Ten Drivers Behind Climate Policy Making in China

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From a new narrative to a new paradigm

• The narrative of climate change has changed profoundly in China and it has brought fundamental shift in climate policy and action, domestically and internationally.
President Xi Jinping meets with visiting U.S. Secretary of State John Kerry
February 14, 2014

“"It is not at others' demand but our own will. We have already taken many measures (to address climate change) and will do more in the future.”

——President Xi Jinping

“不是别人要我们做，而是我们自己要做，采取了许多措施，今后我们还会这样做”——习近平
Global warming is a total, and very expensive, hoax!
— Donald J. Trump (@realDonaldTrump) December 6, 2013

• The concept of global warming was created by and for the Chinese in order to make U.S. manufacturing non-competitive.

• — Donald J. Trump (@realDonaldTrump) November 6, 2012
Driver No.1: Air Pollution Governance

Beijing Air Quality

PM 2.5 particles: 886
Ozone: -

Data: Live feed from US Embassy Chaoyang District
Last Update: 2013.01.12 20:00

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Measuring PM2.5

'Slightly polluted' or 'hazardous'?
## 2013 Air Pollution Prevention and Control Action Plan ("大气十条")

<table>
<thead>
<tr>
<th></th>
<th>Targets for 2017</th>
<th>Actual pollution reduction(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM2.5 reduction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beijing-Tianjin-Hebei area</td>
<td>25%</td>
<td>39.6% (25%-UNEP)</td>
</tr>
<tr>
<td>Yangtze River Delta region</td>
<td>20%</td>
<td>34.3%</td>
</tr>
<tr>
<td>Pearl River Delta region</td>
<td>15%</td>
<td>27.7%</td>
</tr>
<tr>
<td><strong>PM2.5 concentration in Beijing</strong></td>
<td>below 60 μg/m(^3)</td>
<td>58 μg/m(^3)</td>
</tr>
<tr>
<td><strong>PM10 reduction in cities at the prefecture-level</strong></td>
<td>10%</td>
<td>22.7%</td>
</tr>
</tbody>
</table>

Source: Ministry of Ecology and Environment, 2018
## Air Pollution Control through Coal Caps

<table>
<thead>
<tr>
<th>Coal Cap Target (10^4 ton)</th>
<th>Beijing</th>
<th>Tianjin</th>
<th>Hebei</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2635</td>
<td>4807</td>
<td>27465</td>
</tr>
<tr>
<td>2012</td>
<td>2300</td>
<td>5200</td>
<td>38900</td>
</tr>
<tr>
<td>2015</td>
<td>2000 (ideally 1500)</td>
<td>Increase &lt; 1500 (compared to 2010 level)</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>Decrease by 1300 compared to 2012 level</td>
<td>Decrease by 1000 compared to 2012 level</td>
<td>Decrease by 4000 compared to 2012 level</td>
</tr>
<tr>
<td>2020</td>
<td>1000</td>
<td>6300</td>
<td></td>
</tr>
</tbody>
</table>

Source: Annual Review of Low-Carbon Development in China (2014)
Driver No.2 Energy Transition

- Shift of energy system in composition, use, and efficiency, as a result of the changing technology, infrastructure, and institutions.
  - Renewable energy
  - Energy efficiency
  - Electrification (use of electricity)
Megatrends in China’s Energy Transition

1. Decelerated growth of energy consumption
2. Coal consumption peaked!
3. Energy intensity at all time low
4. Steady increase of electrification
5. Mainstreaming of natural gas
6. Accelerated decarbonization of energy system
1. Decelerated Growth of Energy Consumption

GDP and Energy Consumption in China (Standardized)

- GDP
- Primary Energy Consumption
- GDP Growth Rate
- Primary Energy Growth Rate

Growth Rate

GDP and Energy Consumption in China (Standardized)

- -5% 0% 5% 10% 15% 20%
- 0 500 1000 1500 2000 2500 3000

2. Coal Peak and the End of Coal-Fired Growth

2014: 4.12 billion tons, decreased by 3.0%
2015: 3.97 billion tons, decreased by 3.7%
2016: 3.78 billion tons, decreased by 4.7%
2017: 3.80 billion tons, increased by 0.04%
China’s Energy Structure

- Share of coal decreased from 76.2% in 1990 to 61.8% in 2016;
- Share of non-fossil fuels increased from 5.1% in 1990 to 13.0% in 2016

Source: Annual Review of Low-Carbon Development in China (2018)
3. Energy intensity at all time low

Long-term trend of energy intensity

Adapted from Qi, King et. al 2013. *Nature Geoscience*
Fast Improvement in Energy Efficiency

Energy Intensity: US vs China

- **US**: The energy intensity (kgoe/GDP) shows a steady decline, indicating improved energy efficiency over the years.
- **China**: The energy intensity also decreases over time, but at a slower rate compared to the US.

