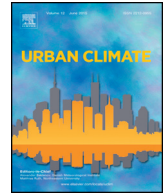




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China's adaptation to climate & urban climatic changes: A critical review

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ABSTRACT

Since the conclusion of the 2014 Climate Summit in New York and the 21st Conference of the Parties (COP21) in Paris, China has been actively advancing its national policies on climate change mitigation and adaptation since more unpredictable extreme weather events are expected, which may incur a heavy cost in terms of economics and public health. Since China is still in the process of urbanisation, the greatest challenge it faces is finding a balance between economic growth and keeping carbon dioxide and greenhouse gas emission rates at a manageable level. Cities in China play a key role in the implementation of the central policies and make concrete actions in response to climate change. With reference to a series of recent policy papers and action plans as the background, this paper attempts to provide a critical overview of China's climate change action plans from the national to the city and urban level. It seeks to understand whether the proposed responses to climate change and strategies for actions on greening and air corridors for cities and urban areas are appropriate. It is found that for China to advance its urban climatic adaptation strategy there is a need for (1) urban data, (2) a cross-disciplinary impact assessment, and (3) the development of a market and policy transformation mechanism.

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1. Introduction

In the face of global economic integration, there is a growing trend and need for the world community to deal with the growing environmental issues with joint efforts (Keohane, 2002; Chen, 2012). Global warming and climate change caused by greenhouse gas emissions are now at the top of the global agenda (UN-Habitat, 2011; IPCC, 2014). As the largest developing country in the region of East Asia, China contributes a dominant and increasing share of greenhouse gas (GHG) emissions. This has naturally attracted international attention and concern (Chen, 2012). Since 2014, China has actively embarked on a number of policies and action plans on the subject of climate change. However, it is never an easy task to understand China's climate change policies. They are not only related to the issues of national image, domestic and foreign policy, transnational co-operation, energy cost and economic growth, but also motivated or driven by other factors such as ecological protection, growing public awareness and civil society's attitude (Chen, 2012; Zhang, 2003; Economy, 1997; Economy, 1998; Hatch, 2003).

China is still in the process of urbanisation. The central government's 13th five-year plan predicts that the country's urbanisation level will reach 70% in 2050. Thus, the greatest challenge for China is to find a balance between economic growth and keeping carbon dioxide and greenhouse gas emission rates at a manageable level (Chen, 2012; Zeng et al., 2008). Cities in China play a key role in the implementation of the central policies and make concrete actions in response to climate change.

Unlike many other studies that attempt to explain China's climate change policies from a purely economic or political perspective, this paper aims to provide an overview of China's climate change strategies and actions to dissect its policy papers and action plans critically at both the national and city levels. Firstly, the paper examines China's climate change policy papers and plans not only in the context of global climate change, but also against its domestic contextual circumstances. Some of its key motivations may then be better positioned; some of its key claims of deliverables better contextualised; and a perspective of its path ahead better visualised. In so doing, the effectiveness of China's strategies and road maps may be better appreciated, and some of the many obstacles it is going to face may be better delineated. Secondly, China's National Climate Change Programme is outlined to provide a background and context of its adaptation plans. Thirdly, the paper analyses the 'China's Policies and Actions for Addressing Climate Change' report and five highlights from it. It is argued that since the priority of economic growth is set by the central government, and the multi-layer inter-governmental bureaucratic structure strictly follows China's top-down political system, it is very difficult to examine the performance of those adaption plans and strategies. It is also hard to tell whether or not they can be followed and practiced in reality at the city level, because there is no specialised legislation and implementation mechanism to supervise and guarantee the performance of the climate change actions in China. Fourthly, the paper introduces China's recent effort to relate its climate change policies to urban climate and its series of policy papers and action plans for cities since 2014, all of which are related to the growing public awareness on environmental problems and the people's call for an improved quality of life. Among them, the Greening Masterplan and Air Corridor Masterplan are two key measures designated by the central government. Three selected examples of Wuhan, Macau and Hong Kong are introduced and discussed and an insight is offered into how local government and researchers can work together to evaluate urban climatic conditions and implement corresponding application strategies to local urban development in the adaptation to climate change. Lastly, based on the lessons learnt from the application in China, the paper concludes and highlights that there are three urgent needs in a country's response to climate change: 1) an available, accessible and standard urban database for cities in China; 2) cross-disciplinary collaboration and impact assessment; and 3) a market and policy transformation mechanism.

1.1. International context: the 2014 climate summit

The 2014 Climate Summit aimed to raise political momentum for a meaningful universal climate agreement in Paris in 2015 and to galvanize transformative action in all countries to reduce emissions and build resilience to the adverse impacts of climate change. So when UN Secretary-General Ban Ki-Moon gave the opening address in this Summit, the key message was "Humanity has never faced a greater challenge than climate change". On the same occasion, Chinese Vice-Premier Zhang Gao-Li, representing Asia's largest contributor to CO₂ emissions, made a response and promised that, "We will announce post-2020 actions on climate

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