socio-economic development for the period of 1996-2000, and the task for sustainable development in Guangdong would be directed to the areas of environmental protection and pollution control, including:

- better control of industrial pollution (industrial restructuring, technological enhancement, clean production, industrial waste recycling, rigorous control over village and township enterprises etc.)
- comprehensive improvement of city environments (infrastructure building, tree planting, control over private vehicle, sewage treatment plant building etc.)
- natural conservation (development of eco-farming, better control over water quality, conservation of marine and coastal resources etc.).

Table 5 Hierarchy of Agenda 21 in Guangdong Province

Title	Level of Applicability	Component				
		Section 1 Comprehensive	Section 2 Environment and Natural Resources	Section 3 Sustainable Economic Development	Section 4 Social Sustainable Development	Section 5 Sustainable Community Development
Study Report on the Implementation of China's Agenda 21 for Guangdong Province	Provincial	<ul style="list-style-type: none"> • Establishment of the socialist market economy system • Promotion of economic development • Effective use of economic instruments and market mechanism for promoting SD 	<ul style="list-style-type: none"> • Conservation and sustainable use of natural resources, including: water, land, forest, marine and mineral • Protection of the environment by means of controlling atmospheric pollution and acid rain, preventing ozone depletion, controlling greenhouse gas emission and constructing climate change monitoring, forecasting system • Conservation of bio-diversity 	<ul style="list-style-type: none"> • Sustainable agricultural and rural development, including the pursuit of cultivation, pasture, marine farming and township and village enterprises. • SD of industry (e.g. textile), transportation (e.g. road and water) and energy (e.g. oil refining) • Regional Economic SD, including the region of the Pearl River Delta, Guangdong East Coast, Guangdong West Coast and the mountainous areas. 	<ul style="list-style-type: none"> • Control of population growth and human resource improvement • Development of Science and Technology for resources, medicine and the environment • Promotion of tertiary education • Development of sustainable human settlements • Improvement of health and sanitation • Eradication of poverty • Disaster Mitigation 	<p>Not Applicable</p> <p>77 projects divided into 12 program areas:</p> <ol style="list-style-type: none"> 1. Population (3) 2. Natural resources (8) 3. Ecosystem and the environment (21) 4. Agriculture (9) 5. Human settlement (5) 6. Health and Sanitation (6) 7. Education (2) 8. Disaster mitigation (6) 9. Poverty Eradication (4) 10. Bio-diversity (4) 11. High-tech industry (5) 12. Economic development (4)

Table 5 Hierarchy of Agenda 21 in Guangdong Province (continued)

Title	Level of Applicability	Component				
		Part I - Strategy			Part II - Priority Programs	
		Section 1 Comprehensive	Section 2 Environment and Natural Resources	Section 3 Sustainable Economic Development	Section 4 Social Sustainable Development	Section 5 Sustainable Community Development
Guangzhou's Agenda 21	Municipal	<ul style="list-style-type: none"> • Invigorating the capacity building in technology, education and human resources for SD • Establishing a resource-saving economic system that encourages comprehensive utilisation of resources, clean production and eco-farming • Invigorating infrastructure building for environmental protection and resource conservation • Developing the necessary policy, legislation and management system for SD to create an effective investment and coordinated management mechanism. 	<ul style="list-style-type: none"> • Continuing the socialist market economic system reform and government restructuring • Accelerating the pace of technology development and economic structural readjustment to facilitate clean production • Protecting and improving the ecosystem for agriculture by means of better management, structural adjustment, commercialisation and proper legislation • Promoting the development of tertiary industry, including commerce, transportation, communication, finance, information technology and tourism. 	<ul style="list-style-type: none"> • Improving people's competence by means of strengthening primary education and developing vocational, technical, adult, and high education • Increasing investment for the comprehensive development of science and technology • Continuing to insist on family planning and the control of immigration • Upgrading the quality of living and promoting a sustainable consumption pattern • Developing social services and a comprehensive security system • Facilitating and enriching people's physical and cultural lives 	<ul style="list-style-type: none"> • Maintaining the quantity of arable lands • Expanding the coverage of forest land, green area and open space • Promoting a better treatment of solid and liquid industrial and civic waste • Controlling the emission of carbon dioxide and toxic pollutants 	<p>21 projects divided into 6 program areas:</p> <ol style="list-style-type: none"> 1) Capacity building (4) 2) Sustainable agriculture and enterprise (3) 3) Science and technology (6) 4) Energy, transportation and telecommunication (2) 5) Family control, health service and community development (3) 6) Natural resource exploitation and conservation (3) <p>Not Applicable</p>

