Reconstruction of China's Low-Carbon City Evaluation Indicator System

A Methodological Guide for Applications

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A Methodological Guide for Applications

Pan Jiahua
Zhuang Guiyang
Zhu Shouxian
Zhang Ying

Chinese Academy of Social Sciences, China

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Preface

Since September 14, 1950, when Switzerland established diplomatic relations with China, there have been frequent high-level visits between the two governments. Trade and economic cooperation increased, and collaboration in various fields including education, tourism, training, science and technology was strengthened. Switzerland has been a pioneer in terms of cooperation between China and European countries. It was one of the first few Western countries to establish diplomatic relations with China. Upon China's reform and opening-up, Swiss companies took the lead in entering China's market and establishing joint ventures. Switzerland was also the first continental European country to recognize China's full market economy status. All these were the result of the pioneering and innovative spirit that has been embedded in Sino-Swiss bilateral relations.

Climate change has become the common challenge for human society and a widespread concern around the world. In response to this challenge, Switzerland and China signed a memorandum of cooperation on climate change. China has achieved remarkable results for low-carbon development as it has been vigorously promoting ecological civilization and actively responding to climate change. Switzerland appreciates China's progressive climate change policies, broad actions and various achievements and is willing to work with China to further cooperate on policies and pragmatic projects. Such cooperation in the field of climate change will be the new highlight in the two countries' bilateral relations, and will contribute to the efforts of addressing global climate change challenges.

In June 2010, the Swiss Agency for Development and Cooperation launched the Low-Carbon City in China project jointly with its Chinese partners. The project aims to build the capacity for urban planning and municipal management, developing a vision, strategy, action plan and supervision system to promote low-carbon city development, enabling best practice exchange and knowledge sharing, developing comprehensive yet China-specific low-carbon standards and management systems, and promoting the development of renewable energy, green building and sustainable transportation. Since the launch of the project, seven cities (Yinchuan, Dezhou, Meishan, Dongcheng District in Beijing, Baoding, Kunming and Jianchuan) have joined the project in the past three years, giving a strong impetus to China's low-carbon city development.

The Institute for Urban and Environmental Studies at the Chinese Academy of Social Sciences is a leading institute for low-carbon economy research and low-carbon city development consulting. It is funded by the Swiss Agency for Development and Cooperation as the consultant to develop China's Low-Carbon City Evaluation Indicator System. Such research aims to study and learn from the European Energy Award and the Swiss Energy City Project and apply their successful experience to guiding China's low-carbon city construction with consideration of China's actualities. We are pleased to see that, through three years of in-depth research, the project team has developed a low-carbon city evaluation indicator system for China, and constructed a framework and application guidelines to evaluate low-carbon cities with methodological support, and successfully tested them in some of the aforementioned pilot.

Right at the time when China's Prime Minister Li Keqiang is visiting Switzerland, the deliverable report of this research project has become ready for publication. I would like to express my sincere appreciation for the hard work of the project team led by Mr. Pan Jiahua, director of the Institute for Urban and Environmental Studies at the Chinese Academy of Social Sciences, as well as warm congratulations on their achievements in this project. At present, the Chinese government has started two batches of national low-carbon provinces and pilot low-carbon cities, followed by numerous other regions and

cities that are also endeavoring to transition themselves into low-carbon society. I believe that the publication of the research results will help provide guidance to China's low-carbon city development practice.

Dr. Philippe Zahner

Counselor of the Embassy
of Switzerland in China
Swiss Agency for Development
and Cooperation

June 5, 2013

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Foreword

The development of a low-carbon economy requires both theoretical guidance and practical solutions. Cities are the major agents in national economic development; hence national goals of low-carbon economy development will eventually need to break down to the city level and cannot be achieved without concrete implementation of low-carbon construction in the cities. With the domestic low-carbon pilot provinces and cities booming, more and more cities have begun to put forward low-carbon development plans and policies based on their own characteristics. However, with all the different understandings of the concept of a low-carbon city and unguided practice, there is an urgent need to develop a comprehensive evaluation indicator system.

Since 2008, the Institute for Urban and Environmental Studies at the Chinese Academy of Social Sciences has taken the lead in China's low-carbon city evaluation indication system research. Building on its definition of the concept of a low-carbon economy, the institute constructed an indicator system consisting of four clusters of indicators: low-carbon output, low-carbon consumption, low-carbon resources and low-carbon policies. The system has been tested in several cases including the low-carbon roadmap development for Guangyuan City, Jilin City, Shenzhen City and Huangshi City. The media has reported this indicator system as "China's low-carbon city evaluation criteria".

