

## Education for Sustainable Development Practice in China



**Copyright© 2009- Institute for Global Environmental Strategies (IGES)**

2108-11 Kamiyamaguchi, Hayama, Kanagawa, 240-0115, Japan

Tel: +81-46-826-9588 Fax: +81-46-855-3809

E-mail: [iges@iges.or.jp](mailto:iges@iges.or.jp) URL: <http://www.iges.or.jp>

**All rights reserved**

This report is produced as a part of FY2008 Capacity Development and Education (CDE) Project activities, IGES in Japan, in cooperation with UNEP-Tongji Institute of Environment for Sustainable Development (IESD), Tongji University in China.

**Co-Authors**

Dr. Mee Young Choi, Project Manager/Senior Policy Researcher, CDE Project, IGES

Prof. Jiang Dahe, UNEP-Tongji IESD, Tongji University

Dr. Ru Guo, UNEP-Tongji IESD Tongji University

Prof. Fengting Li, Head of Environmental Science/Vice Dean, UNEP-Tongji IESD, Tongji University

Ms. Cao Xiaojing, UNEP-Tongji, IESD, Tongji University

# Contents

<b>FORWARD</b> -----	5
<b>CHAPTER 1: INTRODUCTION</b> -----	7
<b>CHAPTER 2: FROM EE TO ESD, CALLED FOR BY THE UNITED NATIONS</b> -----	10
<b>CHAPTER 3: DEVELOPMENT OF EE AND EE FOR SD IN CHINA</b>	
3.1 The Development of EE in China -----	15
3.2 The Development of ESD in China-----	20
<b>CHAPTER 4: ACHIEVEMENTS ESD IN CHINA</b>	
4.1 Policy Perspective -----	23
4.2 Practice Perspective -----	26
<b>CHAPTER 5: ESD IMPLEMENTATION CASES</b>	
5.1 Project Hope-----	29
5.2 UNESCO China EPD-ESD Project-----	31
5.3 SEPA Green School Program-----	32
5.4 Project of Environmental Educators’ Initiative-----	34
5.5 Trainings and communications for public awareness -----	36
5.6 UNU-RCE Activities in China -----	38
5.7 ESD at UNEP-Tongji Institute of Environment for Sustainable Development -----	40
5.8 EE and ESD Research papers-----	42
<b>CHAPTER 6: ESD CHALLENGES IN CHINA</b>	
6.1 General Situation -----	45
6.2 Different Development Levels of ESD across the Country -----	46
6.3 Difficulty in East Regions -----	47
6.4 Other Difficulties -----	50
<b>CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS</b>	
7.1 Introduction -----	52
7.2 Main Findings and Conclusions	
7.2.1 Main Findings -----	53
7.2.2 Conclusions -----	56
7.3 Recommendations -----	57
7.4 Further Questions for Future Research -----	59
<b>REFERENCES</b> -----	61

## **TABLES AND FIGURES**

Table 4.1	MDG targets already met in China, 2008
Table 5.1	Sub-projects of Project Hope
Table 5-2	Core courses of the Master's Degree Program at IESD
Figure 4.1	Literacy rates among young people (15-24) and adults (15 and above)
Figure 5.1	Provinces/cities (in green) where schools participate in EPD project by 2006
Figure 5.2	Distributions of the National Award Green Schools in China
Figure 5.3	The conceptual structure of RCE
Figure 5.4	Number of academic papers on EE during 1979 - 2005 in China
Figure 5.5	Number of academic papers on ESD since 2000 in China
Figure 6.1	The west and east regions of China

## **ABBREVIATIONS AND ACRONYMS**

BP	British Petroleum
CECE	Center of Environmental Communication and Education
CYDF	China Youth Development Foundation
DESD	Decade of Education for Sustainable Development
EE	Environmental Education
EEl	Project of Environmental Educators' Initiative
EFA	Education for All
EPD	Environment, Population and Development
ESER	Energy Saving and Emission Reduction
ESD	Education for Sustainable Development
GDP	Gross Domestic Product
HSBC	Hong Kong and Shanghai Bank Corporation
IESD	UNEP-Tongji Institute of Environment for Sustainable Development
IGES	Institute for Global Environmental Strategies
IPCC	Intergovernmental Panel for Climate Change
MDGs	Millennium Development Goals
MoC	Ministry of Commerce of China
MoE	Ministry of Education of China
MOEP	Ministry of Environmental Protection of China
MoST	Ministry of Science and Technology of China
NPDCCP	National Propaganda Department of Chinese Communist party
RCE	Regional Centres of Expertise
RMB	Renminbi
ROA	Regional Office for Africa- UNEP
ROAP	Regional Office for Asia and the Pacific - UNEP
SEPA	State Environmental Protection Administration of China (became MOEP of China)
SD	Sustainable Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNLD	United Nations Literacy Decade
UNU	United Nations University
WWF	World Wide Fund for Nature

## **FORWARD**

The Capacity Development and Education (CDE) Project at the Institute for Global Environmental Strategies (IGES), has been conducting specifically focused research on Education for Sustainable Development (ESD) in the Asia-Pacific region to seek a way to create balance between rapid economic growth and environmental sustainability by using education as a specific tool within the political scheme. In particular, in consideration of the significance of climate change and greatly increased energy consumption, the Northeast Asia (NEA) is one of regions in Asia which has been a focus of the CDE Project. As a part of regional research on ESD, this paper specifically explores the current status of ESD policy and good practice in China as one of leading countries in the NEA which impacts the greenhouse gas emissions due to the rapid economic developmental growth.

China has recently celebrated its thirtieth anniversary of “Reform and Opening-up Policy” which was an ideological foundation transformation that eventually led to significant economic growth since the political revolution in 1978. At the same time, it is notable that the Chinese government has exceeded environmental policy goals since the early 2000s which included Environmental Education for Sustainable Development and ESD. The visible economic growth during this time consequently resulted in serious environmental problems which not only caused national challenges but also impacted on adjacent countries such as Japan and Republic of Korea. Therefore, it is an appropriate time to examine the current status and obstacles of ESD policy practice in China to provide its future orientation.

As such, I am certain of the value of this paper when we consider the dearth of critical analysis in research on indigenous ESD policy and implementation not only in China and but also world-wide. In addition, this paper also provides detailed information about the current status of ESD in China which foreigner researchers may have experienced difficulties to obtain due to a language barrier

to access governmental documents and academic reports written in Chinese.

I would like to express my heartfelt thanks to the research colleagues in the Institute for Environment and Sustainable Development (IESD) at Tongji University in Shanghai, China, especially to Professor Dahe Jian, Professor Fengting Li and Dr. Ru Guo. I also would like to acknowledge Ms. Xiaojing Cao and Mr. Robert Kipp who assisted me with constant help and support throughout this research. Without all these supporters, this paper would never have been completed.

*Dr. Mee Young CHOI*

Project Manager/ Senior Policy Researcher  
Capacity Development and Education Project  
Institute for Global and Environmental Strategies

## CHAPTER 1: INTRODUCTION

We stand now where two roads diverge. But unlike the roads in Robert Frost's familiar poem, they are not equally fair. The road we have long been travelling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road – the one 'less travelled by' – offers our last, our only chance to reach a destination that assures the preservation of our earth. The choice, after all, is ours to make. (Carson, 1962: 240)<sup>[1]</sup>

China is currently celebrating its thirty year anniversary of the "Opening and Reform" policy implemented in 1978. These thirty-years kept China's annual GDP growth rate close to 10%, brought the GDP from 36.452 billion RMB in 1978 to 24661.9 billion RMB in 2007<sup>[1]</sup>, and lead China to play a significant role in combating the present financial crisis. Also within this thirty-year, in spite of great remedial efforts, China is known as having severe environmental pollution and resource constraints. Further, the 1.3 billion population, the coal based energy structure, and the still rapid development put China in a difficult position in carbon emission reduction to mitigate climate change. China is facing the same challenges of the world: environmental protection, resource conservation, climate change adaptation and mitigation, and sustainable development.

*Silent Spring* by Dr. Carson (1962)<sup>[2]</sup> alerted the world to environmental pollution five decades ago. The 1972 Stockholm Meeting called for environmental education (EE) as an important measure for environmental protection<sup>[3]</sup> while the 1977 Tbilisi Conference defined the objectives of EE, and for the first time inserted phrases regarding "economy" and "development" into EE<sup>[4]</sup>. However, it was not until the 1992 Rio Earth Summit that sustainable development had been clearly defined and education for sustainable development (ESD) been formally called for by the United Nations<sup>[5]</sup>. More recently, after the 2002 Johannesburg Summit, the UN General Assembly proclaimed the UN Decade of Education for Sustainable Development, 2005-2014, DESD. From 2007, concerns with climate change have been more quickly entering various forms of education.

China has been doing its part in the development of EE and ESD with the international community the above. While great efforts have been made for environmental protection and sustainable development, EE and ESD have also been emphasized and put in practice. Although EE had already become popular in all education areas it was from the 1992 Rio Earth Summit that

ESD gradually entered mainstream education in China. The national launch of the DESD was organised at Tongji University on Sept. 10, 2005<sup>[6]</sup>. To the present, the concepts and concerns of sustainable development have been applied to various kinds of informal and formal educations. The issues of climate change have also been strengthened in education since 2007.

However, China's success is established on a base of many years of suffering through poverty and backwardness. China's economy was negligible before the 1970s, especially relative to the late 1990's and early 2000's. Although there has been rapid development, as a large country with a huge population, it is easily understood that there should be great disparities of development between different regions and between urban and countryside. The levels of people's living conditions are different, so as the education situation. Even after the brilliant thirty-years, there is still a considerable portion of people living in poor conditions. Therefore, the main strategy of education in China, for a long time, had been the "Two Fundamentals" which emphasizes basic education, especially the 9-year compulsory education for children and youths, and the illiteracy eradication for young and mid-aged adults<sup>[7]</sup>. In the new 11<sup>th</sup> Five Year Plan (2006-2010)<sup>[8]</sup> and the Mid- and Long- Term Plan for Education<sup>[9]</sup>, the core of the education strategy is on Education Equity, which emphasises the right of receiving adequate education and education quality for all people.

The year 2007 was notable that climate change had been paid extremely high attention because of the facts, impacts, and trends of climate change revealed by the newly released IPCC 4<sup>th</sup> assessment report, AR4<sup>[10]</sup>, and because the negotiations on UNFCCC and Kyoto Protocol arrived at a critical point. The world found that the climate change challenge arose to the top, blocking the development of human society. Therefore, integrating climate change adaptation and mitigation with ESD also has become important. Along with the measures taken by the government on climate change adaptation and mitigation, new courses or relevant teaching materials have been added to the curriculum of EE. China's population growth is expected to continue in some twenty to thirty years. Whether China has stepped on a sustainable development road means a lot to the world. EE and ESD are therefore very important to China as well as to the world.

Within the economic and environmental background in China as outlined above, this paper explores:



- International events and consensus on ESD as lead by the United Nations (Chapter 2);
- Historical developments of EE and ESD within the characteristics and contexts of China (Chapter 3);
- Status and achievements of ESD in China in order to examine the current position of ESD in educational and political positions (Chapter 4);
- Selected ESD implementation cases which show good practices within a range of learning conditions and contexts across the country (Chapter 5);
- Difficulties and challenges in ESD implementation and obstacles to surmount in current and future ESD initiatives in China (Chapter 6), and;
- Finally, conclusions based on the main findings of this research; recommendations for not only researchers and practitioners in ESD fields but also policy decision-makers who have been involved in relevant governmental policy (Chapter 7).

## CHAPTER 2: FROM EE TO ESD, CALLED FOR BY THE UNITED NATIONS

While the declaration on environmental protection and pollution reduction was made at the UN Conference on Human Environment in 1972, environmental education (EE) was at the same time brought forth by the declaration of the Conference through principle 19: “Education in environmental matters, for the younger generation as well as adults, giving due consideration to the underprivileged, is essential in order to broaden the basis for an enlightened opinion and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension. ...” [3].

The role, objectives, and characteristics of EE were clearly defined at the Tbilisi Conference in 1977. The Tbilisi Conference recommended certain criteria that help guide efforts to develop EE at the national, regional, and global levels, and defined the goals, objectives, and guiding principles for EE. The interdependence between economic, social, political, and ecological issues in urban and rural areas was also noted, but the concept of sustainable development was not discussed [4].

It was at the 1992 Rio de Janeiro Conference on Environment & Development that the historical moment was defined for the world that environment must be integrated with development concerns and all nations must work together for sustainable development [5]. It was after this Conference that SD (sustainable development) became one of the most important phrases in all aspects of human society: economy, environment, politics, industry, community, culture, and certainly education. In Chapter 36 of the document resulting from the 1992 Rio Conference, **Agenda 21**, “Promoting Education, Public Awareness, and Training”, it specifically identifies four major thrusts: (1) improving the quality of and access to basic education, (2) reorienting existing education to address sustainable development, (3) developing public understanding and awareness, and (4) training.

In **Agenda 21**, it is declared that human beings are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being.

However, integration of environment and development concerns and greater attention to them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. No nation can achieve this on its own; but together we can - in a global partnership for sustainable development.

Since 2000, the governments of the world, together with agencies of the United Nations, have launched four initiatives, all of which focus on education either directly or as a core component<sup>[11]</sup>. These are:

- The Millennium Development Goals (MDGs) - eight goals with target date of 2015.
- Education for All (EFA)-six goals also with a target date of 2015.
- The United Nations Literacy Decade (UNLD) - from 2003 to 2012.
- The United Nations Decade of Education for Sustainable Development (DESD)-from 2005 to 2014<sup>[11]</sup>.

