LAMPIRAN

中华人民共和国国家发展和改革委员会

尊敬的克里斯蒂娜·菲格里斯女士:

作为联合国气候变化框架公约中方国家联络人，我谨此转交后附《强化应对气候变化行动——中国国家自主贡献》。

顺致最崇高的敬意。

中国国家发展改革委应对气候变化司司长

联合国气候变化框架公约中方国家联络人

2015年6月30日于北京

中国国家发展和改革委员会应对气候变化司
DEPARTMENT OF CLIMATE CHANGE, NATIONAL DEVELOPMENT & REFORM COMMISSION OF CHINA
No. 38, Yue Tan Nan Jie, Beijing, 100824, China, Tel: +86-10-68501567, Fax: +86-10-68505881

Beijing, 30 June 2015

To: Christiana Figueres
Executive Secretary
UNFCCC secretariat
P.O. Box 260124
D-53153 Bonn
Germany
Phone: (49-228) 815-1000
Fax: (49-228) 815-1999

Dear Madam Christiana Figueres,

In my capacity as China's National Focal Point for UNFCCC, I am writing to communicate as attached China's intended nationally determined contribution: *Enhanced Actions on Climate Change*.

Please accept, Madam, the assurances of my highest consideration.

SU Wei
National Focal Point for UNFCCC
Director-General
Department of Climate Change
National Development and Reform Commission
People's Republic of China

A. Implementing Proactive National Strategies on Climate Change

- To strengthen laws and regulations on climate change
- To integrate climate-change-related objectives into the national economic and social development plans;
- To formulate China's long-term strategy and roadmap for low-carbon development;
- To implement the National Program on Climate Change (2014-2020) and provincial climate programs; and
- To improve the overall administration of climate-change-related work and to make carbon-emission-related indicators play guiding role, by subdividing and implementing climate change targets and tasks, and improving the performance evaluation and accountability system on climate change and low-carbon development targets.

B. Improving Regional Strategies on Climate Change

- To implement regionalized climate change policies to help identify differentiated targets, tasks and approaches of climate change mitigation and adaptation for different development-planning zones;
- To strictly control greenhouse gas emissions in Urbanized Zones for Optimized Development;
- To enhance carbon intensity control in Urbanized Zones for Focused Development and to accelerate green and low-carbon transformation in old industrial bases and resource-based cities;
- To enhance the control of development intensity, to limit large-scale industrialization and urbanization, to strengthen the planning and construction of medium-and-small-sized towns, to encourage moderate concentration of population and to actively push forward the appropriate scale production and industrialization of agriculture in Major Agricultural Production Zones;7

- To define ecological red lines, to formulate strict criteria for industrial development and to constrain the development of any new carbon intensive projects in Key Ecological Zones; and
- To introduce a withdrawal mechanism for those industries that do not match with functions of development-planning zones and to develop low-carbon industries in line with local conditions and circumstances.

C. Building Low-Carbon Energy System

- To control total coal consumption;
- To enhance the clean use of coal;
- To increase the share of concentrated and highly-efficient electricity generation from coal;
- To lower coal consumption of electricity generation of newly built coal-fired power plants to around 300 grams coal equivalent per kilowatt-hour;
- To expand the use of natural gas: by 2020, achieving more than 10% share of natural gas consumption in the primary energy consumption and making efforts to reach 30 billion cubic meters of coal-bed methane production;
- To proactively promote the development of hydro power, on the premise of ecological and environmental protection and inhabitant resettlement;
- To develop nuclear power in a safe and efficient manner;
- To scale up the development of wind power;
- To accelerate the development of solar power;
- To proactively develop geothermal energy, bio-energy and maritime energy;
- To achieve the installed capacity of wind power reaching 200 gigawatts, the installed capacity of solar power reaching around 100 gigawatts and the