The chart illustrates the significant progress in energy efficiency in both countries since 1980.
4. Steady Increase of Electrification

Share of Electricity Consumption in End-use Energy Consumption (1996-2015)

Calculated by converting electricity to tce based on average coal consumption for power generation in that year (gce/kWh)

Conversion factor: 10,000 kWh = 1.229tce
5. Natural Gas Becomes a key Component as a Bridge Fuel in the Energy System

Natural Gas Consumption and its Share in China’s Energy Mix

- Natural Gas Consumption (in Ten Thousand COE)
- Share of Natural Gas in energy mix (%)
6. Accelerated Decarbonization of the Energy System
Driver No.3: Industrial Development

Growth of the Renewable Energy Industry (PV and Wind)

Share of renewable (excluding large hydro) in 2017: 21.9%

Accelerated substitution of coal by renewable sources

PV: New installation 53GW, >50% of global
Wind: 15GW, about ¼ of global
Share of investment in renewables increased from 13% in 2005 to 77% in 2017

Source: Annual Review of Low-Carbon Development in China (2018)
Driver No.4: Scientific Research

**Global Warming of 1.5°C**

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.
National Assessment Reports of Climate Change
Climate Change has Drawn Increasing Scholarly Attention

- 2012-2018, 22,492 peer-reviewed articles on climate science (Web of Science)
Growing Climate Science Research Contributed by Chinese Scholarship

No. of articles

2,241 articles
9.96% of total

US
England
Australia
China
Germany
Netherlands
Canada
Italy
Sweden
France
Driver No.5: International Climate Negotiations
Ed Miliband blaming China on Copenhagen failure

图片来源: Anja Niedringhaus/AP
Driver No. 6: International Collaboration

President Xi Jinping delivered a speech on the opening day of COP21, Nov 30, 2011
Bilateral and Multilateral Collaboration

Bilateral announcements:
• China-Europe Joint Announcement on Climate Change, June 2015
• China-US Joint Announcement on Climate Change (the 2nd), September 2015
• Joint China-France Statement on Climate Change, Nov 2015

Multilateral platforms:
• G20 Summit—G20 Presidency Statement on Climate Change, Guangzhou Sherpa Meeting, April 8, 2016
• BRICS Meetings
• Major Economies Forum on Energy and Climate
China-US Joint Announcement on Climate Change
November 12, 2014
Joint China-France Statement on Climate Change
Nov 2015
South-South Cooperation on Climate Change

• Facilitates South-South cooperation mainly in forms of material donation and capacity building.
  – Xi Jinping announced the “Ten-Hundred-Thousand” program: launching 10 low-carbon demonstration zones and 100 mitigation and adaptation projects in developing countries and training 1,000 officials for climate change

• 20 billion RMB Climate Fund for South-South Cooperation
Training for Officials from Developing Countries
Driver No.7: Global Governance

“Taking a driving seat in international cooperation to respond to climate change, China has become an important participant, contributor, and torchbearer in the global endeavor for ecological civilization.”

——President Xi Jinping

President Xi Jinping delivered a report to the 19th National Congress of the CPC, Oct 18, 2017
Driver No.8: Marketization

• “The **decisive role of the market** and a better role of the government in resource allocation”
  ——President Xi’s report to the 3rd plenary session of the 18th CPC National Congress, also written into the CPC Constitution
Trial Carbon Markets in Seven Provinces

- Covered approximately 3000 enterprises in more than 20 industries
- Total allowances (2013-2018) approximately 1.3 GtCO2e, slightly less than EU ETS
National Carbon Market Launched on Dec 19, 2017

• Apply to emissions from >1700 power plants, responsible for more than 3 GtCO₂, nearly 1/3 of China’s national emissions.

• The largest carbon market in the world

• Allowance allocation scheme still pending

• Expected to expand to industrial facilities (annual energy consumption >10 ktce or emissions 26 ktCO₂) in other industries such as petrochemical, chemical, construction, iron&steel, non-ferrous metals, paper, and aviation.
Driver No.9: Building an Ecological Civilization

• “Ecology and the environment is a major political problem that concerns the mission of the Party and a major social problem that concerns the livelihood of the Chinese people.”

——President Xi Jinping
Evolution of the Xi Jinping Thought on Ecological Civilization

Nov 2012 18th CPC National Congress

Oct 2015 Written into the 13th Five-Year-Plan

Oct 2017 Written into the Report to the 19th CPC National Congress and the CPC Constitution (Amendment)

Mar 2018 Written into the PRC Constitution (Amendment)

May 2018 National Congress on Ecology and Environmental Protection
Driver No.10: Environmental NGOs
## Strategies of NGOs for Different Target Groups

<table>
<thead>
<tr>
<th>Target Group</th>
<th>Primary action strategy</th>
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| **International**    | • International negotiation  
                        | • International communication                                 |
| **community**        |                                                               |
| **Governments**      | • Research consultation 
                        | • Policy advocacy  
                        | • Project collaboration                                     |
| **Businesses**       | • Corporate Social Responsibility  
                        | • Capacity building  
                        | • Information disclosure                                   |
| **Public**           | • Education outreach  
                        | • Awareness raising                                        |
Ten Drivers behind Climate Policy Making

1. Air pollution control
2. Energy transition
3. Industrial development
4. Scientific research
5. Climate negotiation
6. Marketization
7. Environmental NGO’s
8. International cooperation
9. Global governance
10. Eco-civilization