In The UN Millennium Declaration (UN, September 2000)<sup>[12]</sup> sets international development targets for the MDGS including education, stating:

“To ensure that, by the same date, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling and that girls and boys will have equal access to all levels of education”

UNESCO is the lead agency of the UN for education. It has the job of coordinating three of the four initiatives: the EFA movement, the UN Literacy Decade and the Decade of Education for Sustainable Development. On its website<sup>[11]</sup>, “UNESCO believes that education is the key to social and economic development. We work for a sustainable world with just societies that value knowledge, promote a culture of peace, celebrate diversity and defend human rights, achieved by providing Education for All (EFA)”.

All these four initiatives consider education as a right of all humans and believe that education is a key to development, as a way of enabling people to fulfil their potential and take increasing control over decisions that affect them<sup>[11]</sup>. However, the DESD ties the ongoing interests in education to the current overarching theme of sustainable development. It is a

powerful concept that could ignite the interests of people around the world to use education as a tool to shape a more sustainable future <sup>[13]</sup>. Furthermore, the DESD was intended to link its goals with those of the other three initiatives.

It should be beneficial to recall the background, goals, and objectives of DESD, stated by UNESCO<sup>[13]</sup> as follows:

“The founding value of ESD is respect: respect for others, respect in the present and for future generations, respect for the planet and what it provides to us (resources, fauna and flora). ESD wants to challenge us all *to adopt new behaviours and practices to secure our future.*”

“The overall goal of the DESD is to integrate the principles, values, and practices of sustainable development into all aspects of education and learning. This educational effort will encourage *changes in behaviour* that will create a more sustainable future in terms of environmental integrity, economic viability, and a just society for present and future generations”

“The basic vision of the DESD is a world where everyone has the opportunity to benefit from education and learn *the values, behaviour and lifestyles required for a sustainable future* and for positive societal transformation”.

“The objectives for the DESD are to:

- facilitate networking, linkages, exchange and interaction among stakeholders in ESD;
- foster an increased quality of teaching and learning in education for sustainable development;
- help countries make progress towards and attain the millennium development goals through ESD efforts;
- provide countries with new opportunities to incorporate ESD into education reform efforts.”

In a report by UNESCO <sup>[14]</sup>:

“4. At UNESCO, Education for All (EFA) lies at the heart of the effort to achieve the DESD objectives. EFA focuses on getting people into organized learning while DESD addresses all levels and modalities of education, including quality media and corporate training programmes....”

“5. ...MDGs provide clear development goals that can be measured, including education as a significant input and indicator. EFA focuses on ways of ensuring that everyone has an opportunity to have a quality education. UNLD concentrates on promoting literacy as the key tool for all types and levels of

learning. And DESD promotes the societal goal of sustainable development, which results from excellent education programmes. ...”

Reviewing the actions by UN to promote EE and ESD, it is understood that there are different needs and goals of education in the world. For many developing countries, the priority is to achieve the MDGs of the UN. While EFA emphasizes equity and quality of education and UNLD focuses on promoting literacy, **DESD concentrates at behaviour and lifestyle teaching.**

It is also understood that ESD is relevant not only to formal education settings, training and workplace learning but also to public awareness-raising and non-formal and informal learning of many kinds. **Thus, ESD should not be seen narrowly as another subject or concern to be added onto the formal education system or a workplace training programme.** Rather, ESD is a teaching and learning process through which understanding of and orientation towards sustainable development become embedded in the core education and learning processes to be found in societies everywhere.<sup>[15]</sup>

It is also important to note that, since SD – sustainable development – requires poverty combating, consuming pattern changing, human health improving, sustainable human settlement, environmental protection and resource conservation etc., in a broad sense, ESD – education for sustainable development, should include all the four initiatives of UNESCO: MDGs, EFA, UNLD and DESD. But in a specific sense, DESD is more on the learning on the values, behaviour and lifestyles required for a sustainable future.

## CHAPTER 3: DEVELOPMENT OF EE AND EE FOR SD IN CHINA

Thirty years ago, China's economy was negligible. With a huge population, Chinese people were fighting poverty, a weak economy, and backward science and technology. The main task of education in China is the same as that explained in Wikipedia: "learning of knowledge, information and skills during the course of life" <sup>[16]</sup>. To combat poverty, hunger and backwardness, great efforts have been devoted in the country. The statistical data from the Ministry of Education illustrates the achievements in basic education. From 1978 to 2008, great successes have been made in China. However, China's rapid development has been for only thirty years, there are still a lot to do in basic education. Therefore, the main strategy of education is designed on education equity and quality <sup>[17, 18, 9]</sup>.

It was after the 1972 Stockholm Conference, with the attention on environmental protection, that China started to consider EE. Environmental protection was taken seriously in China after the late 1970s and in turn EE, especially after the Second National Conference on Environmental Protection in 1983. In the policy aspect, EE was called for in the *Environmental Protection Law of China* (1979, amended in 1989)<sup>[19]</sup>. EE documents of state level meetings, regulations and implementation guidelines were issued by the Ministry of Education (MoE) and State Environmental Protection Administration (SEPA, now MoEP), as well as local governments and education institutions. In the practice aspect, EE entered the curriculum of primary and secondary schools. Currently, more than three hundred universities and colleges all over the country have set up majors, department or schools on environmental science, engineering or management, or resource protection.

It is worth noting that after the 1992 Rio Conference, similar to other places of the world, the concept and principle of SD started entering or integrating with EE of China. In Chapter 6 of the White Paper of *China's Agenda 21* of 1994 <sup>[20]</sup>, "Education and Capacity Building for Sustainable Development", ESD was officially called for the first time. This chapter is composed of six program areas, one of which is "Development of Education". In this program area, it said, "the development of education is fundamental to sustainable development". Furthermore, it calls for

improving the educational system, encouraging the idea of sustainable development in students' thinking, generally popularizing 9-year compulsory education, eliminating illiteracy among the young and middle – aged adults, implementing *The National Program for Educational Reform and Development* and so on, in order to build a group of far-sighted leaders and decision-makers, a contingent of highly-skilled scientific and technological workers in various fields and a large labour force with specific skills and scientific and cultural knowledge.<sup>[20]</sup> This shows China's desire to develop its ESD. To some extent, China's ESD is developed on the basis of EE.

Since then, various efforts have been taken for ESD. Examples include the UNESCO EPD (Environment, Population and Development, later renamed as ESD) education project; the Green School program by National Propaganda Department of Chinese Communist Party (NPDCCP), MoE and SEPA, and the Environmental Education Initiative (EEI) by MoE, WWF and BP. These programs efficiently push forward the development of ESD in primary and secondary schools of China. On the other hand, textbooks have been written and courses on ESD are offered by university professors. Various training programs on ESD have also been organized.

However, the phrase ESD can hardly be found on the website of MoE of China. Based on reviewing official documents and academic articles, as well as ESD experience, it seems intended to relate ESD with EE. In other words, it seems China is integrating the concepts, principles, facts, vision, and approaches of ESD with EE. In the following, we first describe the development of EE in China, then illustrate how SD contents are incorporated with EE. The achievements and problems are also summarised.

### **3.1 The Development of EE in China**

It was in the late 1970s China began take substantial measures for environmental protection. The major development of EE was also from the late 1970s. EE and EE for SD development in China can be considered as of four stages.

### **(1) Stage I (1973-1983): the preliminary period of EE**

China has a long history. Resource saving and consumption based upon income is of Chinese tradition and culture. Preliminary concerns on environmental pollution and resource saving were considered in early years, named as “Three Wastes Treatment” (reuse of waste gas, wastewater and solid waste). However, such simple ethics was not raised up or upgraded to the consciousness requisite for environmental protection. For example, during the late Cultural Revolution, because of unfavourable diplomatic situation and the urgent need of chemical fertilizers, the government promoted setting up small scale chemical fertilizer plants, which was the beginning of the sources of current severe environmental pollution. It was from the 1972 Stockholm Conference that China gradually noticed the importance of environmental protection, and so marked China’s beginning with environmental education.

The first National Environmental Protection Conference was held in 1973. The Conference document, ***Provisions on Environment Protection and Improvement***, for the first time officially called for efforts to conduct research and education on environmental protection. It was the symbol of the official beginning of environmental protection, and was also the beginning of EE in China. The document also required the development of academic disciplines on environmental protection and teaching curriculums in colleges and universities to foster technical personnel [21-22].

Because of other reasons, such as the Cultural Revolution, it was actually from the late 1970s that the rate of implementing EE greatly increased. In December, 1978, the State Council put forward a clear requirement: "It is necessary to incorporate environmental protection into the curriculums in the general primary and secondary schools" in ***Notes on Environmental Protection Progress***, which brought up EE in primary and secondary schools [23-24]. In the same time, universities began setting up relevant disciplines such as environmental engineering (e.g., Tsinghua University in 1977, Tongji University in 1978, Beijing Industrial University in 1978, etc.) and environmental science (e.g., Nankai University in 1978, Beijing Normal University in 1978, etc.) The ***Environmental Protection Law of China (trial)*** was enacted in September 1979, amended in 1989. The Law encourages the development of EE. The first meeting of Environmental Education Committee of China Environmental Science Association was held in



November 1979. A decision was made to conduct experimental EE programs at primary and secondary schools in selected provinces and cities.

In February, 1981, the State Council promulgated ***Decisions on Enhancing Environmental Protection During Economic Adjustment Period***. In the 6<sup>th</sup> part of the document, it asked for “cultivating the personnel on environmental protection should be incorporated in the national education planning to support the new career of environmental protection in China”. To reach this objective, different requirements were designed for primary schools, secondary schools, universities, officers and the staff in the sector of environmental protection.

In this first stage of EE, the emphasis was on the knowledge of environmental protection technologies <sup>[25]</sup>, in the respect of the then environmental protection policy of China: the control and treatment of “Three Wastes”. Series of trainings on environmental protection were organized for officers and technicians in environmental protection sectors. In the same period, the importance of EE was also noted at tertiary level so that EE in universities started being developed. The development of EE in universities laid a foundation for EE to enter primary and secondary schools, teacher’s training and training for trainers, and trainings for government officers etc.

In the same time period, several enlightening publications were translated into Chinese, including ***Silent Spring, Only One Earth***, and ***Limits of Growth*** etc., which greatly helped the development of EE in China.

## **(2) Stage II (1983-1992): The Foundation and Development of EE**

The Second National Meeting on Environmental Protection was held in 1983. At the meeting, Environmental Protection was then recognized as a national fundamental policy. In the documents of the meeting, the necessity of EE was emphasized for officials and for general public. Since this Meeting, EE in China entered a quick developing stage <sup>[25]</sup>.

It was required to integrate EE into the curriculum in the basic education in *Teaching Program in Full Time Ordinary Primary School and Junior High School for 9-Year Compulsory Education (for trial Implementation)* (1987), *Suggestion to the Adjustment of the Current Curriculum in High school* (1990), *Curriculum Plan in Full time Ordinary Primary School and Junior High School for Nine-Year Compulsory Education (for trial)* (1992) by the National Education Committee (the then MoE). In *Suggestion to the Adjustment of the Current Curriculum in High schools* (1990), it also required high schools to offer elective courses on environmental protection. Thus, both primary and high schools were supposed to have specific courses on environmental protection as well as integration of EE in other subjects <sup>[26]</sup>.

In December, 1990, the State Council emphasized the importance for officers to receive EE in *Decision on Further Enhancing Environmental Protection*. It also laid requirements on the enhancement of EE in basic and higher education. Furthermore, there were several new developments in this period: The first environmental newspaper, *China Environment News* started publication in early 1984; The National Environmental Protection Agency (NEPA) was set up in 1984 based on the Bureau of Environmental Protection within Ministry of Town and Country Construction. In 1998, NEPA was promoted to SEPA and the Department of Environmental Communication and Education was set up under SEPA for improving the quality of macro management of EE <sup>[25]</sup>.

Overall, the forms of EE activities became diverse; the contents of EE became more definite and diffuse within multiple & indigenous contexts. EE was spread from the environmental protection sector to the whole of society. It is because that Chinese government called for promoting pollution treatment through management and environmental education at that time <sup>[25]</sup> that in terms of the target group, more attention was paid to the environmental consciousness of governmental officers at all levels.

### **(3) Phase III (1992-1996): Reorientation began for EE to EE for SD**

The UN Conference of Environment and Development (UNCED, also known as Earth Summit) was held at Rio de Janeiro in Brazil in 1992. It is the mile stone of human society on sustainable development. *Agenda 21*, one of the outcomes in UNCED, proposed a global strategy of

sustainable development. It pointed out in Chapter 36 that, “Education, including formal education, public awareness and training should be recognized as a process by which human beings and societies can reach their fullest potential. Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues.” Chapter 36 further proposed the objectives which included those brought up by Education For All (EFA) on basic education, to proceed in primary education and adult illiteracy reduction, to achieve environmental and development awareness, to ensure accessibility of environmental and development education, and to promote integration of environment and development concepts with all other education programs.

In response to the Rio Conference, the Chinese government promulgated ***Ten Countermeasures to Environment and Development in China*** in August 1992. It was the first time for China to link “environment” with “development”, which also indicated the beginning of reorientation in China with EE to extend to ESD.

The First National Meeting for Environmental Education was held in November of 1992, requiring education to serve as a base for environmental protection and emphasized the importance of EE for environmental protection <sup>[21,27]</sup>. ***China’s Agenda 21*** was released in 1994, which symbolized the beginning of establishing and implementing the national strategy of sustainable development nationwide. Thus the core of EE in China at that time was how to reorient environmental education to environmental education for sustainable development during the period of 1992 to 1996.

