The Updated Progress and Perspective of Environmental Economics in China

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Abstract: The paper introduces updated research achievement from the perspective of environmental economics and makes an outlook on its development in the near future. With establishing a well-off society from all aspects of life and with the increasing demands for environmental quality, the contents covered in environmental economics will be wider and deeper. Meanwhile, the role of environmental economics in Chinese environmental management will be more notably.

Key words: Environmental Economics; The updated progress; Research perspective; China

1 Introduction

Environmental economics was introduced in China in late 1970s. In 1978 Environmental economics and Eight Years Developing Program of Environmental Protection Technology and Economic（1978－1985）were initiated in China. In 1981 Seminar on Environmental Economics Research was held and some books related to environmental economics were published. Hereafter, environmental economics made progress as a unique subject and the basis of economic development policy, environmental protection policy and sustainable development policy.

After mid 1980s with success of a group of experts and the practice of relating theories and methodology of environmental economic, prominent environmental economic research achievements were made and professional books were published in the field of environmental valuation, environmental pollution damage measuring, environmental economic models, such as Ecological Economics (Jiang XueMin, 1985), Ecological Economics (Ma ChuanDong, 1986), Natural Resources Accounting (Li Jincang, 1991), Practical Environmental Economics (Zhang LanSheng, 1992), Environmental Economics: Theory, Methodology and Policy（Wang JinNan,1994）, Environmental Economics (Li YiNing, 1995), Environmental Economics (Zhang XiangShu, etc,1998), Environmental and Resources Economics（MaZhong,1999）, Environmental Economics（Wang YuQing，2002）.

At present, many research academies as a special group undertook the professional research studies and hosting many relating national scientific projects. Experts from Chinese Academy for Environmental Planning (CAEP), Policy Research Center of State Environmental Protection Administration (SEPA), Renmin University of China, and Chinese Academy of Social Sciences have many years' experiences and publications in environmental economics studies and made achievements in environmental economics policy, environmental valuations, environmental investment and financing, environment and trade, environmental economic analysis. In late 1990s, first Master and Doctor Degree study programs were established in Renmin University of China,

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CAEP and FuDan University in Shanghai which made their contribution to speeding up fostering of professionals and the subject building up in environmental economics in China.

As an independent major, environmental economics mainly includes environmental economics theory, environmental valuations, environmental economic policies etc. With the effort of experts and scholars, environmental economics has made much progress in China over the last two decades.

2 New Progress in Environmental Economics

The following make a general review of the progress of environmental economics in recent 10 years, which is mainly from seven perspectives of environmental economics theories, circular economics, environment and trade, economics of international environmental issues.

2.1 Environmental Economic Theories

Theoretical system of Environmental economic is based on microeconomics and welfare economics in Western economics. With reform of marketing economic in China, the continual introduction of western modern economic theories enriched theoretical basis of environmental economics and expanded the study scope of environmental economics (Xia Guang,1999a). With the introduction of environmental economic theories and efforts of Chinese scholars, theoretical research level in the field has reached international top level（Xia Guang,1999b）. The development of environmental economics theories has built up foundation for China environmental economics development.

The development of environmental economic theories can be traced up in many books. On one aspect, introduced directly from western countries, such as RFF Environmental Economics Series, and The World Without End；On the other aspect, domestic scholar referred and made use of western environmental economics theories, such as Environmental Economics (Wang JinNan, 1994) published by Tsinghua University, Environmental Economics (Li YiNing, 1995), Environmental Economics (Zhang XiangShu, 1998). Currently, more scholars have shifted their research to the relations between the environment and economics, practical circular economy and economic instruments.

2.2 Environment Valuation

Environment valuation is still an eventually unsolved subject concerned by domestic and international environmental economic researchers since 1970s（Wang YuQing, 2002）, environment value calculation is experiencing the process from general to specification study.

From the perspective of macro-policy, establishing a green national calculation based upon environment value calculation is currently the hottest point domestically. In 1990s international organizations such as United Nations (UN) and World Bank (WB) put forward the Integrated Environment Economic Accounting（SEEA）and genuine saving. In 2003 the State Environmental Protection Administration (SEPA) and the Ministry of Science and Technology jointly initiated The Tenth-Five-Year key research projects, the Framework Development of Green National

Economic Accounting, which was undertaken by CAEP and Renmin University of China. The frameworks of Chinese SEEA and environmental accounting were set-up and the report of pollution-adjusted green GDP has been drafted by CAEP in 2005.