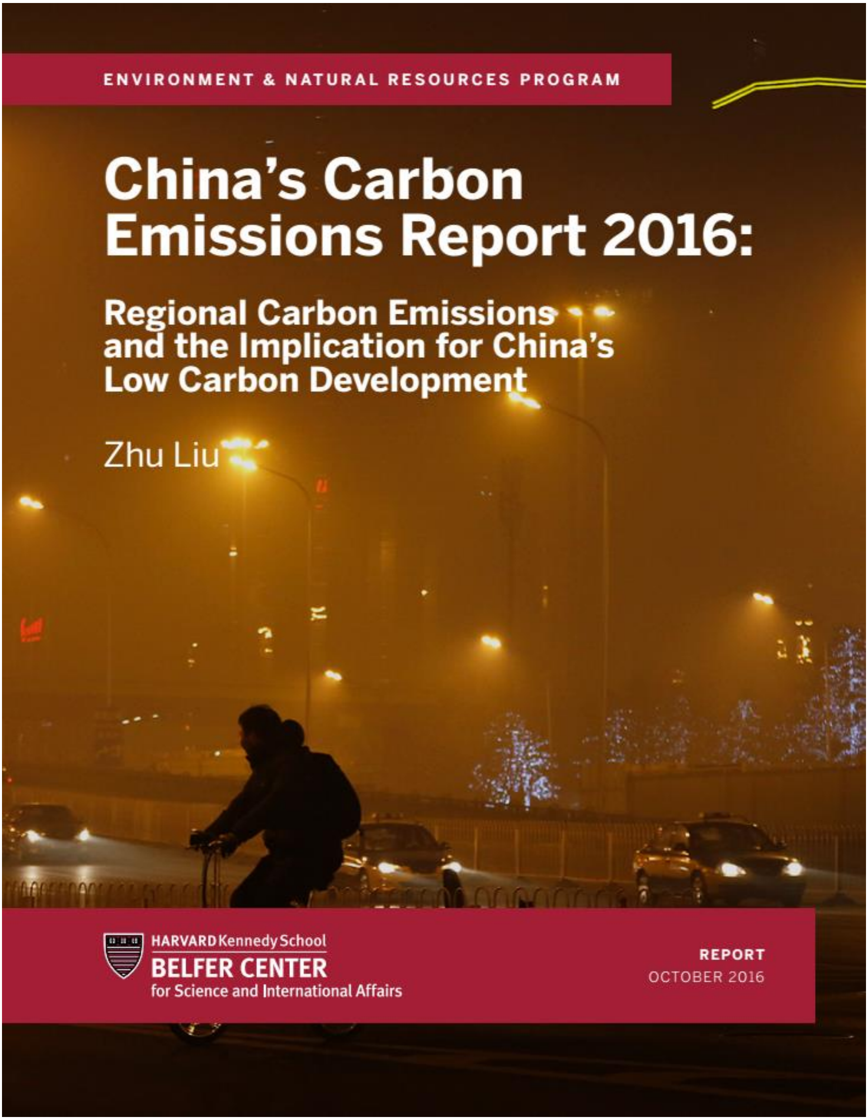
utilization of thermal energy reaching 50 million tons coal equivalent by 2020;

- To enhance the recovery and utilization of vent gas and oilfield-associated gas; and
- To scale up distributed energy and strengthen the construction of smart grid.8

D. Building Energy Efficient and Low-Carbon Industrial System

- To embark on a new path of industrialization, developing a circular economy, optimizing the industrial structure, revising the guidance catalogue of the adjustment of industrial structure, strictly controlling the total expansion of industries with extensive energy consumption and emissions, accelerating the elimination of outdated production capacity and promoting the development of service industry and strategic emerging industries;
- To promote the share of value added from strategic emerging industries reaching 15% of the total GDP by 2020;
- To promote low-carbon development of industrial sectors, implementing Action Plan of Industries Addressing Climate Change (2012-2020) and formulating carbon emission control target and action plans in key industries;
- To research and formulate greenhouse gas emission standards for key industries;
- To effectively control emissions from key sectors including power, iron and steel, nonferrous metal, building materials and chemical industries through energy conservation and efficiency improvement;
- To strengthen the management of carbon emissions for new projects and to actively control greenhouse gas emissions originating from the industrial production process;