#### **(4) Phase IV (1996 - ): Upgrade and Sublimation of EE for SD**

The Fourth National Meeting on Environmental Protection was held by SEPA, Propaganda Department of China Communist Party and Ministry of Education (MoE) in 1996. The ***National Action Guidelines for Environmental Communication and Education (1996-2010)***<sup>[ 28]</sup> was promulgated at the meeting and provided important instructions for EE, including the subjects, topics and forms. Cooperation with international organizations for EE was also called for. Along with the activities in the international community, a series of initiatives were enacted in the country to start integrating ESD with EE jointly with international organizations. A special journal,

**Environmental Education** began its publication at the same year by SEPA which illustrated the deepening involvement of academic society in EE. It is also in the year 1996 that China took both the strategy of invigorating the country through science and education and the strategy of sustainable development as the basic strategies for the national development <sup>[28]</sup>.

### 3.2 The Development of EE for SD in China

The year of 1996 is a sign for upgrading and sublimation, or reorientation, of EE for SD in China. Since 1996, China issued a series of documents to enhance EE at all levels from kindergarten to higher education and for the public, such as **Syllabus for National Environmental Protection Communication and Education** (SEPA, PDCCP, and MoE, May 2001), **Guideline of Education in Kindergarten** (for trial) (MoE, July 2001), **Subject Syllabus of Environmental Education in Primary school and Secondary School** (MoE, February 2003), **Action Outline for Sustainable Development in China in the Early 21st Century** (Office of National Leading Group for Promoting Sustainable Development Strategy, July 2003)<sup>[30]</sup>, **Suggestions about How to Improve Environmental Protection Communication and Education during the 11<sup>th</sup> Five-Year Plan** (SEPA, PDCCP, and MoE, December 2006), etc.<sup>[31]</sup>

In **Action Outline for Sustainable Development in China in the Early 21st Century**, it claimed that China will vigorously develop all forms of education at all levels to enhance the public awareness on sustainable development and strengthen their scientific and cultural capacity for their participation in sustainable development through personnel trainings.

In February 2003, MoE issued **Special Curriculum for Environmental Education in Primary and Secondary Schools**<sup>[32]</sup>. The teaching requirements on environmental issues were clearly listed for four groups of students: grades 1~3 and 4~6 in primary schools, junior and senior high schools. It is noted that in the requirements for secondary students, knowledge on resource and energy issues is required to offer for the students to understand the meaning and importance of sustainable development. Further in November 2003, **Implementing Guideline on Environmental Education for Primary and Secondary Schools**<sup>[33]</sup> was issued by MoE, supported by WWF-China and BP. The above two documents are important that they are the first official, formal documents issued by MoE on implementing environmental education in primary and secondary schools. It is

also very important that, in the leading paragraphs of the *Implementation Guidelines*, it was emphasized that environmental education is beneficial for the students to obtain concepts of sustainable development, including population, environment and development. And further, the third guideline of the document requires to lead students understand the meaning and intrinsic ethics of sustainable development. It is seen that, it is only after nearly 20 years practice, that the government policy of EE can be formally implemented in curriculum reform. It also tells that, to reorient EE to ESD needs time. A lot more practice of ESD will be needed for the next official formal documents to incorporate ESD in curriculum. EE for ESD as a policy of China began with this document.

Furthermore, China called for enhancement of quality education<sup>1</sup>, implementation of the scientific notion of development and building a resource-conservative society including resource-conservative school in several documents, such as *Decision on the Deepening of Educational Reform and the Full Promotion of Quality Education* (CPC Central Committee and State Council, June 1999), *Regulations on the Reform and Development of Basic Education* (State Council, June 2001), *Decision on the Implementation of the 'Scientific Notion of Development' on Environmental Protection* (State Council, December 2005), *Notice of Building a Conservation-minded School* (MoE, January 2006) and so on<sup>[25]</sup>. These documents contribute to the reform of basic education and the development of ESD.

In *Decision on the Implementation of the 'Notion of Scientific Development' on Environmental Protection*, the control of greenhouse gases emission was required. "Energy Saving and Emission Reduction (ESER)" is a new strategy or measure brought forth by Chinese government to combat environmental pollution, specifically it was a response to the failure of environmental goals in the 10<sup>th</sup> Five-Year Plan (2001-2005). ESER requirements are quantified in the compulsory indicator system in the 11<sup>th</sup> Five-Year Plan (2006-2010). Energy saving is related to coal consumption reduction. Therefore, although the emission reduction is for SO<sub>2</sub> and COD, not directly related to CO<sub>2</sub>, ESER can be viewed as a short term measure for climate change mitigation because energy saving means less fuel to be used. In September 2007, seventeen Chinese ministries jointly launched "People's Action on Energy Saving and Emission Reduction" campaign all over China. It includes a series of theme campaigns, two of which are related to the students – "School Action" and "Youth Action". In such a manner, ESER becomes a new content of ESD in

---

<sup>1</sup> Quality includes the person's thinking, knowledge, physical quality, psychological quality, and so on. Quality education is opposite to the examination oriented education. It put more emphasis on develop student in mortal, intelligent, physical, psychological and technological aspects other than only on the exam scores.

China's education. A movement has been conducted to turn school campuses into demonstration sites as ecologic, environmental friendly, energy saving, and sustainable development <sup>[34]</sup>. For the long term to mitigate climate change, while "low carbon economy" is taking places in the discussions of governmental planning, it also appears in university lecturing and training programs.

In this period, EE has been developing firmly all over the country, at all levels and with all forms in implementation. ESD began enter the documents for EE. ESD activities quickly spread over the country that will promote the formulation of ESD policy.

## CHAPTER 4:

### ACHIEVEMENTS OF ESD IN CHINA

As described in the previous section, it was mainly after the 1992 Rio Summit that ESD has been introduced into China's education system, e.g., claimed in the *China's Agenda 21*. Since then, great efforts have been made to carry out ESD in China. Examples can be found in the UNESCO EPD Program, SEPA Green School Program, UNU RCE Program, UNEP-Tongji Institute of Environmental for Sustainable Development etc. This chapter summarizes the achievements of these efforts from policy, practice and academic perspectives.

#### 4.1 Policy Perspective

A **policy** is a deliberate plan of action to guide decisions and achieve rational outcome <sup>[35]</sup>. At the state level, a policy should be made by the central government, or the responsible ministries. For EE and ESD in China, the relevant policy or policies refer to that designed and proclaimed by the central government, the Ministry of Education (MoE), and the Ministry of Environmental Protection (MoEP). MoE is the lead ministry on education. The policies by MoE are essential in implementation in the country. In this sense, based on the present review, it is found that EE policies have already been developed as a system, and are quite strong and fruitful. On the other hand, for ESD, it seems still at a preparation stage featured with practicing and experimenting. Officially announced policies on ESD, such as plans, guidelines, etc. are rarely found. According to the current status of development of EE and ESD, it seems likely to incorporate ESD with EE.

##### (1) Policy for basic education

The policy for basic education is clearly claimed in the *10<sup>th</sup> Five-Year Plan of Education, Outline of the 11<sup>th</sup> Five-Year Plan for China's Education Development*, and *Draft Version for Consultation: Outline for China's Mid- and Long Term Education Reform and Development Plan*<sup>[7~9]</sup> by MoE, that the goals of EFA in China, "Two Completions (9-year compulsory education

and illiteracy elimination)”, have basically been met, and the next core task is “education equity and quality”.

## **(2) Policy for EE**

- **EE policy for basic education**

The target groups of EE policy in basic education are kindergartens, primary, and secondary schools. The State Council brought forth a clear requirement: "It is necessary to incorporate environmental protection into the teaching curriculum of general primary and secondary schools in *Keynotes of Environmental Protection Works* in December, 1978. This was the first time that the Chinese Government and Communist Party promulgated instruction on EE for primary and secondary schools. Since then, series of documents were issued releasing specific provisions on the basic approach of education, teacher training, as well as teaching materials construction of EE in primary and secondary schools. For example, in 1990, the State Education Commission (now MoE) required secondary schools to offer elective courses on environmental issues and to publish teaching materials of environmental protection. It was also required to revise curriculums with environmental protection materials in compulsory education.

- **EE policy for higher education**

The EE policy for higher education can be divided into two parts: one for environmental major programs, which is to foster professional personnel; the other for non-environmental major programs, which is to popularize environmental knowledge and information. In 1973, the State Council called for universities to set up majors and curriculum on environmental protection and to educate technical personnel in *Decisions on Environmental Protection and Improvement*<sup>[36]</sup>, the document of the First National Meeting on Environmental Protection, which was the first official document in China on environmental protection, also with requirements on EE. Since then, China started to educate personnel in the field of environmental protection. The importance and meaning, teaching and implementation approach for EE were defined in *Law on Environmental Protection of the People's Republic of China (for trial)* (1979), *Decisions on Enhancing Environmental Protection Work at Present Time* (1981), *China's Agenda 21* (1994) and *National Action Guideline for Environmental Communication and Education (1996-2010)* (1996) and so on. Up to the present, China has already established a multi-level education system of environmental



majors in higher education including technical (vocational) school programs, junior college programs, undergraduate programs, Master's and PhD programs, available in more than 300 universities and colleges over the whole country. The institutes of higher learning have already fostered a large amount of technical and management personnel for China's environmental protection and EE.

- **EE policy in in-service education**

The EE policy in in-service education is to develop the environmental consciousness, sustainable development consciousness and related skills for officers and staff in government departments, schools, and private sectors. It was clearly defined that "Consider environmental education as an important content in the training of the officers in different departments and different areas" in *Decisions on Enhancing Environmental Protection Work at Present Time* (1981). In December, 1990, the state council emphasized the importance for in-service staff to take education on environmental protection in *Decision on Further Enhancing Environmental Protection Work*. Specific requirements were put forward *National Action Guidelines for Environmental Propaganda and Education (1996-2010)* in 1996.

- **EE policy in public education**

EE policy in public education is to promote environmental consciousness of the public. EE for the public was started from the first National Environmental Protection Conference (1973). The government organized the writing and/or translating a number of environmental books to help the public know environmental situation in the world, understand the impacts on development caused by the environmental problems. Special activities have been organized time to time for the public awareness on environmental protection, and extended on sustainable development, such as at the Earth Day (April 22) and the Environmental Day (June 5) every year. The social system in China is well organized. From cities to countryside, the administrative network covers all villages and street communities. Some of the EE programs have been carried out at the grass-root level.

### **(3) Policy for ESD**

In China, ESD was firstly called for in *China's Agenda 21* in 1994. However, as a government policy, it first appeared in 2003, in *Implementing Guideline on Environmental Education for Primary and Secondary Schools* by MoE, supported by WWF China and BP. As described in the previous section, in this document, the reorientation of EE towards SD was claimed. Therefore it provides a signal that China might implement to incorporate ESD with EE. The establishment of the EE policy system spent about 20 years. ESD in China is at the early stage so that experimenting and practice are needed for an ESD policy system.

## **4.2 Practice Perspective**

For a long time, China had been suffering from poverty and backward. One of the major tasks of the government is therefore to get rid of the shadow of the painful past which included illiteracy. According to the statistical data of MoE, with the rapid economic development, China also obtained remarkable achievements in education which include those from basic education, illiteracy eradication, higher education, and vocational education etc.

In the broad sense, sustainable development should fight poverty, inequity, population overgrowth, environmental deterioration, climate change, resource constraint etc. ESD in a broad sense is therefore related to these activities.

- **Practice in basic education**

China spent great efforts and a long time to fight poverty and backward, so as basic education. Aware of the severely poor education conditions in country side especially some western or mountainous areas, Hope Project was launched in 1983. In the same time, “Two Completes” – 9-year compulsory education and eradication illiteracy of young and mid-ages have been carried out as the core objectives for several Five-Year education plans.

- **China's Implementation on the Four Main International Initiatives on Education**

China takes part in the main international initiatives on education called for by the United Nations: Millennium Development Goals (MDGs), Education for all (EFA), United Nations Literacy Decade (UNLD) and United Nations Decade of Education for Sustainable Development (DESD). According to *China's Progress towards the Millennium Development Goals 2008 Report*, China is likely to achieve all the MDG targets by 2015<sup>[37]</sup>. Some of the targets under MDGs are already met, including eradicating extreme poverty and hunger, achieving universal primary education and reducing child mortality. For EFA, at the end of 2005, the Chinese government announced it would invest 125.4 billion yuan (US\$15.6 billion) over the next five years to foot the bill for nine-year compulsory education in rural areas, making sure every rural child has the opportunity for a free nine-year education. Local governments had been required to provide a minimum 92.8 billion yuan (US\$11.6 billion) over the next five years, bringing the total spending to a potential 212.8 billion yuan (US\$26.6 billion)<sup>[38]</sup>. Chinese government succeeded in exempting all the Chinese students from their miscellaneous fees<sup>2</sup> for the compulsory education on September 1, 2008<sup>[39]</sup>.