Environmental pollution economic loss has experienced nearly 20 years development and primarily put forward calculation method about pollution cost. Many scholars have undertaken series of work in the field, for example China Environmental Pollution Economic Loss by Xia Guang etc., (Wang YuQing, 2002). In recent years, scholars have made research on regional economic loss of environmental pollution. Zhou YueXian etc., has made assessment on impact of air pollution to human health, which caused economic loss of 1994 (Zhou Yue Xian etc., 1999). Hu Yan has made comprehensive quality assessment on air pollution situation for Qingdao urban area from 1981-2000 by HuYan. In 1998 Qingdao has carried out evaluation about economic loss of impact of air pollution to health in Qingdao (HuYan, 2003). In addition, Yuan JunHua has developed evaluation method for the agricultural loss of soil pollution (Yuan Junhua, 2002). Cooperating study between World Bank, Harvard University, Resources for the Future and domestic scholars have been made about human health loss from environment pollution in Beijing, Shenyang, Chongqing etc., In 2003, SEPA has determined to make survey on evaluating loss of environment pollution from 2004 to 2006 across the country which is presently under preparation. In recent, the World Bank is carrying out the second phase of project Environmental Cost Model to support the accomplishment the evaluation system of environment pollution loss. According to the updated estimation of CAEP about 300,000 citizens were dead in urban areas because of outdoor air pollution in 2001 (Wang JinNan, 2005).

In the field of ecological damage, at the beginning of 1990s the study hosted by Jin Jianmin, the Ecological Damage Cost in Selected Regions, provided fully knowledge about ecological damage in China. In 1995 Chinese Academy of Social Science made a research about the Environment Pollution and Ecological Destroying Loss in 1990s, which concentrated in improvement of evaluation concept, methodology and case studies (Wang Yuqing, 2002). In 1999, Xu Haolin has made study about Ecological Destroying Leading to China Flooding and Draughting Damage(Xu HaoLing, 1999) .

Various normal valuation methods of environmental cost are developed these years. Some researchers considered the direct cost based on market prices is a feasible method for estimating environment damage cost in China (Wang Yanxiang, 2002), and exploring the enterprises' internalization of environmental cost (Hu Zhenhua, 2003). In 2005 CAEP and the World Bank have drafted the Guidelines to Environmental Economic Accounting in China to be used in the selected 10 provinces of green GDP accounting program which include the methodology of pollution damage cost estimation (CAEP, 2005b).

2.3 Environmental Economic Policy

Pollution charge program is the main environmental economic policy in China since 1980. From 1994-1996 with support of the World Bank project of the Design and Implementation of Pollution Charge in China, Chinese Academy for Environmental Planning finished the design of the reform framework of pollution charge program（Yang JinTian et al. 1998）. Based upon the policy

proposed by the above study, Chinese government has implemented new Pollution Charge Collection and Utilization Regulation over the country since July 1, 2003.

Environment taxation policy is a hot point in the field of environmental policy at present in China. At the same time China related institutions have studied resources tax, consumption tax, which made taxation greener in China. In 2005 the project of Environmental Taxation Design and Its Implementation Strategy was finished by CAEP, the Fiscal Institute of MOF and the Taxation Institute of STA, in which three options of environmental taxes in Chins has put forward (CAEP, 2005a). Based on the number of researches by CAEP and other institutions several reform proposals on greening fiscal and taxation have been submitted to the Ministry of Finance (MOF), State Taxation Administration (STA) and Beijing Financial Bureau since 1999. With a number of local practices, researches on ecological compensation policies have been paid much attention by academic institutions and public departments such as SEPA, MOF and NDRC since 2003 (CAEP, 2005c).

With deepening of marketing economic and gradual implementation of total load control, in mid 1990s the pilot study of emission trade policy has been made in six cities such as Baodou, Kaiyuan, Liuzhou, Taiyuan, Ping Dingshan, Guiyang. With support of ADB, RFF and CAEP, Taiyuan municipal government approved Taiyuan SO2 Emission Trade Regulation in September 2002 so that emission trade has been fully initiated in Taiyuan. In November 2002 CAEP and Environmental Defense accomplished Sino-America cooperation project about feasibility study of China marketing mechanics on SO2 emission reduction, published the SO2 discharger trade: Feasibility in China which discussed the feasibility of implementing SO2 emission trade in China and made case study in Jinagsu province and Benxi city of Liaoning province (Wang JinNan et al., 2002).

2.4 Environmental Investing and Financing

Environmental protection investment and financing and policy development in China has been established, improved and perfected with the development of the reform of China economic system and environmental managing concept.

In 2002，the third phase of China Council for International Cooperation on Environment and Development (CCICED) approved the taskforce of China environmental protection investment and financing mechanics and got the support from Japan. In November 2002, a seminar on *Environmental Protection Investment and Financing* has been held together by CCICED project team and a Report on Environmental Protection on Investment and Financing was accomplished in 2004 (CCICED, 2005). Cooperated with OECD, CAEP undertook the analysis on investment and financing instrument and case studies have been made in 14 cities of Sichuan province. Currently environmental investment and financing research is shifting to financing environmental infrastructure such as municipal bonds related to municipal wastewater and waste disposal, BOT etc., to speed up environmental financing. (Wang JinNan et al., 2003). Recently more researchers are paying attention to the environmental public budget and fiscal policy in order to mainstream environmental investment for reducing serious pollution over the country.

