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**ANALYSIS ON CLIMATE POLICIES OF CHINA,  
THE UNITED STATES AND THE EUROPEAN UNION**

张焕波/著



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## 序

2009 年之初，世界期待奇迹和转折。事实上，“转变”正是美国新科总统奥巴马对美国也是对世界的承诺。这个在前任期间经历了“9·11”、阿富汗战争、伊拉克战争、“卡特琳娜”飓风的超级大国，在奥巴马竞选之时下马威似地呈上一个百年一遇的金融危机。一夜间，危机席卷全球，中国也未能幸免其影响。然而正当欧美各国仍在为危机寻求出路之时，中国经济却“V”字形地复苏，奇迹发生了！

世人期待的另一个影响更大、更为深远的奇迹和转折是计划在 2009 年底召开的哥本哈根气候变化大会。经历了十几年的谈判和全球各国政府和民间的努力，人们渴望在哥本哈根会议上就全球气候保护达成一个公平、远大、具有约束力的全球协议。美国在气候变化问题上态度的转变更加强化了人们的这种期待。与其前任在气候变化问题上的消极态度形成鲜明对比，奥巴马在竞选期间就气候变化问题多次做出承诺，并希望美国在气候变化问题上发挥领导作用。与此同时，欧盟各国也就温室气体排放问题协调各成员国的立场，希望能够满足政府间气候变化委员会（IPCC）所提出的最低目标，即发达国家到 2020 年温室气体排放比 1990 年减少 25% ~ 40%。同时，各国政府和媒体在各种场合纷纷把目光投向美国和中国，据称是世界上两个最大的温室气体排放国。他们认为美中两国占世界温室气体排放总量的 2/5，如果两国之间就排放问题达成协议，那么，气候变化谈判将会顺风顺水、易如反掌。

看似在迎合这种舆论和喧嚣，美国新政府上台之初就声称与中国在清洁能源和应对气候变化等领域加强合作。在 2009 年初的首次对华访问中，美国国务卿

希拉里·克林顿将环境、能源和气候变化问题列为重点。一周后，气候变化特使也拜会中方同行。一时间，气候外交拉开序幕。果然不久，被认为是气候问题障碍重重的美国国会也派出了以其议长为首的众议员代表团来华访问，就气候变化问题进行磋商，参议院外交委员会主席也接踵而至。其后，美国能源部和商务部两位华裔部长也率领阵容庞大的政府代表团来到北京，所谈之事无非气候变化和清洁能源合作。美国政府如此频繁地高规格访华，而且主要针对同一个议题在中美外交史上即便不是绝无仅有也必定是实属罕见的。而所有这些也不过是为 11 月的总统访华和 12 月份的哥本哈根大会预演和热身而已！

时隔数月，回眸去年 11 月中美关于清洁能源合作的若干协议和 12 月哥本哈根会议最后一刻达成的所谓“哥本哈根协议”，多数人会认为当初的期待的确过高，而奇迹并没有如期出现！

的确，应对气候变化是一个十分复杂的问题，其困难程度超出多数人的想象。困难的原因之一是它涉及利益，更涉及公平和正义；它涉及此时此地，更涉及未来和全球；它是一个科学和经济问题，更是一个政治和伦理问题。国家、集团间的利益纠葛、博弈，局部和全局上的得失权衡、谋略，注定了气候变化谈判之艰难。而把焦点对准中国，把希望寄托于一个刚刚兴起但仍有数千万贫困人口的国家，显然是极不现实的，同时也有失公允。

对谈判的每一方面而言固然需要知己知彼，而对全人类来说更重要的在于在信息充分的基础上集体做出智慧的决策和协调的行动。无论出于何种目的，理解世界主要经济体在气候问题上的观念、政策和策略都是必不可少的。这也正是本书的主题，也是张焕波博士在清华大学博士后工作站期间的研究课题。

2007 年夏天，焕波从中科院博士毕业来到清华大学公共管理学院开展博士后研究工作。他和几个博士生、硕士生一起组成一个气候政策研究小组。张焕波是这个小组的负责人，在博士后期间，他做了大量关于气候变化政策、低碳经济的研究工作。这个团队合作研究的一些内容和成果也包括在本书当中。本书主要基于他的博士后出站报告，并新增了他近期的一些研究工作。这本书系统介绍和分析了中国、美国和欧盟的政策，并就中国气候变化应对和低碳经济发展做了一些思考，提出了许多有意义的见解和对策，具有重要理论价值和实践价值。从深层次剖析这些气候政策背后的机制、原理以及对未来气候政策趋势的推断是本书的核心内容和价值所在。关于碳关税、低碳技术转让、欧盟气候领导力、中国