**Table 4.1 MDG Targets Already Met In China, 2008**

Goals and Targets	Status	National Support
<b>MDG1: Eradicate extreme poverty and hunger</b>		
Target 1.A: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	Already met	Strong
Target 1.C: Halve, between 1990 and 2015, the proportion of people who suffer from hunger	Already met	Strong
<b>MDG2: Achieve universal primary education</b>		
Target 2.A: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	Already met	Strong
<b>MDG4: Reduce child mortality</b>		
Target 4.A: Reduce by two-thirds, between 1990-2015, the under five mortality rate	Already met	Strong

Source: *China's Progress towards the Millennium Development Goals 2008 Report*<sup>[37]</sup>

The national target of EFA intended to eliminate illiteracy among young and middle- aged adults, which is in line with the target of UNLD. China's action on illiteracy elimination is divided

<sup>2</sup> The miscellaneous fees refer to the expenses for the books and daily activities in the school and tuition fee is not included.

into 3 steps: (1) block the new illiteracy through disseminate of nine-year compulsory education. (2) eliminate illiteracy through literacy classes, and (3) consolidate the achievements of literacy. As part of this group, the literacy rate of young people aged 15 to 24 increased from 94% in 1990 to 99% in 2005 (see Figure 4.1). The urban-rural gap in literacy rate of young people had been narrowed, from 6% in 1990 to 1.6% in 2005. However, the literacy rate of rural adults of 15 years old and above is still relatively low<sup>[37]</sup>. Although China has made great success in poverty alleviation, dissemination of nine-year compulsory education and illiteracy elimination, special attention should be paid to promoting gender equality and women’s empowerment, combating HIV/AIDS and reversing the loss of environmental resources. The Chinese Government also pays special attention to balancing development between urban and rural areas, different regions, economic and social progresses, and between people and nature. China is set to achieve further development successes by 2015, making even greater contributions to the international effort to reach the MDGs<sup>[37]</sup>.

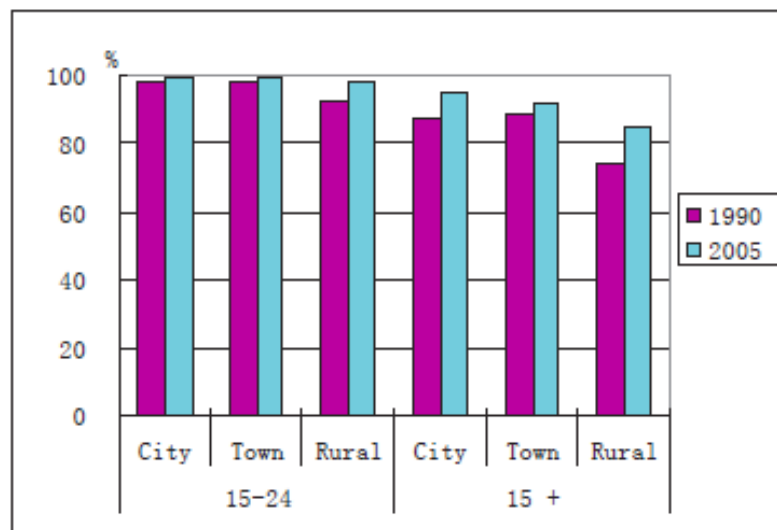


Figure 4.1 Literacy rates among young people (15-24) and adults (15 and above)

Source: *China's Progress towards the Millennium Development Goals 2008 Report*

## CHAPTER 5:

### ESD IMPLEMENTATION CASES

Around the 1992 Rio Earth Summit, the concept of sustainable development entered China. With the help of United Nations' agencies and other international organizations, a number of important programs or projects have been conducted which greatly promote ESD implementation in China.

#### 5.1 Project Hope

The late 1970s were extremely important to China. Science and technology were recognized again as with the potential of productivity. It was also after then, education was taken attention again across the country. However, China's development was just started. The economy was raised slowly at the time. In the poor areas, peasants were still suffering so that the education situation was severe in those areas. It was said, among every 4 illiteracies in the world, there was 1 Chinese. It was also said, there were 2 million children in China had no chance for schooling because of poverty.

This is the background of the *Law of Compulsory Education* (1986) of China, the policy of 9-year compulsory education, and the well-known Project Hope. Admired by the government, Project Hope was initiated in October 1989 by China Youth Development Foundation (CYDF). Project Hope has enlisted extensive support from home and abroad to assist dropout students and those at risk of dropping out to continue schooling in China's rural, poverty-stricken areas. In addition to funding these students' studies and building schools, CYDF has also launched series programs seeking to improve the educational conditions in these areas (including teacher training) and to strengthen the government's efforts in implementing the 9-Year Compulsory Education policy<sup>[40]</sup>.

At the first stage, Project Hope was to support poor areas to build schools and to help poor children to enter these schools. Up to 2000, there were more than 7000 schools built under Hope,

and more than 2 million children entered schools. More recently, CYDF launched new initiatives in supporting children of migrant workers with financial difficulties for schooling from junior high school for vocational education to improve their life skills <sup>[40]</sup>. Hope Project supports several activities, as shown in Table 5.1.

By the end of 2002, Project Hope had equipped more than 3,000 Hope primary schools with Sunchime film library series and other modern teaching equipment <sup>[41]</sup>. By the end of 2008, Project Hope had raised over RMB 4 billion in donations, helped 3.5 million children from poverty-stricken rural families continue their schooling, built over 15,000 Hope primary schools, presented Hope mini-library series to 10,000 village schools in remote areas, and trained over 40,000 village primary school teachers.

Table 5.1 Sub-projects of Project Hope

Sub-project	Project Hope student financial assistance	Hope Primary School Program
Content	Primary and Middle School Students	Hope Primary School
	High School Students	Hope Computer Lab
	College Students	Project Hope Teacher Training
	Students in Vocational Education	Hope Mini-library
	Vocational Education	Hope Happy Playground
	Hand in Hand Action	Hope Film

Source: Website of CYDF: <http://www.cydf.org.cn/sub.asp>.

However, with the development of Chinese economy and society, Project Hope is now facing challenges. There are several reasons. First, the number of children at schooling age in the Project Hope areas is decreasing quickly: (1) due to urbanization, families have been moved to cities for jobs and better living; (2) also because of development, the impact of birth rate decreasing emerges. Secondly, the Hope Schools are not properly located and the teachers are limited. Parents would like their children to enter schools of better qualities. Thirdly, Hope Schools were built in a hurry to meet the requirement of 9-Year Compulsory Education. The planning was not properly made. Lessons are learned through more than 15 years experience. For example, 3.63% Hope Primary School was withdrawn till the end of 2007 due to lack of master plan for Hope schools <sup>[42]</sup>.

Project Hope has helped China to meet the goal for education of UN MDGs, and the objectives of EFA. EFA is essentially for sustainable development. In the broad sense of ESD, EFA is an important part of ESD, so as DESD.

## 5.2 UNESCO China EPD-ESD Project

UNESCO China ESD project was formerly known as China Education for Environment, Population and Development project (EPD). Before the launch of EPD, UNESCO and Shanghai Academy of Education Science took a one year feasibility study in 1995-1996. Then EPD project was launched officially since 1998, when Beijing Academy of Educational Science (BAES) was entrusted to implement the EPD project jointly with a number of provinces in China, supervised by Chinese National Commission for UNESCO (NatCom China). It symbolized the beginning of ESD in China in the practice perspective.

In December 2005, under the promotion of the UN Decade of Education for Sustainable Development (DESD), NatCom China renamed EPD project as ESD project (also known as ESD-EPD project)<sup>[43]</sup>. *Education Today* (No.16, 2006), the newsletter of UNESCO's Education Sector, spoke high of China's success in expanding EPD project to ESD program in the article "Reorienting Existing Programs". It said: "More countries are taking the route that China has chosen by expanding current environmental education programs and experimenting with ESD piloting"<sup>[44]</sup>.

Up to 2008, there have been more than 1000 member schools in 14 provinces with over 10,000 teachers and 500,000 students participating this project (Figure 5.1). It generates significant impacts on the promotion of quality education in the schools<sup>[34, 43]</sup>. Quality education is opposite to the examination oriented education. It puts more emphasis on developing students in moral, intelligent, physical, psychological and technological aspects other than only on the exam scores. The target pursued by quality education is similar to that of ESD to some extent – they both emphasize all-round development of the students. Therefore, China advocates combining the promotion of ESD with the promotion of quality education. It is an approach with China's characteristics by localizing ESD with the current education policy and activities. It makes easier for the school to implement the cross part of quality education and ESD, such as moral education.



Figure 5.1 Provinces/cities (in green) where schools participate in EPD project by 2006  
 Source: Provided by Mr. G. Shi Beijing Academy of Education Science

This EPD-ESD project also emphasizes the combination of the advanced international experience of education reform with that of the domestic, and the integration of ESD principles and methods with domestic education reform. To the present, EPD-ESD project has obtained the following achievements <sup>[45]</sup>:

- Extensively popularized scientific knowledge and concerns on environment, population and sustainable development, and helped teaching staff to understand the importance and meaning of implementing ESD.
- Effectively promoted curriculum reform and improved the education quality in terms of fostering students in the project schools;
- Promoted the capacity of the teaching staff by means of various forms of training activities, set up groups of teachers and principals who are interested in ESD and brought up a number of excellent schools in promoting ESD-EPD;
- Organised the project schools to carry out a diverse range of activities about environment and resource conservation, traditional fine culture, and cultural diversity, and sustainable living, as well as practicing and cherishing life etc. The Project also helps surrounding communities develop the consciousness on environment, health and sustainable development.

### 5.3 SEPA Green School Program



In 1996, the Propaganda Department of Communist Party of China (PDCPC), MoE and SEPA jointly initiated the Green School Program. To the present, with the efforts from local governments and schools, this program has become a model EE program for children and youths. The state level leading office of the Green School program was established in Center of Environmental Communication and Education (CECE) of SEPA in 2000. Since then, this Center has organized various EE activities. The achievement of this program is was outstanding. To the present, there have been more than 40,000 primary and middle schools, middle technical training schools and kindergartens taking part in this program, distributed all over China: in 31 provinces/autonomous areas and in more than 90% cities. There are 705 schools awarded state level “Green Schools”. Figure 5.2 below shows that the Program has covered almost the entire country, the distribution of the National Award Green Schools from 2000 to 2006.

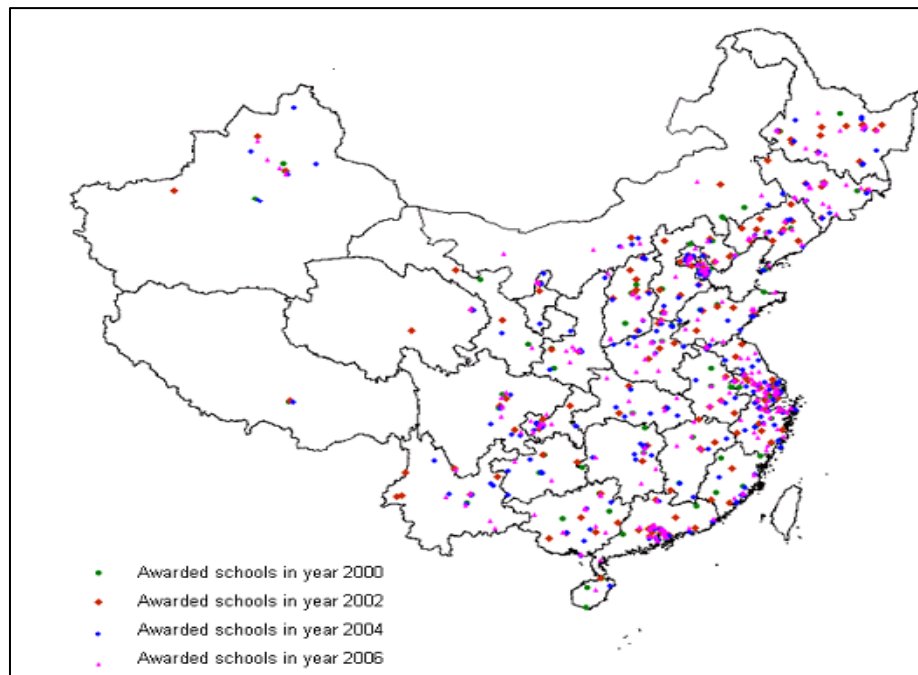


Figure 5.2 Distributions of the National Award Green Schools in China  
(Source: YANG, 2008: 113<sup>[21]</sup>)

In this Program, there are a number of activities in various forms on EE and ESD at the local levels. Examples include: campus environmental building and management, little green journalist project, small hand joining big hand project etc. These activities have promoted environmental awareness of teachers and students in the schools, the management level of the school, and quality education, and disseminated the idea of sustainable development. Green School program becomes an excellent platform for youths to participate in environmental protection, to offer an

effective way to promote environmental protection, and to be an potential driver to the building of resources-saving and environmental friendly society. The Green School program is one of the fundamental programs of China to implement the strategies and policies of national Science and Education, and sustainable development.

The State Council of China in December 2005 issued *Decisions on Implementing Notion of Scientific Development on Environmental Protection*, clearly referred to the continuing of the Green School Program. This is not only a full admiration for the program but also a requirement to its future work.

CECE-SEPA represented China Green School to join in the *Fund of Environmental Education* on June, 2007 to further promote the program linking with international society and to present China's feature of Green Schools on the international arena of Sustainable Development in the future.

## 5.4 Project of Environmental Educators' Initiative

The Environmental Educators' Initiative (EEI) was jointly supported by MoE, WWF-China and BP Company from July 14, 1997. The purpose was to seek mainstream EE in all schools across China.

Different from conventional EE projects which focus on basic issues in environmental protection, EEI devoted to raising EE to a higher level to reorient to sustainable development. EEI was not simply strengthening campus hard environment, such as building greener campuses etc. It advocated inquiring learning method, took a multi-facets climbing curriculum designing and implements discipline permeating on the base of not increasing burden of current curricula<sup>[46]</sup>.

In the Phase I (1997-2000), the Initiative focused on establishing Environmental Education Training Centres in three key teacher training institutions: Beijing Normal University, East China Normal University in Shanghai, and South West China Normal University in Chongqing. These

centres developed an environmental educators' training manual and a series of model lesson plans for grades 1-9 students published by People's Educational Press<sup>[47]</sup>.