2.5 Circular Economy

Another new hot point of environmental economics is circular economy. SEPA has held several seminars of circular economics and ecological industrial research popularizing domestic and foreign circular economic theory and practical experience. National Clean Production Center (NCPC) and Policy Research Center under SEPA have undertaken research about foreign circular economic legislation, methodology and developing circular economic model initially. Key ecological industry laboratories at national level have been constructed by Northeast University, CRAES and Tsinghua University. NCPC is always caring about circular economic and ecological industry domestic and foreign development since 2000. Expanding research field in term of theory, methodology and practical research work strengthening the research of circular economic (Xu Shufan, 2003). In October 2003 NCPC has accomplished *the Report on China Promoting Circular Economic and Clean Production Strategy and Mechanics*, putting forward proposal about circular economic policy to National Development and Reform Committee and SEPA. Since 2002 many publications related to circular economy were published in China such as the Circular Economics by the Development Research Center of the State Council (Zhou HongChun, 2005). Also the World Bank, EU and other international institutions are supporting several research programs for China to integrating circular economy into the construction of environmental friendly society.

2.6 Trade and the Environment

With broad range reduction of custom barrier by joining WTO, technical barrier to trade (TBT) and green barrier has played more and more evident role. Beijing Foreign Economic and Trade University has accomplished national the Ninth Year key scientific project of the Impact of Green Barrier to Trade Development, which researched the green barrier cause, essence and relating impact and countermeasures in our country in 1999. In 2000 the Ninth Year Humanity and Social Science Program between environmental protection and foreign was developed under the ministry of Education, which discussed impact of international environmental measures to China foreign trade and harmonious improvement of foreign trade mechanics from the perspective of sustainable development. Based on the research work of Beijing Foreign Economic and Trade University and CAEP, the National Green Trade Action Plan was put forward in 2000 (Wang JinNan, 2002). At present *the Project of Environmental Service Industry of International Trade Standard System* is under studied by CAEP, which was one subproject of the Tenth Five Year Scientific Key Project (2001~2005).

2.7 Economics of Global Climate Changes

Global climate changes have caused series of impact to human living environment and social economic development, which has caught concern globally and in recent years wide developed climate changes impact. Since the Ninth Five Year the Ministry of Science and Technology (MOST), SEPA and China National Weather Bureau organized projects including global changes impacts on agriculture (Zhang Jintun, 1999), energy strategy (He Jiankun, 2001), natural resources (Zhang Yunxia et c. 2003), infectious disease, forestry ecological system (Liu Guohua, 2001), land hungriness (Chang Ying etc., 2002), wild animals (Peng Shaolin etc., 2002), and future surface run off (You Songcai etc., 2002). The research mainly concentrated on evaluation of global changes impact in practice and less study was made in economic impact. In recent years, China Academy of Social Sciences, Tsinghua University has researched on economic policy to reduce GHGs (such

as coal tax, emission trade, clean development mechanics etc.). Several CDM-based CO2 trading programs have been finished by the support of the World Bank and MOST (Feng Fi et al., 2004).

Global climate changes has brought deep impact to economic and social development, China has averagely suffered from economic loss 3% to 6% of GDP caused by climate damage annually. In 2002 related departments of Chinese government has decided to establish a leading group of editing climate changes evaluating report, starting climate change national evaluation report and supporting research project. China climate changes national evaluation report will refer to the primary framework of evaluation report by inter-governmental climate changes committee (IPCC) and at the same time undertaking the evaluation about key issues about China and climate changes. The key project application for special project fund of MOST has been accomplished. Total works of China climate changes evaluation will be predicted to complete in two years and will edit national climate changes evaluation report. From the perspective of science analysis is made in term of impact of global climate changes to China and impact of climate changes to the development of China economic growth, sustainable development, and public health as well as to the future 50years' China ecological environmental changes backed up by global climate changes etc.

3 Perspective of Environmental Economics in China

To look at the near future, the environmental economics in China will mainly concentration on the following fields:

（1） Developing a more practical environmental economic evaluation and fully environmental assessment research. Adjusting the basic theory of environmental economics assessment, enhancing it in practice and accuracy, which is a challenging confronted by environmental economics. Starting the evaluation on natural resources and environmental quality valuation presenting the strategic requirement of sustainable development.

（2） Starting green national economic accounting research, building up the SEEA suitable for China. At present, calls from departments of government and experts speed up establishing a fully coordinated and green national economic accounting system from the perspective a sustainable scientific development concept.

（3） Stimulating more effective and market-based environmental economic policies. With deepening of China marketing mechanism, a full set of policies concerned need to be designed for China special situation, which is key research issue for the study of environmental economics. The research will concentrate on environmental tax and ecological compensation policy recently.

（4） Research is concerned on financing and investing instrument on environmental infrastructure facilities investment. Further research is needed in the field of relations between economic development and environmental investment. Study need to make to improve the efficiency of environmental investing, broaden the financing instruments, and promote multi-sources of environmental financing.

（5） Strengthening the research on impact of economic globalization to China's trade.

With fast development of globalization, China environment will confront the threatening abroad. Trans-country pollution transfer has speed up the environmental issues of China. At meantime, to enhance the trade and to promote the China economic development, environmental issue will play an important role in foreign trade and worth of being studies in its effect.

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