2020 年的碳目标、低碳城市发展思路、低碳经济概念等问题，书中有许多新颖的观点，值得读者去思考。

中国在节能以及温室气体减排上的努力本身就是对全球应对气候变化的巨大贡献，同时也是中国转变经济发展方式本身的迫切要求。中国现在的经济、社会发展处在一个特殊的阶段——以大规模、高速度为基本特征的工业化和城市化的中期。当前的工业发展和城市建设对今后十几年、几十年的能源消耗有着极其深远的影响。从长远来说，发展低碳经济是实现我国经济社会可持续发展的必然选择，走低碳化道路是中国发展的必由之路。要把气候变化纳入国民经济和社会发展规划，引导各级政府培育以低碳排放为特征的新经济增长点，加快建设以低碳排放为特征的产业体系。

在本书与读者见面之际，清华大学气候政策研究中心也将正式成立。希望更多的年轻学者投入到气候变化政策和低碳发展研究，使中国在新一轮产业革命中能够领跑世界。

齐 晔

2010 年 4 月于清华园



## Preface

The world was expecting a miracle and turn at the beginning of 2009. In fact, “change” is the commitment of the newly elected U.S. President Obama to the United States as well as the world. The superpower that experienced the “911”, the Afghan War, the Iraq War and Hurricane Katrina during the term of the previous administration dealt a head-on blow when Obama ran for presidency by presenting a 100-year financial crisis. Overnight, the crisis swept the globe, and China was no exception. Yet when European and American countries were still seeking a way out of the crisis, China’s economy was undergoing a V-shaped recovery. A miracle has happened!

The world had been expecting the Climate Change Conference scheduled to be held at the end of 2009 in Copenhagen to deliver a miracle and turn that have a greater and more profound impact. After more than a decade of negotiations and governmental and non-governmental efforts around the world, people were desirous to reach a fair, ambitious and binding global agreement on global climate protection at the Copenhagen meeting. Change in the attitude of the United States towards climate change further strengthened people’s such expectation. In sharp contrast to his predecessor’s negative attitude towards climate change, Obama made a commitment to climate change several times during his election campaign and hoped that the United States could play a leading role in climate change. Meanwhile, the European Union also coordinated the positions of member states on greenhouse gas emissions in the hope of meeting the minimum target proposed by the Intergovernmental Panel on Climate Change (IPCC), namely cutting greenhouse gas emissions of developed countries by 25% to 40% below 1990 levels by 2020. At the same time, governments and media around the world on various occasions looked to the United States and China, allegedly the world’s two largest emitters of greenhouse gases. They thought that the United States and China accounted for two-fifths of the world’s total greenhouse gas emissions and if the two countries reached an agreement on emissions, then climate change negotiations would proceed smoothly and be as easy as winking.

Seeming to cater to this kind of public opinion and the clamor, the new U.S. administration at its beginning already said it would strengthen cooperation with China in areas including clean energy and climate change. In her first visit to China in early



2009, U.S. Secretary of State Hillary Clinton put the environment, energy and climate change at the top of her agenda. The climate change envoy who just took office one week ago also accompanied the Secretary of State and visited his Chinese counterpart. Soon climate diplomacy began. As expected, soon the U.S. Congress that had been considered as obstacles to climate change agreement also sent a delegation of members of the U.S. House of Representatives headed by its speaker to China to exchange views on climate change. They were rapidly followed by chairman of the Senate Foreign Relations Committee. Thereafter, heads of the U.S. Department of Energy and Department of Commerce who are ethnic Chinese also led a large government delegation to Beijing. The things talked about were none other than climate change and clean energy. The U.S. government's so frequent high-profile visits to China mainly over the same subject are really rare, if not unique in Sino-U.S. diplomatic history. But all these were nothing more than rehearsal and warm-up for the presidential visit to China in November and the Copenhagen Conference in December!

After the lapse of several months, looking back at the several agreements on cooperation in clean energy signed between China and the United States in November last year and the so-called "Copenhagen Protocol" reached in the last minute at the Copenhagen Conference in December, most people will think they indeed had expected too much. The miracle didn't appear as expected!