Table 5 Hierarchy of Agenda 21 in Guangdong Province (continued)

Title	Level of Applicability	Components				Part II - Priority Programs
		Section 1 Comprehensive	Section 2 Environment and Natural Resources	Section 3 Sustainable Economic Development	Section 4 Social Sustainable Development	Section 5 Sustainable Community Development
Tianhe's Agenda 21	District	<ul style="list-style-type: none"> Increasing educational input for the development of primary, vocational and adult education Comprehensively utilising the internet and the South-China human resource market to perfect the mechanism for the recruitment of skills Adopting a proactive approach to environmental protection Rationally planning and protecting the environment and natural resources of the entire district, with particular attention given to the areas of ecological value Ascertaining that the district government would adopt SD as the chief strategy for the future economic and social development, which needs to be clearly stated in the Planning Report on the National Economic and Social Development, the Tenth Five-year Plan and the Government's Annual Report 	<ul style="list-style-type: none"> Upgrading the economic structure from the state of medium income to high income Promoting high-tech and value added industry Improving the relation between the government and business by organisational reform Developing eco-farming and pollution free agriculture Reforming the rural management system to facilitate capital generation Accelerating the process of economic integration with the international market Transforming Tianhe District into a strategic centre for high tech and value added industry Encouraging the recruitment of talents and capital investment from outside 	<ul style="list-style-type: none"> Establishing a strategic model for the forecast and long-term planning of the population Improving the competence level of the district by increasing investment in primary education, adult education, vocational training and distance learning program Establishing a multi-level social security system and an advanced medical and first aid system Promoting a resource saving consumption pattern and an environmentally friendly outlook Establishing a civilised, healthy, open-minded, just and fair society 	<ul style="list-style-type: none"> Establishing functional mechanisms for better coordination between the environment, natural resources, economy and society Getting rid of the traditional thinking of compromising the economic development with environment found in government, business and individuals Encouraging the businesses and individuals to take part in environmental protection Rigorously executing EIA and other environment-related assessment systems Carrying out a series of environmental improvement and conservation projects within the district 	<ul style="list-style-type: none"> Preventing piecemeal development in the district Ensuring that the open space per capita is not less than 1.5 square metre Promoting the use of economic, practical and energy saving building materials Establishing a model of inhabitable community in the pre-designated villages Transforming Tianhe North into a CBD of Guangzhou Increasing input for the development of liquid and solid waste treatment plants Implementing other specific policies to improve the living environment and culture life

Source: synthesised from [25,27,28]

This suggests that the sustainable development strategy during the period of the Ninth Five-year Plan for Guangdong was biased towards environmental considerations, and the linkage between the sustainable development strategy and other sectors (i.e., economic and social) had not been established. However, this changed in August 1998 when the Guangdong Provincial Government put forward three long-term strategies for the socio-economic development. 'Externally Oriented' (Wai-xiang-dai-dong), 'Sustainable Development' and 'Re-invigorating the Country by Education, Science and Technology' [29]. In this context, 'Sustainable Development' specifically means:

- upgrading and readjusting the economic structure by science and technology so as to accelerate economic growth
- improving the spatial distribution between districts by proper coordination and guidance
- developing and enforcing legislation for sustainable development.

Following the announcement of the 'Three Strategies', sustainable development has again been incorporated in 'The Tenth Five-year Plan for Guangdong Province Economic and Social Development (2001-2005)' [30]. This includes:

- 1 rigorous family planning
- 2 comprehensive pollution control
- 3 conservation of natural resources
- 4 mitigation of natural disasters
- 5 improvement of the mobilisation system for national defence.

When compared with the Ninth Five-year Plan, it is apparent that the current Five-year Plan has approached sustainable development from a broader perspective. The concept of sustainable development is now better defined and there is more effective integration across policy sectors.