In the Phase II (2001-2004), the Initiative focused on bringing EE into the mainstream of China's primary and secondary school system while China was just restructuring the national curriculum for kindergarten through secondary school in a groundbreaking effort to strategically enhance enquiry-based, experiential learning methods<sup>[47]</sup>. The important outcome was ***Implementing Guideline on Environmental Education for Primary and Secondary Schools***, issued by MoE in 2003.

It is also interesting to note there are two versions in introducing EEI project. In the earlier version, the initiative was said including two phases (1997-2000) and (2001-2003). In the later version, a third phase was added (2004-2007). And it is more interesting that, in the early version, all activities were said on EE, but the new version, EE was replaced by ESD<sup>[47-50]</sup>. It is not a simple modification or improvement. The outcome of this initiative at the second phase is the important document: ***Implementation Guidelines on Environmental Education for Primary and Secondary Schools***, which was officially issued by MoE and for the first time embedding ESD phrases in the guidelines. It is probably also the only official thread that can be found indicating China might try to extend EE policies to ESD.

According to the new version of the initiative description, the main task of Phase II was upgraded to incorporate the ideas, contents and methods for sustainable development into the new curriculums referring to the new round of curriculum reform for basic education sponsored by MoE<sup>[50]</sup>.

In the Phase III (2005-2007), it was to promote the effective implementation of the ***Implementation Guidelines*** in primary and secondary schools.

The main achievements of EEI are as follows<sup>[48, 49]</sup>:

- Incorporated ESD into the curriculums of primary and secondary schools: The document ***Implementation Guidelines on Environmental Education for Primary and Secondary Schools*** becomes a main content of China's basic education reform;
- Established a broad network of ESD in China's higher education institutions: 21 normal universities have set up the centers of ESD;
- Practiced ESD in the pilot schools across the country
- Developed a series of teaching resources for ESD.

## 5.5 Trainings and communications for public awareness

Trainings and communications are important measures to raise public awareness on environmental protection and sustainable development. In fact, China is doing well in conducting such trainings and public communications. The approach is probably unique in the world, which explains the reason that a great success has been made in this country: government administration combined with mass movement.

Chinese people are innovative in creating proper phrases for education and communication. The following terms either frequently appear in documents, media news, and mass movement slogans, or have been used for specific strategies or measures to implement government regulations. With these phrases, with regard to the then media news, it would be easier to understand what is going on in China for environmental protection and sustainable development.

*“Three Wastes”* – Refers to the treatment and reuse of waste gas, wastewater and solid waste. The term appeared early in the 1960s, originally for an economic society rather than environmental protection. It now has been upgraded to 3Rs – Reduction, Reuse and Recycle.

*“Three Simultaneities”* – A requirement of China's project environmental impact assessment system: environmental equipment and device must be designed, constructed and put in operation as the same time as that for the main parts of the construction project.

*“Two-Control Zones”* – Selected cities with strict SO<sub>2</sub> pollution control and the regions with strict acid rain control

*“Zero-Point Action”* – Refers to the instant of the midnight of the date, specifically set for pollution source to attain emission requirement. Otherwise the relevant enterprises got in serious trouble. This action was taken for the pollution control in the 3 lakes: Taihu, Caohu and Dianchi.

*“33211 Project”* – Pollution control for three rivers (Liaohe, Haihe, and Huaihe), three lakes (Taihu, Caohu and Dianchi), two-control zones (SO<sub>2</sub> and acid rain), one-city (Beijing), and one bay (Bohai)

*“EIA Storming”* – EIA requirement has been written in the relevant law of China. However, because of local benefit, EIA law was not strictly obeyed. From 2005 to 2007, SEPA brought three times of EIA storming to regulate the construction projects by suspend the EIA approval, and other legal actions. Some of those projects were well known.

*“Regional/Catchment EIA Approval Suspension”* – part of the EIA storming

*“Eco-City Construction”, “Environmental Model City”, “Environmentally Friendly City”* etc. – refer to sustainable development of China’s urbanization. “Eco-City planning and development” has been an important movement from 1990s and covers the whole country. The concept of eco-city in China includes three-bottom lines: society, economy, and environment, so that with a broader sense in sustainable development than the original sense generated in the international society.

*“Circular economy”* and *“Eco-industry garden”* – often combined to refer to sustainable development of industry.

*“Xiaokang Society”* – the short term vision of China’s goal of development. It was raised by the former party Chairman and the leader of China’s development, Mr. Xiaoping Deng. The phrase means China is being developed based on a poor and backward situation and with difficulties of population, resource, and science and technology, so that the goal of short term should not be comparable with that of advanced countries. Along with the awareness of the challenges that human being is facing, this phrase is attached with the meaning of sustainable development: adjustment in behaviour and lifestyle expectation. For example, one environmentalist in his keynote speech for a training class in Shanghai said, Xiangkang Society in Shanghai could mean “tall buildings and public parks” in contradiction to western townhouses and private gardens, and “orbital transportation and 2-wheels” in contradiction to private car driving. This is an interesting note in response to the doubts and questions often raised by foreign visitors.

*“Energy Saving and Emission Reduction”* – a new strategy from central government. It refers to energy saving and energy efficiency rising, and SO<sub>2</sub> and COD emission reduction. It is based on the actual situation of China’s energy resource and environmental pollution. However, it is the most powerful because it is required by the state council and the measuring indices are included in chief officer evaluation. For example, it is more powerful than “eco-city” program. Although the later has been implemented for more than ten years, it is mainly under one ministry: Ministry of Environmental Protection. In China’s system eco-city program is not compulsory to officer evaluation.

*“Low Carbon Economy”* – also a new phrase. It is following the new trend of international community for climate adaptation and mitigation. This phrase has entered conversation in all levels of stakeholders of China: government officers, enterprises, universities, research institutes, etc. The pace in China is quick. People would like to find the chances and opportunities in the future, not only for carbon emission reduction, but also for energy and industry re-structuring.

*“Notion of Scientific Development (NSD)”* is a political manifesto declared by the current central government of China. It in fact is the Chinese expression of Sustainable Development and the guarding principle of the government. There are six challenges of practicing SDN: population control; energy and resource saving; sustainable urbanization; environmental and ecological protection; disparity elimination among different areas; and the capability of national sustainable development and international competition. The strategy to meet the challenges will be prior in three domains: changing the connotation of GDP oriented development; developing circular economy, and taking scientific-technical progress as the pillar.

All the above phrases are with trainings, public communications, and quickly enter the textbooks for education. Every year, Chinese people celebrate the April 22 Earth Day and June 5 Environment Day and these phrases are often used.

## **5.6 UNU-RCE Activities in China**

United Nations University (UNU) is also a key agency of UN on education. To help implementing UN DESD, UNU in 2006 launched a program entitled RCE: Regional Centre of Expertise for Education for Sustainable Development. The RCE concept is to promote the close cooperation among various stakeholders of ESD: government, university, schools, enterprises, etc., to share and integrate the knowledge and information of ESD. With the efforts of UNU and

interested parties, there have been established about 55 acknowledged RCEs around the world. There are 2 RCEs of China obtained nomination by UNU: RCE Beijing and RCE Anji.

RCE Beijing was organized based on Beijing Normal University. A teaching group in Department of Geography takes the lead of the RCE. For a relatively long time, this group has developed programs and activities on ESD. This group has a close relationship with Beijing Academy of Education Science concerning the EPD-ESD program. Several training/teaching books have been published by Beijing RCE.

RCE Anji was organized by the Environmental Protection Bureau of Anji County, Zhejiang Province. Anji is a well-known county of bamboo forest. Since the 1990s, Anji people developed an ecological development approach. Heavily polluting industries were restricted. It watches environmental quality and Anji is well-known in China of its development road. Training and education on environment and sustainable development have been conducted for a broad range of stakeholders - from government officers to common people. Because their achievement in environmental protection and ecological way of development, Anji was named as a national demonstration ecological county in the early stage of China's eco-city/eco-county program by SEPA. In June 2006, Anji was officially named by SEPA as an "Ecological County". It is of a significant honor because to the present, there were only 11 officially nominated eco-city/eco-county/eco-district in China out of more than 600 such "demonstrative" eco-sites.

With the help of UNEP-Tongji Institute of Environment for Sustainable Development (IESD), Anji successfully applied as a RCE from UNU at the end of 2006. A RCE conference was organized at Anji. However, because of language difficulty, Anji found difficult to follow the activities by UNU RCE group.

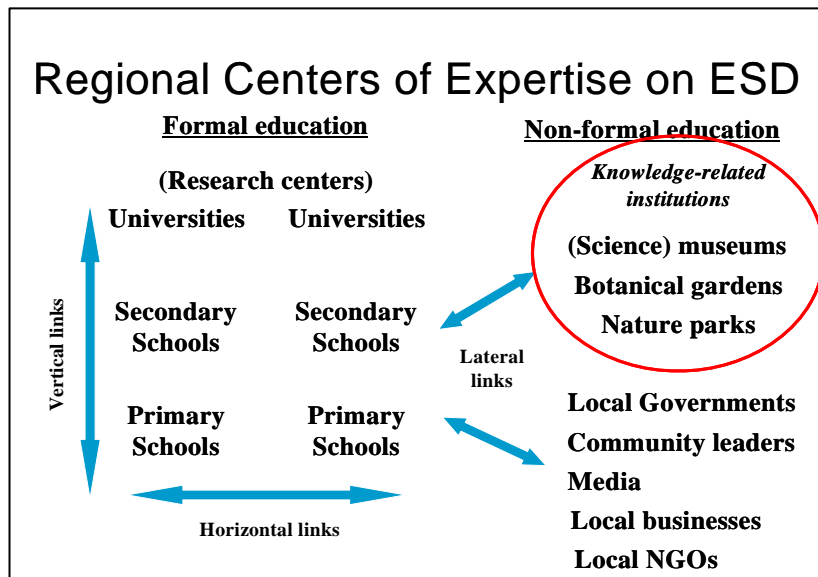


Figure 5.3 The conceptual structure of RCE

## 5.7 ESD at UNEP-Tongji Institute of Environment for Sustainable Development

As the responsible agency of UN for environmental protection, United Nations Environment Programme (UNEP) also emphasizes the promotion of environmental education, and education for sustainable development. The UNEP-Tongji Institute of Environment for Sustainable Development (IESD) was jointly established by UNEP and Tongji University on May 9 2002. At the agreement ceremony, in his speech of Dr. Klaus Toepfer, the then Under Secretary General of UN, Executive Director of UNEP, it was clearly stated that with the 30 years of experience of UNEP, “now we understand that to say ‘environment and sustainable development’ is not enough, we must say ‘environment for sustainable development’”. He also emphasized the importance on drawing university students into environment for sustainable development. Therefore, IESD is built for environment for sustainable development.

IESD is under Tongji University. With the help of UNEP, Regional Office for Asia and Pacific (ROAP), and Regional Office for Africa (ROA), IESD established a network internationally with UN agencies, international leading universities, and multiple-country companies; domestically with the ministries of education, environmental protection, science and technology, and commerce. IESD’s mission is with environment for sustainable development on short term leadership



trainings, degree education, and scientific research. IESD is therefore more on the higher education level for sustainable development.

To the present, IESD has obtained the following achievements:

- (1) Organized series of short term training programs, internationally including 5 times Asia – Pacific Leadership Programme on Environment for Sustainable Development (2004-2008), a Leadership Programme on Sustainable Development for Small Island Developing State (2006), a Young Environment Leaders Program for African Countries (2008); domestically including 6 times leadership program for urban sustainable development (2006-2008, 2 times a year, supported by HSBC), UNESCO/UNEP Training on Sustainability in Water Management for Urban and Rural Development (2006), and UNEP/GPA-UNESCO-IHE Training on Improving Wastewater Management in Coastal Cities (2006). Internationally, the nearly 200 participants came from almost all Asia-Pacific countries, 20 small island developing states, and 17 African countries; Domestically, the over 200 trainees came from all over China.
- (2) Organized the National Launch of DESD on Sept. 10, 2005.
- (3) Established in China the first international Master’s Degree Program in Environmental Management and Sustainable Development. This program is unique because the working language is English and degree is given by Tongji University, acknowledged by MoE of China. IESD is based on the College of Environmental Science and Engineering, which is well-known on environmental technology. IESD in the Master’s Program, is trying to add ethical, social, and economic components in the curriculum, which is in consistent with ESD requirement. This Program began enrolling students from September 2006. The student structure is shown in the table. To date, there have been 29 Chinese students, 23 regular international students, and 10 exchange international students.

IESD is based on the College of Environmental Science and Engineering. However, efforts have been made to reorient the courses towards sustainable development. Table 5-2 shows the core courses that integrate the three pillars of sustainable development.

Table 5-2 Core courses of the Master's Degree Program at IESD

1	Environmental Ethics
2	Introduction to Environmental Science
3	Environmental Sociology
4	Environmental Economy and Circular Economy
5	Framework and Tools for Sustainable Development
6	Environmental Management and Policy

- (4) Conducted research projects on environment and sustainable development topics. For example, UNEP-ROAP entrusted IESD to review the green accounting practice in China, HSBC supports IESD to study carbon dioxide emission reduction in Shanghai and surrounding cities, BAYER sets up a professorship at IESD with a batch of research projects. The mentioned research projects have reached noticeable results. From 2009, IESD will concentrate research activities, supported by both domestic and international sources, on climate change adaptation and mitigation. It is noted that, IESD has been quite internationalized, with the help by UNEP and other international organizations and supported by MoE, MoEP, Ministry of Science and Technology (MoST) and Ministry of Commerce (MoC) of China. IESD is becoming an important platform for international exchanges for EE and ESD.