Indeed, coping with climate change is a very complex issue and is more difficult than most people imagine. One of the reasons why it is difficult is that it involves the interests and more importantly fairness and justice; it involves the present and specific places, as well as the future and the world; it is a scientific and economic issue, as well as a political and ethical issue. Disputes over and conflicts of interest between countries and groups and consideration of pros and cons and strategic plotting at local and global levels predestined the arduousness of climate change negotiations. Sharpening the focus on China and pinning hopes on a country that is rising but still has tens of millions of people living in poverty is obviously very unrealistic and also unfair.

For each party to the negotiations, no doubt it is necessary to know itself and its opponent, while for all mankind, it is more important to collectively make wise decisions and take coordinated actions based on sufficient information. Regardless of the purpose, it is essential to understand the world's major economies' ideas, policies and strategies on climatic issues. This is exactly the theme of the book, and was also the research subject of Dr. Zhang Huanbo during his stay at the post-doctoral workstation of Tsinghua University.

In the summer of 2007, Zhang Huanbo came to the School of Public Policy and Management of Tsinghua University to conduct postdoctoral research after graduating from the Chinese Academy of Sciences with a doctoral degree. He along with several

doctoral and master students formed a climate policy research team. Zhang Huanbo was the head of the team and did a lot of research on climate change policies and low-carbon economy during the postdoctoral period. Some of the contents and results of the team's research are also included in the book. The book is mainly based on his Post-Doctorate Reports and covers some of his recent research. The book systematically introduces and analyzes policies of China, the United States and the European Union, does some thinking about China's response to climate change and low-carbon economy, puts forward many significant ideas and countermeasures and has important theoretical and practical values. The book's core content and value consist in deep analysis of the mechanisms and principles behind these climate policies and inference about the trend of future climate policies. The book's many innovative views and judgments on carbon tariffs, low-carbon technology transfer, EU's climate leadership, China's carbon target for 2020, thinking about low-carbon city development, the concept of low-carbon economy and other issues are worth thinking about by readers.

China's efforts in energy conservation and greenhouse gas emissions reduction are an enormous contribution to global response to climate change. Meanwhile, such efforts are also in line with China's urgent need to change its way of economic development. China's current economic and social development is still at a particular stage—the intermediate stage of industrialization and urbanization with large scale and high speed as the essential characteristics. The current industrial development and urban construction have an exceedingly profound impact on energy consumption in the next decade or so and several decades. In the long run, developing a low-carbon economy is an inevitable choice for achieving China's sustainable economic and social development and pursuing a low-carbon path is the only way of China's development. Integrating climate change into national economic and social development planning is conducive to guiding the efforts of governments at all levels to cultivate new economic growth points characterized by low carbon emissions and speeding up the construction of an industrial system featuring low carbon emissions in terms of policy orientation.

When the book is published, the Climate Policy Initiative of Tsinghua University will be formally established. We hope that more young scholars can devote themselves to the research on climate change policies and low-carbon development to make China the world's leader in a new round of industrial revolution.

Qi Ye

April, 2010, Tsinghua University Park

## 前 言

适应和减缓气候变化对人类社会的影响，已成为当今国际政治和环境外交的热点。研究各国应对气候变化的态度、政策及行动，以及这些行为对国际政治、经济、社会的影响，对于我国的气候谈判乃至国内政策的制定，具有重要的现实意义。

本书介绍和分析了美国、欧盟和中国的气候政策（主要是减缓方面的气候政策），并就中国如何实现低碳发展做了一些研究。主要内容分为六章。

第一章，对全球气候变化的影响做了说明，分析了气候变化对社会环境经济系统的影响，回顾了气候保护的国际进程。最后提出当前应对气候变化面临的挑战。

第二章，介绍和研究了美国在联邦层面和州与地方层面的气候政策。研究发现，美国州和地方层面的首创性气候政策和行动，对于联邦和国际层面都产生了重要的影响。这种首创性行动受到多方面因素的影响，例如，民主党主导的地方政府在气候政策方面，相对更为积极；地方政府在环境保护方面，有很大的权力空间；一些具有影响力的州的行动，发挥了领导力的作用。在气候变化问题上，奥巴马政府相比布什政府有了积极改变，但也存在很多问题：减排力度相对仍然较弱；在减排途径上严重依赖国外抵消；企图绑定发展中国家共同减排；试图建立以美国为中心的气候政策标准；等等。