Guangzhou, the provincial capital which is located approximately 120 km north of Hong Kong, has also responded positively to this growing pressure to integrate the principles of sustainable development into the policy making process. The municipal government has also developed its own sustainable development strategy, entitled '*Guangzhou's Agenda 21*' [27] (Table 5). The city was designated as a Local Agenda 21 pilot project by the central government in 1997, and the strategic role of sustainable development for Guangzhou was officially confirmed by the municipal government in 1998. The task of developing *Guangzhou's Agenda 21* started in 1995. This included establishing a Leading Group and an administrative office (within the Guangzhou Municipal Planning Commission), providing training courses for staff, holding seminars, raising funds, and carrying out publicity campaigns. The formulation of *Guangzhou's Agenda 21* also involved a wide range of expertise. There were in total 70 officers, business representatives and academics involved in the task, and the entire process lasted for two years. The final version of *Guangzhou's Agenda 21* was approved by the municipal government on 23 February 1998. *Guangzhou's Agenda 21* is consistent with the sustainable development strategy at higher levels, consisting of four program areas, which represent a comprehensive strategy for sustainable development, sustainable economic development, sustainable social development and sustainable utilisation of

natural resources and environmental protection. The strategy element is supplemented by a Priority Program. The first elements of the Priority Program focused on capacity building, sustainable development enterprises and ecosystem building, clean production and pollution control, clean energy, transportation and communications, human health and the living environment, and natural resource exploitation and protection.

Although it is claimed that the sustainable development strategy was integrated into 'The Ninth Five-year Plan for Guangzhou City's Economic and Social Development and the Long Term Objectives for the Year 2010' [31], the concept of sustainable development as expressed in the Plan appeared to be rather vague. There was no explicit mention of sustainable development, except in the second chapter where it is briefly discussed. Furthermore, the linkage between sustainable development and other sectors was not clearly defined.

However, in the review of the progress of *Guangzhou's Agenda 21*, the Guangzhou Municipal Planning Commission reiterated that the basic idea of *Guangzhou's Agenda 21* would be taken into account in the formulation of the Tenth Five-year Plan [32]. 'The Tenth Five-year Plan for Guangzhou City National Economic and Social Development' [30] was published on 17 April 2001. The Plan has fewer quantitative targets; the linkage between sustainable development and other sectors is better defined; and the importance of sustainable development is clearly stated. More importantly, the Plan is consistent with *Guangzhou's Agenda 21* in terms of organisation and content. The Plan consists of 25 chapters divided into eight parts, addressing:

- 1 comprehensive idea and development targets
- 2 economy and information technology
- 3 structural readjustment and economic development
- 4 city planning and management
- 5 development of science, technology and education
- 6 social development
- 7 organisational innovation and the market
- 8 cultural life and democracy.

It is clearly stated in the Plan (Chapter 2, section 3) that the sustainable development of Guangzhou will be achieved by improving infrastructure, rural and village development; the quality of the environment; and the city's management. These correspond to *Guangzhou's Agenda 21*.

In 1998, the provincial government, led by the Guangdong Provincial Planning Commission, carried out a comprehensive study on sustainable development for Guangdong as a whole. The study covered 19 prefecture-level cities, including Dongguan, Huizhou, Heyuan, Foshan, Meizhou, Yuedong, Qingyuan, Shenzhen, Yunfu, Zhaoqing, Yuexi, Zhuhai, Zhongshan and Shaoguan, and the findings are summarised in 'the Study Report on Sustainable Development' [25]. In 1999, Guangzhou municipal government designated Tianhe District (i.e. the CBD of Guangzhou) as an experimental zone for sustainable development, and the district government was commissioned to develop its own sustainable development strategy. The task was completed in 2000, and it became the first district-level Agenda 21 in Guangzhou [28] (Table 5).

6 Conclusions

Sustainable development became a national priority after the publication of *China's Agenda 21*. The role of sustainable development in national development has been confirmed officially and the concept of sustainable development is linked with legislation and various policies relating to the economy, education, population, agriculture, industry, energy, natural resources and environment. However, it should be emphasised that economic development remains the most important consideration. Economic growth is seen as the means to bring about sustainable development in China. Nevertheless, the Chinese government has attempted to translate the 'collectively' defined strategy into programs and actions.