## 5.8 EE and ESD Research papers

The number, topic, content of research paper illustrate concerns on a subject of the government and the society. Furthermore, academic research could contribute to the development of ESD in China through providing the advanced ESD theory, idea or approach, sharing the experience in the practice of ESD and some useful suggestions of ESD in China.

TIAN, YUN and YIN (2007) found 4527 papers, 3831 of which are useful academic paper, by taking "Verbatim Record Data Base of Academic Journal in China" and using "Environmental Education" as key word from the period from 1979 to 2005<sup>[51]</sup>. Figure 5.4 Show the number distribution of academic papers on EE during 1979 - 2005 in China.

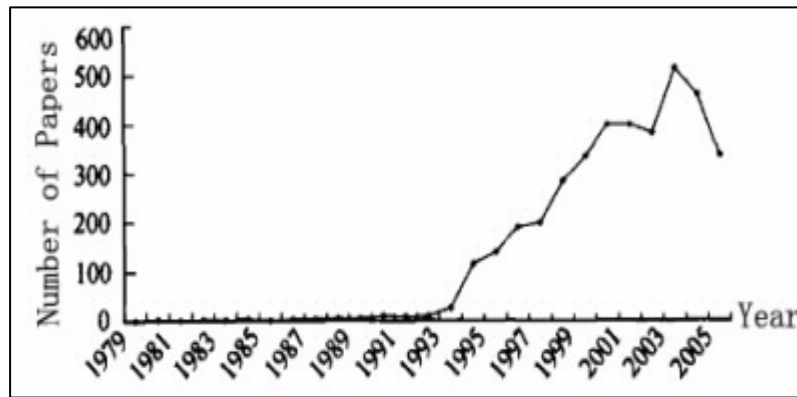


Figure 5.4 Number of academic papers on EE during 1979 - 2005 in China <sup>[51]</sup>

From Figure 5.4, there is an increasing trend of the numbers of paper from 1994 to 2004. It indicates that more and more researchers show interest in environmental education.

From 2004 to 2005, the numbers of the paper was on the decline. It is because more researchers start to use “Education for Sustainable Development” instead of “Environmental Education” (see Figure 5.5). Figure 5.5 Showed the numbers of academic papers on “Education for Sustainable Development” was on rise. It indicates the future study trend from environmental education to education for sustainable development.

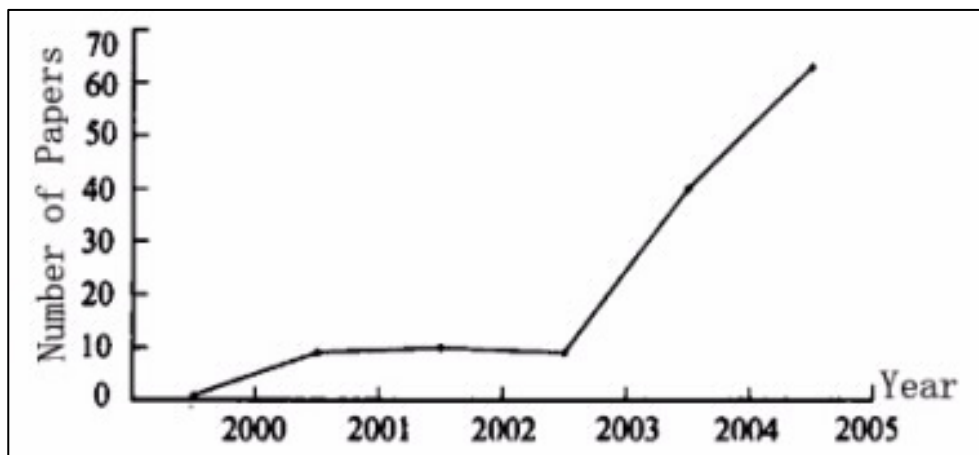


Figure 5.5 Number of academic papers on Education for Sustainable Development since 2000 in China <sup>[51]</sup>

In terms of the content of the academic paper from 1979 to 2005, more and more subject of the research are related to environmental fair and equality, social participation in environmental protection and the promotion of the sustainable development in society <sup>[51]</sup>.

In terms of the methods and approaches mentioned in academic papers, environmental education is sensitive to the mainstream education methodology such as inquiry learning, action research, multidisciplinary infusion study and integrated practice activities etc. It implies that China is ready for transferring the function of environmental education to promote the sustainable development of society in terms of methodology to some extent. Although China has made great success in poverty alleviation, dissemination of nine-year compulsory education and illiteracy elimination, special attention should be paid to promoting gender equality and women's empowerment, combating HIV/AIDS and reversing the loss of environmental resources. The Chinese Government also pays special attention to balancing development between urban and rural areas, different regions, economic and social progresses, and between people and nature. China is set to achieve further development successes by 2015, making even greater contributions to the international effort to reach the MDGs.

## CHAPTER 6: CHALLENGES OF ESD IN CHINA

### 6.1 General Situation

ESD is the education for sustainable development so that the challenges of ESD are directly related to that of sustainable development. The conditions and development in different countries are different. Then the challenges of ESD in a country should be specific to the said country. In the new century, China is facing the difficulties of population and growth, still low living standard, rapid urbanization, uneven development between different regions, restricted resources, heavy and polluting industry structure, backward science and technology, etc. Then ESD in China also faces the challenges accompanied with these difficulties. For example, because of the huge population, still low living conditions, and uneven development in different regions, education equity and quality of basic education should be emphasized, especially in the western region. But in the eastern, relatively advanced region, the difficulties are more on urbanization, industry restructuring, as well as the living behavior. In addition, for the entire country, population, restricted resource, environmental pollution, and backward science and technology are the common difficulties.

In the respect of EE, China has established a relatively complete system. As required, concepts and basic knowledge of environmental issues are integrated in the curriculum of basic education. Disciplines and majors on environmental issues have been offered in high education. Governmental actions are combined with mass movements of the public. And, not only trainings for government officers on environment are popular, but also the requirements of energy saving and emission reduction have been listed in evaluation framework of chief officers.

But for ESD, the situation is different. According to official documents, ESD was firstly called for in the 1994 *China's Agenda 21*. But the documents on ESD issued by MoE are rarely found, except the 2003 issued ***Implementation Guidelines on Environmental Education for Primary and Secondary Schools***. The core issue of education is education equity and quality, as that in the preparation of China's mid- and long- term education strategy. However, in the meanwhile, a

number of important projects on ESD have been conducting in China with the help of international organizations. These projects spatially cover a large portion of the country, especially in the eastern advanced areas, and they generally seem as an extension from EE to the inclusion of social and economic components, so that to ESD. The Beijing Commission of Education promulgated an ESD guideline for primary and secondary schools in Beijing. A number of universities began offering courses on sustainable development. Training programs on SD become popular for government officers and enterprises. Furthermore, the government is conducting series of movements to combat environmental deterioration, recourse restriction, and climate change issues. These movements not only regulate local governments and enterprises to implement, but also organize training programs, public communications, and media propaganda.

Therefore, it seems that there are noticeable achievements of ESD in China. However, it is still at the preliminary stage, or experimenting stage. The policy of ESD at the state level is on the way. Based upon the known situation, it is possible for China to develop a policy of extending EE to ESD.

## **6.2 Different Developmental Levels of ESD across the Country**

Due to unbalanced economic development across the country, there are different levels of both EE and ESD developed in different parts of China. The east part of China is relatively more developed than the west, especially the western rural areas (Figure 6.1). In the poor areas, people consider more on economic development and on living a better live than the risk of polluting the environment. It was heard that among the most polluted cities in the world, there are several in China, often in the western region. Although there are laws and regulations on environmental protection, when there are conflicts between economic benefit and environmental risk, the enterprise and the local government might make inadequate decisions, and the local people did not know their lost and right, due to the lack of proper EE. Their environmental awareness is generally low<sup>[52]</sup>. In the poor regions, children might not have the chance for schooling and there is often higher illiteracy. With a background of weak basic education and weak EE, ESD is usually also weak.

On the contrary, in the east part of China, the governments, enterprises, and the general

public have higher level of EE, so as stronger environmental consciousness. Eco-city movement is more successful in these regions, including all the state level acknowledged eco-city/eco-county/eco-district <sup>[53]</sup>. People know their right and got success in fighting polluting construction projects. For example, a very recent example, the Xiamen PX project was once a hot subject of environmental impact assessment at the end of 2007. With the public opposition, it is heard in Jan 2009 to move the project to Zhangzhou City of Fujian Province <sup>[54]</sup>. With such background, ESD in the east part is more popular and more fruitful.



Figure 6.1 The west and east regions of China

Source: Website of Office of the State Council Leading Group for Western Region Development

### 6.3 Difficulty in East Regions

ESD has been developed better in the east part of China, such as Beijing, Shanghai, the cities in Changjiang River Delta and Pearl River Delta etc. However, there are still difficulties to deepening ESD in these areas. For example, the UNESCO EPD/ESD was firstly initiated in Shanghai. From 1995 to 1996, the feasibility study of EPD was completed in Shanghai, by the Education Science Academy of Shanghai. A number of suggestions were brought up from the study. However, in the follow up EPD project, the development in Shanghai is much slower than that in Beijing.

One of the important factor was, not enough support from the local government, especially financial support. There are other difficulties. The main index to evaluate a school is often on the rate of students entering higher education. Knowledge education is taken much more attention than ESD. The major difficulties are:

- Limited funds for ESD
- Imperfect knowledge structure of teaching staff
- Examination-based education
- Inadequate decision making respective to the contradiction between development and sustainability

### **(1) Limited fund for ESD**

Inadequate fund is one of limiting factors for the development of EE. Currently there are two main funding sources for EE. One is from the environmental protection fund and the other is from the education fund <sup>[55]</sup>.

For China, the investment for environmental protection during the 8th, 9th and 10th Five-Year Plans (1991-1995, 1996-2000, 2001-2005) accounted for only 0.74%, 0.88% and 0.99% of GDP respectively <sup>[56]</sup>. This amount of investment is much less compared with the developed countries <sup>[55]</sup>. And most of the investment is used to the treatment of pollution other than environmental education and communication.

In China, environmental education is not taken as a special discipline. Environmental science, environmental engineering, environmental management etc., are seen as similar disciplines as mathematics, literature, medical science etc. Even in normal universities, there is rarely a discipline as “Environmental Education”. Instead, in the normal universities, there are schools or departments of environmental engineering, environmental science, environmental management etc. The students from these majors do environmental education in primary and secondary schools.

The situation for ESD is worse than that of EE. As understood, environmental protection and resource conservation are important components of sustainable development. Therefore, ESD activities are often mixed with that of EE. Although ESD is broader than EE that social and economic components should also included, it is not clear whether ESD would be developed similar to the development of EE. According to UNESCO documents, ESD is to reorient education for sustainable development rather than to set up a new discipline.



## **(2) Weak knowledge structure of teaching staff**

EE is already popular in China: environmental science, environmental engineering, environmental management etc. However, ESD requires integrating social, economic components with environment. It is to require the teaching staff to have the ability that those in environmental science and technology to have adequate knowledge in sociology, economy and legal science etc. On the other hand, those in social sciences must be able to understand some scientific background, such as energy, resource and pollution etc. The existing teaching system is not for ESD. Therefore, there is a lack of teaching staff knowledge.

## **(3) Examination-based education**

Education is “learning of knowledge, information and skills during the course of life”. The main objective of a school is let the students to graduate (qualified in having learned knowledge) and to enter a higher level school or university, or to find a good job (career). Therefore, most schools are pursuing high scores of their students. This objective is in contradiction with that of ESD. Therefore, with current curriculum system and education objective for examination, infusion education on environment issues cannot be efficiently implemented<sup>[25]</sup>. The most important thing for the teachers and the school is still how to keep high progression rate. The progression rate is the most important criteria for people to judge whether it is a “good” school or not.

In this education system, teachers have already beard a heavy burden on their own regular education. Therefore it is difficult to require teachers to spend more time and energy in ESD without compulsory provision or incentive policy.

To add EE content in a subject when it is not closely related to environmental issues, such as those in physics, Chinese language, and mathematics, the situation is even worse. More than one third of the teachers adopt an approach of “teach, if there is time”, and a fraction of them do not add EE at all. For the subjects closely related to environmental issues, such as geography, biology, and chemistry, environmental education, more than 80% of teachers can carry out EE as required by textbook or education standards. Generally speaking, there are teachers doing much on EE based on personal interest. However, interest is an unstable, low-level motivation. It can be affected by exterior factors, such as the issue being a social hotspot or a chic topic, or the issue involving

more international exchanges. An enduring motivation, “Environmental issues are important”, is often neglected <sup>[25]</sup>.

ESD also encounter such kind of problems. ESD not only covers environment issues, but also other aspects, such as moral education, health education and so on. Different aspects have different situations. For example, moral education is a deep-rooted education in China, because it has been emphasized many times by Chinese leaders and required in policy documents. For example, Deng Xiaoping, the former Chairman of CPC, put forward to make people become of "Four Possessions" (i.e. of ideals, morality, culture and discipline)" in 1982. Later, China advocated for developing children in moral, intellectual, physical, aesthetics and labor aspects. In 1999, China set the promotion of quality education as the focus of the education strategy in the 21<sup>st</sup> century in ***Decision on the Deepening of Educational Reform and the Full Promotion of Quality Education*** (June, 1999). One important part of quality education is moral education. Therefore, moral education is relatively easier to promote in the basic education compared to other aspects.