As an important component of the cooperation between China and Switzerland in the field of climate change, the Swiss Agency for Development and Cooperation in China launched the Low-Carbon City in China project in 2010 and entrusted the Institute for Urban

and Environmental Studies at the Chinese Academy of Social Sciences to learn from international experience and further develop China's Low-Carbon City Evaluation Indicator System in order to provide standards and guidance for China's low-carbon urban construction. After nearly three years of research, the institute developed a low-carbon city evaluation framework with methodological support for China and application guidelines.

This indicator system is a tool developed with funding from the Sino-Swiss low-carbon city project with the target of guiding China's low-carbon city development. It was developed by drawing on the successful experience of the European Energy Award and Swiss Energy City Project with adjustments based on China's specific situation. The indicator system has been tested in several cities, including Dezhou City in Shandong, Baoding in Hebei, Kunming in Yunnan, Meishan in Sichuan, Yinchuan in Ningxia, and Dongcheng District in Beijing.

China's Low-Carbon City Evaluation Indicator System consists of three integral and inter-connected parts: a list of indicators, a low-carbon city assessment report and action plans for the case study cities. The core of this system, the list of indicators, is further divided into two parts: major indicators and supporting indicators. The evaluation reports are the result of applying the indicator system as well as a review and summary of the pilot cities' low-carbon construction, while the action plans provide recommendation for future improvement.

The theoretical basis of the methodologies for China's Low-Carbon City Evaluation Indicator System is the well-known PDCA in management science. Through the continuous "plan-do-check-act" cycle, experience can be summarized and lessons can be learned for future improvement. The most important feature of this indicator system is that it is not only able to evaluate the status of low-carbon city development, but it is also able to measure the efforts of the cities while taking into account their different geographical features and natural resource endowment. The indicator system could help cities to understand their current achievements, identify their strengths and weaknesses and learn from the successful experience of other cities, so that they can advance their low-carbon transition process in a more efficient way.

As this is exploratory and cutting-edge research, throughout this project there were several adjustments to research objectives. During the study, Mr. Walter Meyer, former Counselor at the Swiss Agency for Development and Cooperation, was extensively involved in the project and provided detailed technical guidance. Moreover, Dr. Wang Liyan, Mr. Liu Ke, Dr. Bai Chenxi, Miss Li Yang and Miss Bai Jie also gave great support for the project implementation. In particular we would like to thank Mr. Philippe Zahner, the incumbent counselor, who always found constructive solutions whenever the project encountered difficulties and was stalled. He played a critical role in helping the project to finally succeed.

The support given by the project management office is highly appreciated. Mr. Zhang Ruijie, director of PMO, together with project managers Mr. Jin Qing, Mr. Weng Weili, Mr. Xie Hongxing and Mr. Wang Boyong are professionals with both expertise and enthusiasm for the research project. They coordinated and participated in all field trip studies of this project.

We also acknowledge the support provided by government officials in the pilot cities, including those from Dezhou, Baoding, Kunming, Meishan, Yinchuan and Dongcheng District in Beijing. Under the coordination of PMO, the research team conducted several field trips in these pilot cities for interviews, indicator testing and data collection. Special thanks to Dezhou Energy Monitoring Commission, the School of Economics and Management at North China Electric Power University, and the carbon indicator system research team at Kunming Low-Carbon Development Research Center.

We owe the success of the project also to Mr. Robert Harbaty, a Swiss expert who brought in advanced concepts and methodologies from Europe, and to Mr. Jiang Zhaoli, Division Chief in Department of Climate Change in National Development and Reform Commission, who provided both guidance and motivation for the project team.

Dr. Pan Jiahua, director-general of the Institute for Urban and Environmental Studies at the Chinese Academy of Social Sciences, was the leader of the research team. Dr. Zhuang Guiyang (Senior Research Fellow) was the acting team leader, and Dr. Zhu Shouxian

(Associate Research Fellow) took responsibility for overall coordination of the project. Dr. Zhang Ying (Associate Research Fellow), Dr. Xiong Na, Dr. Cui Yuqing, Dr. Yuan Lu, Dr. Zhou Yamin, Mr. Li Qing (Senior Engineer), Dr. Mu Haoming and Mr. Liang Benfan participated in the research and made important contributions to the project.