第三章，介绍和研究了欧盟的气候政策。分析了欧盟 2012 年后的气候政策趋势，对当前欧盟的国际气候政策进行了解读，包括减排目标、《京都议定书》、碳关税与碳包含机制、对发展中国家的资金和技术支持、碳交易和 CDM 等问题。



研究了欧盟气候政策领导力问题：欧盟气候政策领导力受到国际领导力、能源安全、经济利益、成员国的领导力、组织制度、权力空间等因素影响。现在欧盟气候政策领导力又受到新的挑战：中期目标和国际抵消受到质疑；如何帮助发展中国家减排；内部成员国间协调难度增大；美国领导力的崛起；等等。

第四章，介绍和研究了中国的气候政策。介绍了中国应对气候变化方面的政策并做了评估；通过设定中国未来经济增长、能源效率提高和可再生能源使用比例提高三者之间的速度关系，研究了中国未来碳排放的可能路径。分析了2020年碳减排40%~45%的目标对中国经济的影响；对地方政府应对气候变化机制做了分析，研究发现，在地方政府的层面上，中央政府的重视与号召、政治升迁动机和经济利益这三个主要因素，促使地方政府在应对气候变化方面做出了响应。其他因素，包括实际气候变化的影响、能力和认识、远见和领导力也发挥了一定作用，但在大多数省份中只属于次要因素。

第五章，将美国、欧盟和中国的气候政策做了比较分析。从气候政策的效果、气候战略、气候政策工具三个方面做了总结分析；探讨了未来应对气候变化的道路。

第六章，研究了低碳相关概念，提出中国低碳发展的相关建议。在梳理总结国内外低碳概念的基础上，提出低碳经济概念、低碳城市的概念及实现途径；分析了低碳发展下企业的应对策略；指出低碳发展下中国面临的挑战；最后以京津冀经济圈为背景，从对低碳经济定位，确定低碳经济发展模式，培养低碳竞争优势三个方面提出中国低碳发展战略建议。

需要指出的是，书中的观点和建议只是作者一家之言，不代表任何机构。限于个人能力，书中难免会有遗漏和不正确的地方，恳请读者给予指正和谅解。

张焕波

2010年4月7日

# Foreword

How to adapt to and mitigate the impact of climate change on human society has become a hot topic in the current world political and environmental diplomacy. It is of great practical significance for China's international climate negotiation and domestic policy formulation to study the attitudes, policies and actions for climate change taken by other countries and the influence of such actions on international political, economic and social dynamics.

Characterized by introduction and analysis of climate policies (mainly focus on mitigation policy) adopted by the US, EU and China as well as study on how China would fulfill low-carbon development, this book falls into six chapters.

In Chapter One, the impact of climate change is illustrated with analysis on the impact on the socio-economy and environment systems and a review of the course of international climate protection. To end the chapter, challenges to address climate change are raised.

Chapter Two focuses on introduction and study of climate policies adopted by the US on federal, state and local levels. It is found that initiative policies and actions taken by states and localities have exerted important influence on both the federal and international levels. Such initiatives are driven by multiple factors, e.g. democratic dominant local governments are relatively positive in climate policy making, local governments are highly authorized in environmental protection and some influential states have played a leading role in action taking. There is also an analysis on climate policies adopted by the Obama administration under which certain positive changes have taken place compared with the Bush administration. However, an array of problems remain: insufficient emission reduction, heavy reliance on offset by other countries in terms of emission reduction channel, attempt to bind to developing countries and to set up a US centered climate policy standard, etc.

Chapter Three is introduction and study of climate policies adopted by EU and analysis on its policy trends after 2012. The current EU international climate policies are interpreted including issues on emission reduction targets, the Kyoto Protocol, carbon tariff and carbon inclusion mechanism, financial and technological support for developing countries, carbon trading and CDM, etc. Study is conducted on EU leadership in climate

policies such as impact on EU climate policy leadership of the international leadership, energy security, EU member leadership, organization systems and authorization space, etc. New challenges facing EU climate policy leadership are studied: questionable medium emission reduction targets and international offset, aid for developing countries in emission reduction, difficult coordination between member countries and emergence of the US leadership, etc.