#### **(4) Inadequate decision making respective to the contradiction between development and sustainability**

In the east regions, based on education, media communication, and other sources, officers, enterprises, and the general public, usually have some consciousness on environmental protection and sustainable development. However, it is often the case that when personal or local benefits are involved, inadequate decision might be made that violates the sustainability of development.

## **6.4 Other Difficulties**

The understanding on EE and ESD & the meanings of EE and ESD sometimes cause confusion. For example, EE and ESD, are they the same? Which is broader? Or which includes the other? Another example: what does that mean by EE? Do the educations for environmental science, environmental engineering, environmental management, environmental law, etc. belong to EE? On the other hand, should we set up a major for SD? This illustrates that the understanding on EE and ESD is not simple, even for those doing research on EE <sup>[25]</sup>.

As described in Chapter 2, ESD in UNESCO document has two different senses. In the broader sense, it says “Education for All (EFA) lies at the heart of the effort to achieve the DESD objectives.” so that EFA can be included in DESD. On the other hand, it says “DESD concentrates at behaviour and lifestyle teaching”, which seems as a narrow sense. In China, for the broader sense, there are great efforts doing ESD. However, in the narrow sense, China might not be suitable for emphasizing behaviour and lifestyle teaching. Examples:

(1) In Shanghai, one of the most developed cities in China. The population is close to 20 million, but the number of cars is only a little over one million. If “behavior and lifestyle teaching” means not to buy cars, it would not be successful.

(2) For many years, there had been no heating in China southern to Huaihe River, although the temperature in winter can be as low as  $-7^{\circ}\text{C}$ , e.g., in Shanghai. Although with the development, air conditioning/heating is popular in the present Shanghai. However, Shanghai people is used to “unpleasant conditions” that we can work without heating or cooling in the temperature range that people from advanced countries cannot bear. In a broader sense, we can apply ESD for energy saving and emission reduction. But in the narrow sense, for “behaviour and lifestyle teaching”, it seems more adequate for those from advanced countries.

Education is the process of knowledge learning. However, it seems ESD is different from EE in such a sense. EE can have physical subjects, such as air, water, land, solid waste, ecology, biology etc., or liberal science, e.g., law and management etc. ESD does not seem to possess such specific disciplines. Then, where is the knowledge of ESD? Do we need to set up a major for ESD?

Another difficulty is language. Many the things are well known in China, but other people do not, due to the difficult Chinese language. On the other hand, the major portion of Chinese does not know English, although ESD seems very much international.

## **CHAPTER 7:**

# **CONCLUSIONS AND RECOMMENDATIONS**

### **7.1 Introduction**

China is a country of huge population and restricted resources, with development based on a very weak economy. Not far from the early part of the brilliant “Thirty Years (1978-2008)”, in the “Three Difficult Years (1959-1961)” Chinese people were suffering from hunger so much so that the population growth rate was even once negative at that time. China’s development was almost frozen during the 10 years of Cultural Revolution (1966-1976). It was only after 1978, with the open and reform policy that greatly released the potential of Chinese people for better living. With the promotion of the government, Chinese people have been working hard, fighting to overcome the difficulties wrought by a lack of advanced science and technology, and importantly, experience. These are the reasons that there has been severe environmental deterioration accompanied by rapid development.

Along with the rapid economic growth and environmental deterioration the above, international experience also quickly entered China, such as environmental protection and environmental education, later sustainable development and education for sustainable development. The often heard Chinese phases, “Three Wastes Treatment”, “32211 Project”, “Zero Pint Action”, “EIA Storming”, and “Energy Saving and Emission Reduction”, etc. recorded the efforts made in China to fight environmental deterioration. While “Family Plan”, “Ecocity Development”, and “Xiaokang Society” etc. illustrate the actions taken and visions drawn for sustainable development. With such background, it is understood that EE in China is already very popular, and that a number of programs and projects are being conducted for ESD.

Nevertheless, according to the recent official white paper <sup>[1]</sup>, the country is still troubled by poverty, with an impoverished rural population of 14.79 million inadequately fed and clad. Those who just have enough to eat and wear and earn an unstable, low income number 30 million nationwide. Moreover, China has a relatively low level of science and technology and weak

capacity of independent innovation. Developing the economy and improving people's lives are imperative tasks currently facing China. This is the background of education, EE and ESD in China. Thus far this report has therefore explored historical EE policies and contemporary EE for SD and ESD policy and implementation given the characteristics and contexts of China. This chapter consists of three parts: main findings and conclusion (Section 7.2), recommendations (Section 7.3) and further questions for future research (Section 7.4). The first section concludes the main findings of this research which emerged from diverse literature, documents and evidence from EE for SD and ESD practices in China. Based on this research evidence, the following section suggests recommendations for researchers, practitioners and political decision-makers who are working and will be involved in the future with EE for SD and ESD not only in China but also in other countries with similar education and policy conditions to China.

## **7.2 Main Findings and Conclusions**

### **7.2.1 Main Findings**

As a developing country, China is still relatively backward in education. For many years, basic education and eliminating illiteracy have been the main tasks of China's education. In 1949, for the whole country, the schooling rate for children was lower than 20%, but the illiteracy rate was higher than 80%. In the great "Thirty Years (1978-2008)", the 9-year compulsory education rate reached more than 90%, a miracle in the world. However, because of the relatively weak background, equity and quality are still the main objective of China's education.

In this study, it has been found that great efforts have been devoted to EE and ESD, while great achievements have been obtained for EE. However, for ESD, although there are noticeable achievements, it seems still at the experimenting stage. With the relatively comprehensive system of EE, the principles, theories, and methods of sustainable development are being integrated with EE. Many of the EE programs are incorporating ESD subjects. It seems in the policy aspect, China is extending the guidelines and requirements from EE to cover ESD.

#### **EE in China**

According to the governmental documents and literature, the development of EE in China can be divided into four stages. The first stage was in 1973 to 1983, when China followed the Stockholm Conference. While environmental protection was at the beginning, EE was also at the preliminary stage. The second was from 1983 to 1992 when environmental protection was strengthened through the issuance of a number of laws and regulations for environmental protection. In the same period, environmental education also developed quickly, including numerous training programs for environmental protection, university courses, and curriculum reform requirements in basic education etc through which a comprehensive system for EE was established. From the third stage, 1992-1996, EE continued to develop, while the concept of sustainable development began entering EE. In the fourth stage, 1997 to the present, EE is practically being extended with ESD. The UNESCO EPD-ESD project and SEPA Green-School project are good examples of implementing UN DESD strategy. The EEI program resulted in a guideline of MoE for conducting EE with ESD at primary and secondary schools. Recently, EE and ESD programs incorporated topics of climate change adaptation and mitigation.

### **ESD in China**

ESD in China began from 1992 Rio Conference and ***China's Agenda 21***. There are several important projects/programs implementing ESD. Based on the experience of the UNESCO EPD-ESD project, Education Commission of Beijing City issued guidelines for ESD in primary and secondary schools. The WWF-MoE EEI project led to the 2003 MoE ***Implementing Guideline on Environmental Education for Primary and Secondary Schools*** <sup>[33]</sup> in which ESD requirements are explicitly inserted. The SEPA Green School program brings numerous schools all over China to take part in the activities for better environment and better life. The UNEP-Tongji Institute of Environment for Sustainable Development organized the National Launch of DESD in 2005, and is experimenting curriculum reform in a Master's Degree Program towards sustainable development. Beijing Normal University and Anji County are acknowledged as RCEs by United Nations University.

As EFA lies at the heart of the effort to achieve the DESD objectives. The Project Hope in China achieved great successes in promoting in the country 9-year compulsory

education and illiteracy elimination. According to MoE, the core strategy of education in the foreseeable future is on equity and quality of education.

Aware of the importance of sustainable development, Chinese government is pushing series of actions on environmental protection and sustainable development. It is worth noting the most recent and important actions, “Energy Saving and Emission Reduction” (ESER), “Xiaokang Society”, and “Note of Scientific Development (NSD)”. ESER is for raising energy efficiency and reducing energy consumption, and emission reduction of SO<sub>2</sub> and COD (chemical oxygen demand ~ an index for water pollution). The importance is that the indices of ESER have been included in the evaluation scheme of chief officers. “Xiaokang Society” and NSD are the Chinese understanding of the sustainable future. China is a country with strong government roles. These actions are accompanied with various forms of trainings. This kind of ESD is happening all over the country. However, for ESD, there are rarely state level guidelines and regulations, except the one resulted from the EEI project. Based on the situation of EE and the ESD programs, it seems that China is doing experiments ESD, and it is possible to extend EE policies to ESD.

### **Difficulties of implementing ESD in China**

There are difficulties to promote ESD all over China, as discussed in the following:

#### (1) The understanding on ESD

In the narrow sense, ESD is for “behaviour and lifestyle teaching”. For different countries, there are different conditions for behaviour and living. As a developing country, Chinese people are still living at a low standard. What are the behaviours and lifestyles that should be modified in China?

In the broad sense, ESD is based on EFA and is a measure to meet UN MDGs. China is making efforts on 9-year compulsory education and illiteracy elimination, and education equity and education quality. This coincides the requirements of EFA and MDGs, so as ESD. What is the correct relationship between EFA, MDGs and ESD?

In the curriculum reform for ESD, one of the core issues is to find the specific knowledge of sustainable development. It is not easy to define knowledge specifically for sustainable development.

(2) Governmental attention and funding

Government plays important roles in China. When there is a contradiction between economic benefit and environmental protection or sustainable development, it is not easy for a government to make correct decision. To promote ESD in China, more government support so as proper funding are needed.

(3) Restricted knowledge on ESD

ESD is relatively new in China. Educators also need training to possess necessary data and information, theories and methods for sustainable development.

(4) Uneven development among different areas

The development in China is not evenly distributed. EE and ESD policies and practice should be different in different regions.

(5) Language blockage

ESD seems more internationalized than EE. There are many international conferences, initiatives on ESD. However, not many Chinese people can communicate internationally because of the language difficulty. For example, RCE Anji has this difficulty. Anji is a county in Zhejiang Province with 4-hour driving distance from Shanghai. Anji successfully got acknowledged by UNU, but Anji is very hard to communicate with UNU or other RCEs because language difficulty.

## 7.2.2 Conclusion

The following key conclusions were drawn from the main findings of this research. First, EE for SD in China has been evolving within the existing context of EE, as opposed to ESD itself evolving as an independent concept developed within a special administrative system within the economic development and indigenous cultural context in China. The strong centralised governmental will and support of EE has also promoted the development of EE for SD within the formal education sector and finally extended its boundary to ESD. Noticeably, EE for SD has been incorporated with formal education by setting up EE for ESD in school programmes and curriculum.

Second, ESD, which has been merged into the concept and practice of EE for SD, is still lacking guidelines and policies at a state level in China despite a national high-level response showing diverse approaches to the international consensus and demands. Regarding urgent environmental problems including climate change, energy consumption and water pollution, ESD needs to continue to be developed to enable contribution to achieving environmental sustainability along with economic growth. In particular, practical guidelines and political support which have led EE



for SD to success are significant in spite of a regional gap across country *i.e.* a developmental gap resulting in a gap of EE for SD between the eastern and western provinces.

Finally, the concept of ESD is comparatively new compared to EE for SD and still not fully localised yet in China. That is, difficulty of understanding of ESD is one of the current critical obstacles for its practice in success within indigenous learning and cultural contexts in China. Therefore, not only governmental attention and funding for helping balanced development of ESD across country but also practitioners and researchers' efforts on helping develop a locally relevant understanding of ESD are key factors of future ESD success.

China is a country with a long history and has developed its culture and tradition over the last thousand years. In the consuming mode, Chinese people believe in "Liang Ru Wei Chu", which means to consume based on income and was once criticized as being too conservative. However, in contradiction to the excess consuming mode in advanced countries, which might be the essential cause leading to the current financial crisis, the Chinese consuming mode or behaviour can be considered as a simple or plain form of the principle of sustainable development. Even in the current financial crisis, China's tradition and consuming mode has played an important role to combat the financial crisis. With this background, it is therefore highly possible that an ESD system could quickly be built up with the extension of the EE system for SD in the near future given the particular cultural and historical context evident in China

### **7.3 Recommendations**

As the main findings of this research emerged from the indigenous context in China, this research implicates key issues and suggests recommendations for researchers and political decision-makers as follows:

#### **For Researchers**

- Need to localise the concept of ESD into EE for SD within the status of political, economical and cultural contexts in China based on research evidence in order to

enable people to understand and transform concepts into actual practice;

- Need greater acknowledgement of relationships amongst other global educational initiatives such as EFA, MDGs, EE and ESD in order to suggest effective EE for SD and ESD policies;
- Need to conduct in-depth research to provide adequate and specific kinds of knowledge which considers different educational levels for national curriculum reforms for EE for SD and ESD within a national framework, and;
- Need to develop capacity development programmes and provide training courses for practitioners and governmental officers which reflect the current situation and challenges of EE for SD and ESD.

#### **For Policy Decision-Makers**

- Need to put researchers' research findings into actual practice via reforming the national curriculum and school ESD programmes;
- Need to formulate differentiated policies and guidelines which reflect the diverse needs based upon developing economic growth and cultural situations across the country; In view of the different development levels in different areas of China, it should be important to formulate policies or guidelines of ESD to implement in different areas given the unique local context and conditions. For example, for the poor regions, basic education is the most important task of education. However, it should be possible to include some of the principles and information on sustainable development in the curriculum and improve quality of and access to basic education in line with the basic thrusts of ESD. While in developed regions, it might be possible to offer a separate course on sustainable development.
- Need to develop own capacity development for decision-making process in ESD policies in success. There is no doubt about a bright future for ESD in China when policy decision-makers develop a strong awareness and clear understanding of ESD. Providing training programmes specifically designed with the purposes above for policy decision-makers are therefore essential. In particular, it may be effective to merge ESD strategies into the existing EE system when we consider the current situation of ESD in China, in particular based on our findings and experience that EE educators are typically more accepting of ESD principles, and;

- Need to support adequate funding not only to researchers to conduct in-depth research which can collect concrete evidence for developing practical instructional resources for ESD teaching/training programmes but also to practitioners to promote actual implementation at a local level.