- To construct a recycling-based industrial system, promoting recycling restructure in industrial parks, increasing the recycling and utilization of renewable resources and improving the production rate of resource;
- To phase down the production and consumption of HCFC-22 for controlled uses, with its production to be reduced by 35% from the 2010 level by 2020, and by 67.5% by 2025 and to achieve effective control on emissions of HFC- 23 by 2020;9
- To promote the low-carbon development in agriculture, making efforts to achieve zero growth of fertilizer and pesticide utilization by 2020;
- To control methane emissions from rice fields and nitrous oxide emissions from farmland;
- To construct a recyclable agriculture system, promoting comprehensive utilization of straw, reutilization of agricultural and forestry wastes and comprehensive utilization of animal waste; and
- To promote low-carbon development of service industry, actively developing low-carbon business, tourism and foodservice and vigorously promoting service industries to conserve energy and reduce carbon emissions.


ENVIRONMENT & NATURAL RESOURCES PROGRAM
China's Carbon Emissions Report 2016:
Regional Carbon Emissions and the Implication for China's Low Carbon Development
Zhu Liu
HARVARD Kennedy School
BELFER CENTER
for Science and International Affairs
REPORT
OCTOBER 2016

Executive Summary:

Climate change driven by anthropengic carbon emissions is one of the most serious challenges facing human development. China is currently the world's largest developing country, primary energy consumer, and carbon emitter. The nation releases one quarter of the global total of carbon dioxide (9.2 Gt CO_2 in 2013), 1.5 times that from the US. Nearly three-quarters (73%) of the growth in global carbon emission between 2010 and 2012 occurred in China. Without mitigation, China's emissions could rise by more than 50% in the next 15 years. Given the magnitude and growth rate of China's carbon emissions, the country has become a critical partner in developing policy approaches to reduce global CO_2 emissions.

China is a country with significant regional differences in terms of technology, energy mix, and economic development.[1] Understanding the characteristics and state of regional carbon emissions within China is critical for designing geographically appropriate mitigation policies, including the provincial cap and trade system that is projected to be lanuched in 2017. In this study, I summarize the key features and drivers of China's regional carbon emissions and conclude with suggestions for a low carbon policy for China.

The principal findings are:

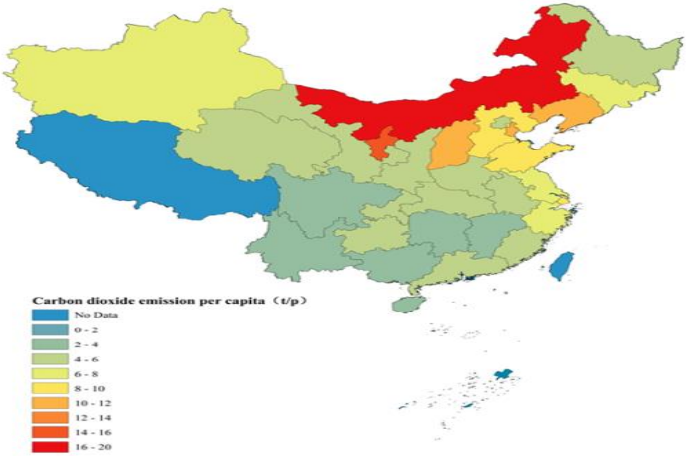
(1) Provincial aggregated CO_2 emissions increased from 3 billion tons in 2000 to 10 billion tons in 2016. During the period, Shandong province contributed most to national emissions, followed by Liaoning, Hebei, and Shanxi provinces. Most of the CO_2 emissions were from raw coal, which is primarily burned in the manufacturing and the thermal power sectors.

(2) Significant differences exist among provinces in terms of CO_2 emissions. Analyses of per capita emissions and emission intensity indicate that provinces located in the northwest and north had higher per capita CO_2 emissions and greater emission intensities than the central and southeast coastal regions. Developing areas have intensive resource use

and their economic structure is dominated by heavy industries with higher sectoral emission intensity. These areas contribute to most of the growth in national emissions and are the main drivers of China's carbon intensive economic structure.

(3) An analysis of the factors that affect China's CO_2 emissions shows that technology heterogeneity is directly connected to China's carbon growth. The dissimilar rate of adoption of energy efficient technologies among regions is a major barrier to China's CO_2 mitigation, and thus needs more attention from researchers and policy makers.

