Low-Carbon Pilot Cities in China: Taking Guangyuan as an Example

Dr. Ying CHEN (cy_cass@163.com)
Institute for Urban and Environmental Studies (IUE)
Chinese Academy of Social Sciences (CASS)
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- Brief Introduction to China’s Climate Change Policy
- Urbanisation Process and Potential Impacts on Carbon Emissions
- Low-Carbon City Pilot and Demonstration Programme
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China’s Intended Nationally Determined Contributions (INDC)

- To achieve the peaking of CO$_2$ emissions around 2030 and making best efforts to peak early;
- To lower CO$_2$ emissions per unit of GDP by 60% to 65% from the 2005 level;
- To increase the share of non-fossil fuels in primary energy consumption to around 20%;
- To increase the forest stock volume by around 4.5 billion cubic meters on the 2005 level.
Achievement made by 2014

- **CO₂ emissions per unit of GDP** is 33.8% lower than the 2005 level;
- The share of **non-fossil fuels** in primary energy consumption is 11.2%;
  - The installed capacity of **hydro power** is 300 gigawatts (2.57 times of that for 2005);
  - The installed capacity of **on-grid wind power** is 95.81 gigawatts (90 times of that for 2005);
  - The installed capacity of **solar power** is 28.05 gigawatts (400 times of that for 2005); and
  - The installed capacity of **nuclear power** is 19.88 gigawatts (2.9 times of that for 2005).
- The **forested area and forest stock volume** are increased respectively by 21.6 million hectares and 2.188 billion cubic meters compared to the 2005 levels;
Policies and Measures to Implement INDCs

- Implementing Proactive National Strategies on Climate Change
- Improving Regional Strategies on Climate Change
- Building a Low-Carbon Energy System
- Building an Energy Efficient and Low-Carbon Industrial System
- Controlling Emissions from Building and Transportation Sectors
- Increasing Carbon Sinks
- Promoting the Low-Carbon Way of Life
- Enhancing Overall Climate Resilience
- **Innovating Low-Carbon Development Growth Pattern**
- Enhancing Support in terms of Science and Technology
- Increasing Financial and Policy Support
- Promoting Carbon Emissions Trading Market
- Improving Statistical and Accounting System for GHG Emissions
- Broad Participation of Stakeholders
- Promoting International Cooperation on Climate Change
Innovating Low-Carbon Development Growth Pattern

- To advance low-carbon pilots in provinces and cities;
- To conduct low-carbon cities (towns) pilots as well as low-carbon industrial parks, low-carbon communities, low-carbon business and low-carbon transport pilots;
- To explore diversified patterns of low-carbon growth;
- To research on effective approaches to control carbon emissions in different regions and cities;
- ……
Urbanization Process in China

Urbanization rate was about 54% in 2014 and is estimated to go up to 70% in 2030.

WB, 2012
Potential Impacts of Urbanization on Carbon Emissions

IEA estimated that Urban area consumes 67% of total energy and is responsible for over 70% of emissions

- Large number of migrants
- Public service: large scale infrastructure construction demands for heavy industry
- Housing: about 60bm² stock of existing buildings and 1.8bm² of new residential buildings built annually
- Employment pressure
- Lifestyle changed: more electronic appliances
- Energy mix: biomass to commercial energy
- Environmental impacts including carbon emissions
- ......
International Comparison of Urbanization and Carbon Emissions

Emissions intensity

50%-90%

Emissions per capita

55%-95%

Total Emissions

similar with peak of emissions per capita except some countries

Urbanization rate

similar with peak of emissions per capita except some countries

China
Can China Find Low Carbon Development Pathways in Provinces and Cities?

Low-Carbon City Pilot Programme:
- The First batch: 5 provinces + 8 cities (July 2010)
- The Second batch: 1 + 28 including Beijing, Shanghai, Guangyuan and etc. (Dec. 2012)
Recent Progress in Low-carbon Pilots and Demonstration

Of 42 pilot provinces and cities,
- 13 established low-carbon development funds
- 36 developed carbon reduction target decomposition and assessment mechanisms
- All have clearly put forward peak targets or are studying the issue, and the peak year proposed is 2025 or before.

U.S.-China Climate Leaders Declaration On the Occasion of the First Session of the U.S.-China Climate-Smart/Low-Carbon Cities Summit (Los Angeles, Sept. 15-16th 2015)
Basic information of Guangyuan City

- GY located in northern Sichuan Province, south-western of China, consisting of 3 districts and 4 counties with a long history. 16.3 thousand km² and 3.14 million population
- GY is the only low-carbon city pilot in Sichuan Province, also known as an excellent tourist city, national forestry city, national sanitary city.
- GY developed rapidly after “5.12” earthquake in 2008.
Reach 30% target of 12th Five Year Plan ahead of time

- CO₂/GDP reduced by 33.4% below 2010 level in 2014. CO₂ per capita is less than 1.5 tons.
Structural Adjustment

- Characteristic agriculture
- Strategic emerging industry
- Service (tourism, leisure activities, etc.)

Energy use growth (2006-2013)

Non-fossil fuel is 23.36% of energy mix
- Natural gas 180million m$^3$/y
- Methane from biomass (75% users in rural area)
- Hydro power 2.15 Gigawatts
- Other renewable energy 0.19 Gigawatts
Transportation and Buildings

- Public buildings retrofitted and managed to reduce energy use per m² by 3.2%, energy use per capita by 4%
- Green buildings pilot 2 projects
- Low-carbon pilot communities 12 (city level) and 24 (county level)
- Public transportation system including 150km special “green lane” for riding bicycle and hiking, 1000 bicycles for free, 6300 natural gas bus, etc.
Carbon Sinks

- Forestry coverage was about 54.6% in 2014, 2.3 percentage higher than in 2010. It is estimated that forestry can absorb 24.1 million tonnes in 2010, which is about 4.5 times of carbon emissions from fossil fuel.
Institutional Construction and Capacity Building

- Low-carbon Bureau as leading group
- Inventory of GHGs emission (2010 base year)
- Guidelines for low-carbon industrial park and community
- Carbon reduction target decomposition and low carbon assessment indicators for districts and counties
- Cooperation with institutes, universities and NGOs
- Training and education to raise the public awareness for low carbon lifestyle, for example, Low-Carbon Day initiated 5 years ago, 3 years before the central government; low-carbon information website; annual report on low-carbon city pilot, etc.
Thank you!