Dr. Pan Jiahua and Dr. Zhuang Guiyang have presented the research output on a variety of occasions, including both domestic and international conferences. During the United Nations Climate Change Conference in Durban in December 2011, the project team presented the research output at the China Session and the exhibit booth of the China Sustainable Development Research Center at the Chinese Academy of Social Sciences, attracting wide attention and interest among conference participants. We are pleased to see that the results of three years of hard work have finally met with readers, yet more importantly, we also hope to see more and more cities benefiting from the application of such an indicator system and guidelines in their low-carbon development. We are willing to provide further intellectual support for cities' low-carbon development efforts, as always.

Professor Pan Jiahua

Director-General of Institute for Urban and
Environmental Studies
Chinese Academy of Social Sciences
May 30, 2013

Project Team

Consultants

Philippe Zahner, Counselor, Swiss Agency for Development and Cooperation

Walter Meyer, former Counselor, Swiss Agency for Development and Cooperation

Jiang Zhaoli, Division Chief, Department of Climate Change at the National Development and Reform Commission

Research Team

Team leader:

Pan Jiahua, Professor and Director-General, Institute for Urban and Environmental Studies, CASS

Executive team leader:

Zhuang Guiyang, Professor, Institute for Urban and Environmental Studies, CASS

Leading Researchers:

Zhu Shouxian, Associate Research Fellow, Institute for Urban and Environmental Studies, CASS

Zhang Ying, Associate Research Fellow, Institute for Urban and Environmental Studies, CASS

Cui Yuqing, International Cooperation Center, Ministry of Environmental Protection

Xiong Na, Post-Doctoral Fellow, Institute for Urban and Environmental Studies, CASS

Yuan Lu, PhD student, Institute for Urban and Environmental Studies, CASS

Li Qing, Senior Engineer, Institute for Urban and Environmental Studies, CASS

Other Participants:

Liang Benfan, Research Fellow, Institute for Urban and Environmental Studies, CASS

Zhou Yamin, Post-Doctoral Fellow, Institute for Urban and Environmental Studies, CASS

Mu Haoming, Post-Doctoral Fellow, Institute for Urban and Environmental Studies, CASS

Support Team from Kunming

Zheng Yixin, Vice President, Senior Engineer, Kunming Institute of Environmental Science

Zhang Dawei, Associate Director, Engineer, Kunming Institute of Environmental Science

Li Zhongjie, Engineer, Kunming Institute of Environmental Science

Fu Rong, Assistant Engineer, Yunnan Chengshui Environmental Engineering Co. Ltd

Xu Yilei, Assistant Engineer, Yunnan Chengshui Environmental Engineering Co. Ltd

Yang Zhi, Engineer, Kunming Institute of Environmental Science

Mi Wei, Assistant Engineer, Yunnan Chengshui Environmental Engineering Co. Ltd

Support Team from Baoding

Wang Jingmin, Professor and PhD Advisor, Department of Economics and Management at North China Electric Power University; Research Fellow, Baoding Low-Carbon Development Research Institute

Yin Xulong, Senior Engineer, Baoding Low-Carbon Office

Wu Wenxin, Senior Engineer, Baoding Low-Carbon Office

Ge Xiaolei, Senior Engineer, Baoding Low-Carbon Office

Sun Wei, Lecturer, Department of Economics and Management at North China Electric Power University; Researcher, Baoding Low-Carbon Development Research Institute

Zhang Shuguo, Associate Professor, Department of Economics and Management at North China Electric Power University; Research Fellow, Baoding Low-Carbon Development Research Institute

Kang Junjie, PhD candidate, Department of Economics and Management at North China Electric Power University

Zhu Daoping, PhD candidate, Department of Economics and Management at North China Electric Power University

Support Team from Dezhou

Wang Shiyan, Senior Economist, Party member of Dezhou Economic and Information Technology Commission; Director, Dezhou Energy Monitoring Commission

Yin Hongkun, Senior Engineer, Deputy Director, Dezhou Energy Monitoring Commission

Ren Xianggui, Senior Engineer, Dezhou Energy Monitoring Commission

Yu Lei, Dezhou Energy Monitoring Commission

Wang Guodong, Engineer, Dezhou Energy Monitoring Commission

Xin Ting, Dezhou Energy Monitoring Commission

Project Management Team

Zhang Ruijie, Director, Sino-Swiss Low-Carbon City Project Office

Jin Qing, Administrative and Financial Manager, Sino-Swiss Low-Carbon City Project Office

Weng Weili, Technical Manager, Sino-Swiss Low-Carbon City Project Office

Wang Boyong, Low-Carbon Transportation Manager, Sino-Swiss Partnership Low-Carbon City Project Office, Sino-Swiss Low-Carbon City Project Office

Xie Hongxing, Low-Carbon Industry Manager, Sino-Swiss Low-Carbon City Project Office

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