Figure 2. **CO_2 emissions per capita in 2012**



Belfer Center for Science and International Affairs | Harvard Kennedy School 9

The high levels of per capita CO_2 emissions in these underdeveloped regions can be explained by two factors: first, these regions serve as energy and resource bases which provide the electricity and industrial materials consumed in other regions. For example, more than one third of the power generated by Inner Mongolia is exported to other provinces, and the economic value of Inner Mongolia's total export to other provinces is equivalent to about 50% of the GDP produced by Inner Mongolia.[18,19] In comparison, the developed regions are mainly the consumers and the importers of the electricity and products supplied by less developed regions; for example, one-third of Beijing's electricity supply is generated by neighboring regions around Beijing. Second, the carbon intensity of these under-developed regions is much higher than that of the developed regions; for example, the carbon intensity of Inner Mongolia, Shanxi, and Ningxia is more than five times that of Beijing.

Figure 3. **China's Provincial Carbon Emissions from 1995-1998**

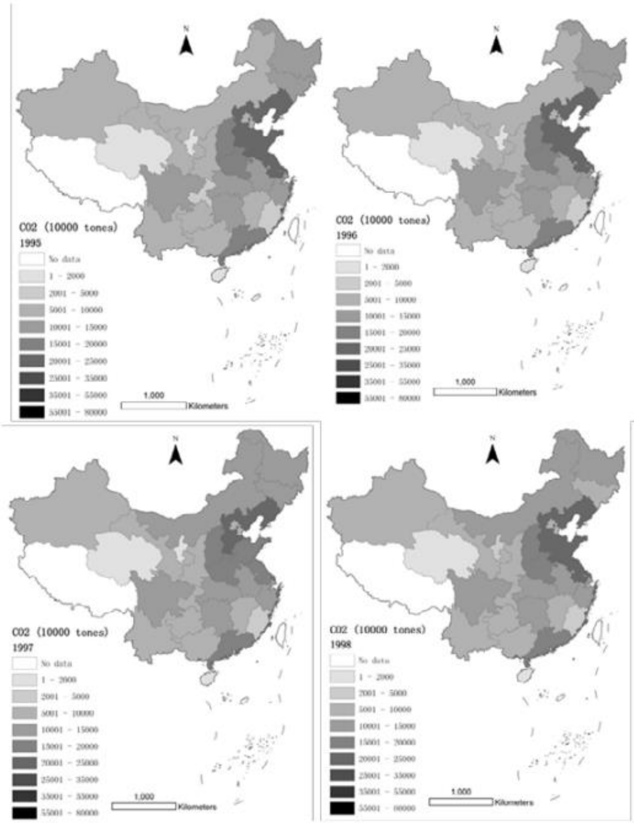


Figure 5. **China's Provincial Carbon Emissions from 2003-2006**

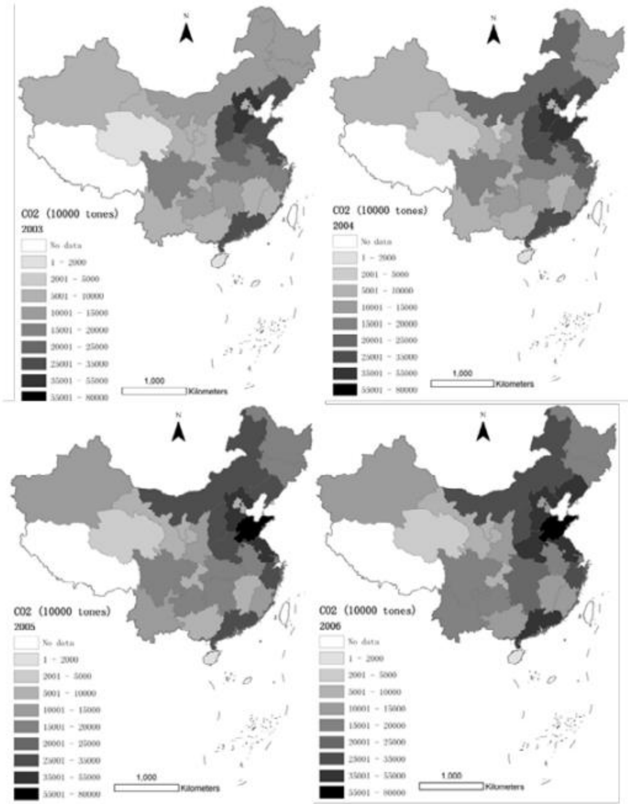
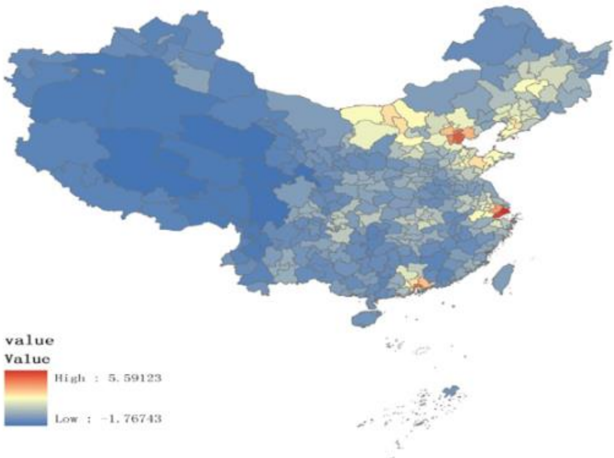