#### **7.4 Further Questions for Future Research**

As we consider the lack of research evidence in the ESD field, this paper is significant as it has provided detailed information about EE for SD and ESD within a specific and indigenous learning and policy context. Nevertheless, this paper is still a small step to understand Chinese EE for SD and ESD policy and implementation due to the huge national research scale to be further explored and the still remaining questions to be solved. Therefore, the following questions are needed to be addressed for future ESD research in relation to the main findings of this paper:

- How we can develop ESD policy and strategy within the existing educational systems such as EE for SD and national curriculum not only in China but also in other countries which have similar economic and political status;
- How we can make the gap narrower between different developmental stages which depends upon economic and political status across the country e.g. the ESD developmental gaps between the east region and west region in China, and;
- What are practical ESD policies and strategies within a supportive national framework which enable practitioners to easily employ them in their actual practice.

All suggestions for future research above focus on how we can make ESD tangible and practicable in reality via education in cooperation with those in the research field and political sector. Finally, it therefore might be appropriate to conclude this paper with the following statement from UNESCO which emphasises what ESD is and what it aims for *i.e.* empowering people through education for a sustainable future.

Education for sustainable development aims to achieve well-being in line with sustainable development by empowering people through education to assume responsibility for creating a sustainable future. It seeks to engage people from all walks of life, in both economically developing and developed countries, in change for a better world. ESD goes beyond teaching about the knowledge and skills associated with understanding the environment, society and economic; it aims to foster respect and understanding for the values and perspective necessary for nurturing sustainable livelihoods, as well as build human capacity to be able to act upon these understandings (UNESCO, 2007: 6)<sup>[57]</sup>.

## REFERENCES

- [1] China State Council Information Office (2008) **White paper: China's policies and actions on climate change** (<http://China.org.cn>) [Both in Chinese and English]
- [2] Carson, R. (1962) **Silent Spring**, Boston: Houghton Mifflin Harcourt Publishing Company.
- [3] UN: **Report of the United Nations Conference on the Human Environment: Educational, Informational, Social and Cultural Aspects of Environmental Issues** Recommendation 96, <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=97&ArticleID=1511&l=en> [Accessed 18 December, 2008]
- [4] UNESCO: **Tbilisi Conference on Environmental Education, Declaration**, [www.gdrc.org/uem/ee/EE-Tbilisi\\_1977.pdf](http://www.gdrc.org/uem/ee/EE-Tbilisi_1977.pdf) [Accessed 10 October, 2008]
- [5] UN Dept. of Economic and Social Affairs, **Agenda 21**, [www.un.org/esa/sustdev/agenda21.htm](http://www.un.org/esa/sustdev/agenda21.htm) [Accessed 23 January, 2009]
- [6] UNESCO Bangkok Office Website: <http://www.unescobkk.org/vi/education/esd/un-decade-of-esd/progress-to-date/launches-and-strategies/> [Accessed 18 December, 2008]
- [7] MoE: **The 10<sup>th</sup> Five-Year Plan for China's Education**, 2001, <http://www.moe.edu.cn/edoas/website18/19/info219.htm> [In Chinese: Accessed 7 December, 2008]
- [8] MoE: **Outline of the 11<sup>th</sup> Five-Year Plan for China's Education Development**, 2007, <http://www.moe.edu.cn/edoas/website18/level3.jsp?tablename=2044&infoid=28865> [In Chinese: Accessed 10 December, 2008]
- [9] Ministry of Education (2008) **Draft Version for Consultation: Outline for China's Mid- and Long Term Education Reform and Development Plan**, Beijing: Ministry of Education of China [In Chinese]
- [10] IPCC: **Fourth Assessment Report (AR4)**, 2007, <http://www.ipcc.ch/> [Accessed 15 January, 2009]
- [11] UNESCO (2005) UN Decade of Education for Sustainable Development: **Links between the Global Initiatives in Education**, UNESCO.
- [12] United Nations Millennium Declaration, <http://www.un.org/millennium/declaration/ares552e.htm> [Accessed 20 December, 2008]
- [13] UNESCO (2005) UN Decade of Education for Sustainable Development (2005-2014): **International Implementation Scheme**, UNESCO.
- [14] UNESCO Action Plan for DESD, September, 2000, <http://unesdoc.unesco.org/images/0014/001403/140381e.pdf>

[Accessed 20 December, 2008]

[15] <http://www.esd-world-conference-2009.org/en/background-information/desd.html>

[Accessed 3 January, 2009]

[16] Wikipedia: **Education**, <http://en.wikipedia.org/wiki/Education>

[Accessed 10 December, 2008]

[17] Ministry of Education (1996): **The 9<sup>th</sup> 5-Year Plan for China's Educational Development and the Development Outline by 2010**, Beijing: Ministry of Education of China [Both in Chinese and English]

[18] Ministry of Education (2002) **The 10<sup>th</sup> 5-Year Plan for China's Educational Development**, Beijing: Ministry of Education of China [In Chinese]

[19] The National People's Congress of China (1989) **Environmental Protection Law of the People's Republic of China**, Beijing: The National People's Congress of China [Both in Chinese and English]

[20] SPC & SSTC eds. (1994) **China's Agenda 21 - the White Paper on Population, Environment and Development of China in the 21st Century**, Chapter 6, 26-31, Beijing: China Environmental Science Press [Both in Chinese and English]

[21] YANG, K. (2008) **Green School and ESD in China**. In Choi, M. Y. (Ed.), *ESD Policy and Implementation in China, Japan and Republic of Korea*, 111-123, Hayama: Institute for Global Environmental Strategies.

[22] WEI, Z. (2003) The Review and Predication about Environment Education Policy of Chinese Basic Education. **Journal of Subject Education**, 12, 16-19 [In Chinese]

[23] MENG, G. and WEI, Z. (2003) The need for the Development of Environmental Education Policy and the Study on China's Basic Environmental Education Policy System. **Journal of Inner Mongolia Normal University (Educational Science)**, 16(5), 20-22 [In Chinese]

[24] HUANG, Y. (2003) Development and Trend of Environmental Education in China, **Environmental Education**, 2 [In Chinese]

[25] TIAN, Q. (2008) **Chinese ESD Policy Research**. In Choi, M. Y. (Ed.), *ESD Policy and Implementation in China, Japan and Republic of Korea*, 79-110, Hayama: Institute for Global Environmental Strategies.

[26] Respective documents by MoE. [In Chinese]

[27] SHEN, J. (2008) Continue the Journey of Environmental Education. **Environmental Education**, 2008, 100.

[28] Propaganda Department of Communist Party of China (1996), Commission of Education (MoE), and SEPA: **National Action Guidelines for Environmental Communication and Education (1996-2010)**, Beijing: PDCPC [In Chinese]

- [29] SEPA: **Outline of National Environmental Communication and Education Action Plan** (2001-2005), 2001, [http://www.mep.gov.cn/info/gw/huanfa/200801/t20080124\\_116783.htm](http://www.mep.gov.cn/info/gw/huanfa/200801/t20080124_116783.htm) [In Chinese: Accessed 18 December, 2008]
- [30] State Council of China (2003) Notice on Issuing **Action Outline for Sustainable Development in China in the Early 21st Century**. [http://www.gov.cn/zwgk/2005-08/12/content\\_22186.htm](http://www.gov.cn/zwgk/2005-08/12/content_22186.htm) [In Chinese: Accessed 27 November, 2008]
- [31] State Environmental Protection Administration, Propaganda Department of Communist Party of China and Ministry of Education (2006) **Suggestions about How to Improve Environmental Protection Communication and Education during the 11<sup>th</sup> Five-Year Plan**, 2006, [http://www.mep.gov.cn/xcyj/zwzb/200701/t20070105\\_99280.htm](http://www.mep.gov.cn/xcyj/zwzb/200701/t20070105_99280.htm) [In Chinese: Accessed 18 December, 2008]
- [32] Ministry of Education (2003) **Special Curriculum for Environmental Education in Primary and Secondary Schools**. <http://www.moe.edu.cn/edoas/website18/level3.jsp?tablename=1157&infoid=7207> [In Chinese: Accessed 18 December, 2009]
- [33] Ministry of Education (2003) **Implementing Guideline on Environmental Education for Primary and Secondary Schools**. <http://www.moe.edu.cn/edoas/website18/level3.jsp?tablename=217&infoid=3032> [In Chinese: Accessed 10 October, 2009]
- [34] SHI, G. (2008) China's innovative characteristics of Education for Sustainable Development - Commemoration the 10th anniversary of China Education for Sustainable Development Project [In Chinese; Unpublished]
- [35] <http://en.wikipedia.org/wiki/Policy> [Accessed 19 December, 2008]
- [36] China Commission of Planning (1973) **Decisions on Environmental Protection and Improvement**, document of the First National Conference on Environmental Protection, China Commission of Planning [In Chinese]
- [37] Ministry of Foreign Affairs of the People's Republic of China and United Nations (2008) **China's Progress Towards the Millennium Development Goals 2008 Report**, Beijing: Ministry of Foreign Affairs of the People's Republic of China
- [38] Feature Article: China strives for free compulsory education for all. **Xinhua Net**: [http://news.xinhuanet.com/english/2006-10/05/content\\_5169944.htm](http://news.xinhuanet.com/english/2006-10/05/content_5169944.htm) [Accessed 22 October, 2009]
- [39] Website of Ministry of Education of People's Republic of China, 2008:

- <http://www.moe.edu.cn/edoas/website18/65/info1220225917890865.htm> [In Chinese: Accessed 18 December, 2008]
- [40] Website of CYDF: <http://www.cydf.org.cn>. [Both in Chinese and English: Accessed 18 December, 2008]
- [41] Website of Tai Sun: <http://www.taisun.co.uk/educational-support.php>. [Accessed 18 December, 2008]
- [42] The Investigation of Withdrawn Hope School by CCTV, December 2008: [http://news.sohu.com/20081211/n261155980\\_1.shtml](http://news.sohu.com/20081211/n261155980_1.shtml). [In Chinese: Accessed 1 November, 2008]
- [43] WANG, Q. (2007) Effective Promotion of ESD: Review of China's ESD Project Characteristics. *Journal of Beijing Normal University*, 6, 126-129 [In Chinese]
- [44] UNESCO (2006) *Education Today*. The Newsletter of UNESCO's Education Sector, 16.
- [45] SHI, G. and WANG, Q. (2007) Education for Sustainable Development under the "Notion of Scientific Development". *Journal of Inner Mongolia Normal University (Educational Science)*, 20(1), 1-4 [In Chinese]
- [46] WANG, H. (2003) Environmental Education of Elementary School for Sustainability, Fujian Normal University [Not published: In Chinese]
- [47] Environmental Educators' Initiative. [http://unesco-chair.nankai.edu.cn/script/unesco-chair/list\\_menu/enviromental\\_information\\_2.html](http://unesco-chair.nankai.edu.cn/script/unesco-chair/list_menu/enviromental_information_2.html). [Accessed 18 December, 2008]
- [48] Website of BP China: <http://www.bp.com/sectiongenericarticle.do?categoryId=9011317&contentId=7024481>. [In Chinese: Accessed 10 January, 2009]
- [49] Website of WWF China: [http://www.wwfchina.org/english/sub\\_loca.php?loca=14&sub=93](http://www.wwfchina.org/english/sub_loca.php?loca=14&sub=93). [Accessed 18 December, 2009]
- [50] EEI Help the Youth Develop Sustainable Development Concept. <http://www.7139.com/lunwenjx/kc/kgdt/200703/78182.html>. [In Chinese: Accessed 8 January, 2009]
- [51] TIAN, Q., YUN, Y. and YIN ,P (2007) The History and Trend of Environmental Education Research in China. *China Population, Resources and Environment*, 17(1), 130-133 [In Chinese]
- [52] LI, Y. and WANG, X. (2005) Survey and Study on the Public Environmental Conscious and Environmental Education in the Rural Area of West Part of China. *Middle School Geography*, 53-54. [In Chinese]



- [53] Ministry of Environment for Protection: List of acknowledged national eco-cities (eco-counties, eco-districts), Aug. 2008,  
[http://www.mep.gov.cn/natu/stxhq/mdl/200606/t20060605\\_77118.htm](http://www.mep.gov.cn/natu/stxhq/mdl/200606/t20060605_77118.htm) [In Chinese:  
Accessed 18 December, 2009]
- [54] MoEP: Construction Project EIA Report (Form) to be approved, Jan 12 2009  
[http://www.sepa.gov.cn/hjpi/spxx/bgsgs/200901/t20090112\\_133492.htm](http://www.sepa.gov.cn/hjpi/spxx/bgsgs/200901/t20090112_133492.htm) [In Chinese:  
Accessed 18 December, 2009]
- [55] CHEN, N. (1998) On the Problem of Implementing Environmental Education. *Journal of Guangzhou Normal University (Social Science Edition)*. (1), 94-97 [In Chinese]
- [56] YANG, D. (2007) 2006 Transition and Game on China's Environment [B], Beijing: Social Science Literature publishing house [In Chinese]
- [57] UNESCO (2007) Asia-Pacific Guidelines for the Development of National ESD Indicators, Bangkok: UNESCO Bangkok.