Chapter Four is dedicated to introduction of China's policies addressing climate change and evaluation of such policies. By assuming the velocity relations between China's future economic growth rate, energy efficiency improvement and increase of renewable energy proportions, this chapter studies possible future channels of carbon emission in China. Analysis is conducted on impact of the targeted 40%-45% emission reduction by 2020 on China's economy, so is climate change addressing mechanism adopted by local governments which, as found in the study, have responded to climate change mainly motivated by the attention and call from the Central Government, desire for political career promotion and economic benefit. Other factors do play a role such as the actual climate change impact, competence and awareness, vision and leadership, but in most provinces, they are only minor motivations.

Chapter Five features a comparative analysis on climate policies between the US, EU and China from the perspectives of effect of climate policies, climate strategies and policy tools; also an exploration of the way ahead to addressing climate change.

Chapter Six contributes to study of low-carbon related concepts and proposals on low-carbon development in China. Concepts of low-carbon economy and low-carbon urbanism are brought forward together with the approaches to achievement based on summarized concepts from home and abroad. Analysis is done on business strategies in the context of low-carbon development and challenges faced by China in such context. At the end of the chapter, based on the Beijing-Tianjin-Hebei economic circle, strategic proposals are put forward on low-carbon development in China in aspects of positioning of low-carbon economy, definition of growth mode and cultivation of core competitiveness.

It is worth noting that the opinions and proposals contained herein represent no institutions but the author as an individual who is limited by capacity and shall feel much encouraged if any omissions or improper ideas are corrected by readers.

Zhang Huanbo  
April 26, 2010

## 第一章 气候变化的挑战 / 001

一 全球气候变化的影响	001
二 气候变化对社会环境经济系统的影响日趋严重	003
三 气候保护国际进程	004
四 面临的挑战	006

## 第二章 美国气候政策分析 / 009

一 美国碳排放与可再生能源发展情况	009
二 美国能源与气候政策	012
三 美国气候政策系统分析	026
四 奥巴马政府的气候政策新趋势	039

## 第三章 欧盟气候政策分析 / 052

一 欧盟碳排放与可再生能源发展情况	052
二 欧盟气候政策	057
三 欧盟 2012 年后气候政策	073
四 欧盟国际气候政策解读	078
五 欧盟气候政策领导力分析	094

## 第四章 中国气候政策分析 / 098

一 中国碳排放与可再生能源发展情况	098
二 应对气候变化的贡献	101



三 气候政策工具·····	108
四 中国应对气候变化政策评估·····	114
五 中国气候政策系统分析：地方政府应对气候变化的行为及 机制分析·····	116
六 中国碳排放未来趋势·····	136
七 40% ~ 45% 碳减排目标对经济的影响·····	141

## 第五章 比较分析 / 144

---

一 实际效果·····	144
二 气候战略·····	147
三 气候政策工具·····	149
四 政策过程·····	151
五 应对气候变化未来之路·····	152

## 第六章 中国低碳发展思考 / 156

---

一 低碳概念演变·····	156
二 低碳城市概念与实施路径·····	161
三 企业低碳发展·····	168
四 低碳发展下中国经济发展面临新的局势和特点·····	173
五 中国低碳发展战略思考：以京津冀经济圈为例·····	178

## 参考文献 / 188

---

## 后记 / 194

---

---

**Chapter 1 Challenge of Climate Change / 195**

---

- 1.1 The Impacts of Global Climate Change / 195
- 1.2 The Impacts of Climate Change on Social Environment  
and Economic System is Ever-increasingly Worsening / 197
- 1.3 International Progress in Climate Protection / 199
- 1.4 Challenges / 201

---

**Chapter 2 Analysis on US Climate Policies / 205**

---

- 2.1 Overview of Carbon Emission and Development  
of Renewable Energy in the US / 205
- 2.2 Policies on Energy and Climate in the United States / 208
- 2.3 Analysis on US Climate Policy / 224
- 2.4 New Trend of Climate Policies of Obama Administration / 238

---

**Chapter 3 Analysis on EU Climate Policies / 253**

---

- 3.1 Overview of Carbon Emission and Development  
of Renewable Energy in the EU / 253
- 3.2 EU's Climate Policies / 258
- 3.3 EU's Climate Policy after 2012 / 274
- 3.4 Interpretation for EU's International Climate Policy / 280
- 3.5 Analysis on EU's Leadership on Climate Policy / 297

---

**Chapter 4 Analysis on China's Climate Policies / 302**

---

- 4.1 Carbon Emission and Development of Renewable Energy in China / 302
- 4.2 China's Contribution in Responding Climate Change / 305
- 4.3 Climate Policy instrument / 314