Figure 7. **Z value of Chinese City Carbon Emissions in 2008**



4. Driving factors of carbon emission

With the most available data from 1997-2009, the total carbon emission and emission intensity are shown in Figure 8 (base year: 1997). During the 1997-2009 period, total carbon emissions remained relatively constant between 1997 and 2001, sharply increased from 2002-2005, and slowed down slightly after 2005. Phase changes can also been seen in historical data of carbon emission intensity. In order to find reasons for such changes, Driving factors analysis was applied for the three periods of 1997-2001, 2002-2005, and 2006-2009, respectively.

From 1997 to 2001, total CO_2 emissions in China remained relatively stable, with a decrease in emission intensity. There was a dramatic increase in total emissions from 2002 to 2005, and the emission intensity increased accordingly. While total emissions have continued to increase since 2006, the emission intensity experienced a decrease after 2005. The analysis of driving factors is therefore broken down into these three time periods.

Figure 8. **Carbon Emission Intensity and Total Emission Index in China from 1997- 2009**

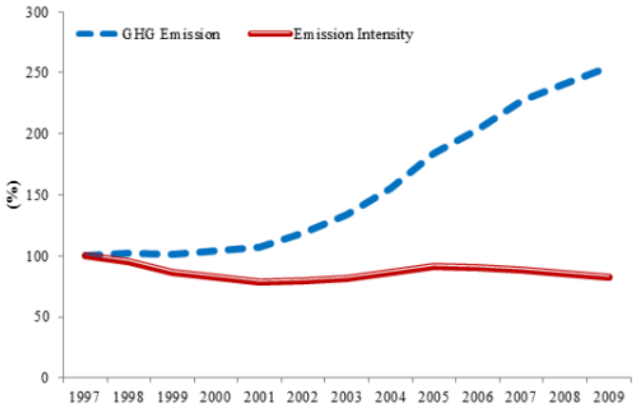


Figure 9. **Driving Forces behind Carbon Emissions of 30 Provinces from 1997-2009** (unit: million tons of CO_2)

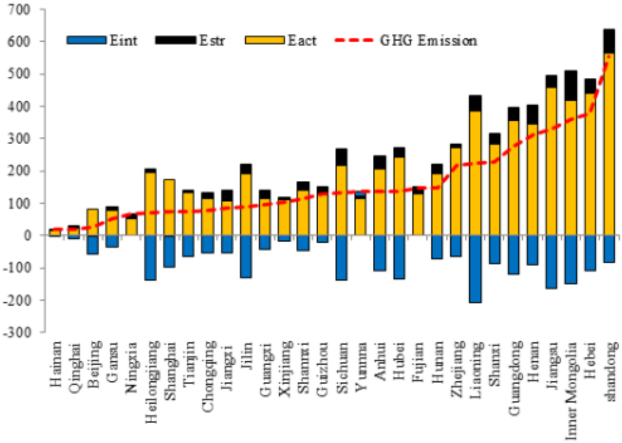


Figure 10. **Driving Forces for Carbon Emission of 30 Provinces from 1997-2001** (unit: million tons of CO_2)