The adoption of *China's Agenda 21* has been followed by a systematic process of translating sustainable development considerations into principles and objectives that can guide decision making. The process commenced with the task of formulating *China's Agenda 21*, the strategy and objectives of which were then conveyed to ministries in different sectors and local governments at different levels (autonomous regions, provinces and municipalities) through various directives and circulars. In response to these central government initiatives, the relevant ministries and agencies developed their respective sectoral sustainable development policies within the framework of *China's Agenda 21*. Local governments also acted accordingly by formulating Local Agenda 21s and action plans. The strategy for sustainable development has also been translated into Priority Programs [15] and experimental projects and incorporated into social and economic plans (i.e. national and local Five-year Plans), which are critical to the whole process of promoting sustainable development in China. Through these various processes, China has managed to translate knowledge into action.

Having examined this implementation process, it appears that China has developed a comprehensive package of mechanisms for the implementation of sustainable development, which includes a well-structured strategy and an integrating process. *China's Agenda 21* seems to have laid down a clear strategy for the entire nation to follow. It has also set out a procedure by which this sustainable development strategy can be efficiently merged with national social and economic development planning. However, the document provides no agreed measures to assess the outcome of sustainable development. The pledge to expand the scope of the national accounting system (i.e. Integrated Environmental and Economic Accounting System-IEEA) to embrace environmental considerations, and to develop a 'Sustainable Development Impact Assessment System' (SDIA) for natural resources that the government made in *China's Agenda 21* (Chapter 4c and Chapter 14c) have not yet materialised. The consequence of this is a lack of consensus on sustainability assessment, both at the national and regional levels [33–36]. The absence of objective means for sustainability appraisal represents a missing link in the otherwise comprehensive package of measures for promoting sustainable development in China. This may impede progress in implementing sustainable development as the government has no mechanisms to measure how far the nation has gone down the path of sustainable development. This problem also reflects the fact that Chinese researchers tend to focus too much on sustainable development policy *per se* while paying less attention to the capacity of the nation in sustainability assessment [36].

The Chinese case demonstrates a particular approach to the implementation of Agenda 21, which is made possible by direct involvement of, if not control by, the

government. The process of promoting sustainable development in China gathered momentum relatively quickly compared to many developing and developed countries, where political debates and public consultations have often delayed or even frustrated the process of policy integration. The rapid production and adoption of *China's Agenda 21* has earned the Chinese government international recognition and financial support. Some neighbouring countries, such as India, Mongolia and Vietnam sent high-level delegations to China to learn from the Chinese experience [1]. However, implementing Agenda 21 in China has been conveniently treated as a technical exercise. Although it was claimed that the draft of 'The Ninth National Five-year Plan for Social and Economic Development Objectives to the Year 2001' had been sent to all the interest parties for comments, and that their leaders had been consulted before the formal proposal was sent to the National People's Congress [2], the extent to which the government really consulted the public is debatable. Lin [1] argues that there is a need for new mechanisms to provide incentives for NGOs to get involved. The grass-root programs, such as the Sustainable Development Experimental Areas, may provide a possible mechanism for the government to start a genuine process of public consultation on sustainable development.

To many observers, it would probably appear that many recent developments in the area of sustainable development in China are rhetorical and have produced little in the way of substantive improvements in environmental and social conditions. It is certainly the case that the Chinese environment remains under acute pressure [37] and that many social problems have emerged with economic restructuring and the transition to a socialist market economy. However, China's response to sustainability issues since the 1992 Earth Summit does appear to reflect a growing realisation that the high rates of economic growth enjoyed by the country over the past two decades will simply not be possible in the future unless it manages processes of environmental and social change more effectively and integrates these with the promotion of economic growth. At the same time, it is also clear that enhancing prospects for sustainable development will depend on the ability of the central government in Beijing to ensure that its policies and edicts are translated into effective action at the provincial and local levels. It is at these levels that the tensions between economic, social and environment concerns are most acutely felt. Therein perhaps rests a key challenge, namely the extent to which a national, top-down strategy for sustainable development can be reconciled with territorial and group interests that are more localised in nature.

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