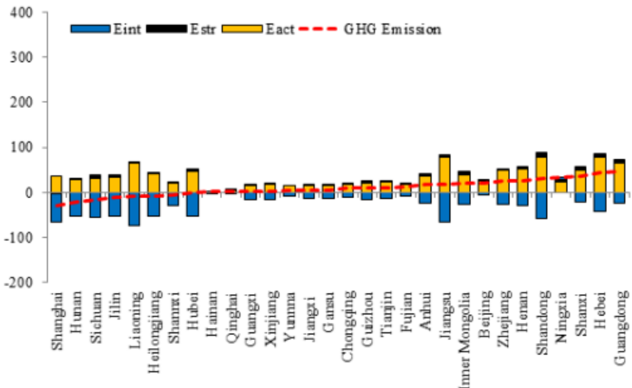


Figure 11. **Driving Forces for Carbon Emission of 30 Provinces during 2001-2005** (unit: million tons of CO_2)

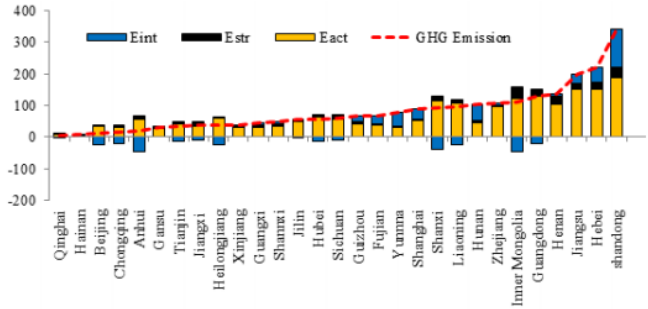
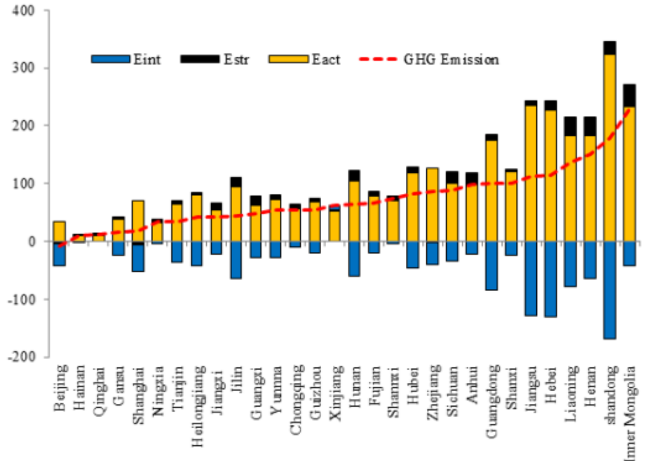


Figure 12. **Driving Forces for Carbon Emission of 30 Provinces during 2005-2009** (unit: million tons of CO_2)



Figures 9, 10, 11, and 12 represent the contribution from economic scale effect, economic structure effect, and technological level effect from 1997 to 2009, from 1997 to 2001, from 2002 to 2005, and from 2006 to 2009, respectively.

As shown in Figure 9, between 1997 and 2009, all provinces experienced a substantial increase in total carbon emissions. While technological advancement offsets part of the emissions increase, the economic structure effect and the proportion of heavy industry contributed positively in all provinces have been increasing.

From 1997 to 2001 (Stage I), the increase in total carbon emissions was limited, and most emissions driven by economic scale was offset by technological advancement (Figure 4.3). The total emissions of Shanghai, Hunan, and the Northeast region even declined due to economic structure adjustment. This structure effect in most provinces drove an increase in total emission.

From 2002 to 2005 (Stage II), all provinces experienced a dramatic increase in total carbon emission. The economic scale, economic structure, and emission intensity contributed significantly and positively to total carbon emission.

From 2006 to 2009 (Stage III), the provincial carbon emission levels continued to increase, represented by the increase in economic scale. While the emission intensity effect dropped significantly, the economic structure still relied on 'heavy' industry. However, with the decline in emission intensity, growth was half that in the preceding five years.