China’s ETS in the context of Paris agreement implementation

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China’s primary energy supply

Source: SSB 2017
Energy-related CO2 emissions
Policy measures deployed for addressing climate change over the past decade in China

- National energy conservation program
  - Targets + subsidy

- Measures for renewable energy
  - Targets + Feed-in tariff /subsidized tariff

- Electric vehicles program
  - Targets + Subsidy

- Energy performance standards for
  - Power generation sector
  - Manufacturing sector
  - Building sector
  - Transportation sector

- Public R&D supports for low carbon energy
  - Central government
  - Local governments
The share of non-fossil fuels in primary energy supply reached 13% in 2016.
Major policy gaps and/or deficiencies

- There is a lack of a primary carbon pricing program to address climate change;
- Too much reliance on subsidy
  - Financial sustainability
  - Cost-effectiveness
  - Fairness/equity
- Deficiencies in implementing energy performance standards
  - Inadequate MRV
  - Insufficient punishment for non-compliance
Transformation of energy and climate policy measures featured by “trading”?

- **Renewable energy policy**
  - Transit from feed-in tariff to feed-in premium;

- **Electric vehicles program**
  - The subsidy from the Central Government is to be phased out in 2020
  - An approach similar to that adopted by California is under discussion

- **National energy conservation program**
  - Subsidy was terminated by Ministry of Finance in 2013;
  - Energy savings trading program has been considered;
  - National emissions trading program was launched in December 2017 and is under construction
China’s national emissions trading program — A critical policy for the Paris Agreement

- A significant shift from the conventional programs which are often characterized by command-and-control and heavy fiscal subsidy
- It will involve 8 sectors and ultimately cover approximately one half of China’s total energy related CO2 emissions;
- To establish a nation-wide MRV system; and
- It will be implement by three stages: Infrastructure construction (one year), system test (one year), development and improvement; and
- A reasonable floor carbon price to honor its climate pledges.
China’s national ETS: an overview

- **Coverage**
  - 8 sectors covering the power sector and the main manufacturers
    - electricity/heat, iron & steel, non-ferrous metal, construction material, petrochemical engineering, chemical engineering, and civil aviation.
  - Emission: *direct emissions* from the burning of the fossil fuels and *indirect emissions* associated with the uses of electricity and heat

- **Threshold**
  - Threshold: 26000 tons CO2 emissions per year
  - Number of enterprises regulated: approximately 7500

- **Total emissions (direct):** 4.5 billion tons or a half of China’s total energy-related emissions

- **Allowance allocation methods**
  - Primary allocation method: *Output-based free allocation*
  - *Auction* is to be encouraged.
China’s national ETS is essentially a multi-region and multi-sector tradeable performance standard (TPS)

\[
\text{CAP} = \sum_{i=1}^{M} \sum_{j=1}^{N} S_j \times Q_{ij}
\]

Where

- $S_j$ — The national emission performance standard for sector $j$;
- $Q_{ij}$ — The actual physical output of sector $j$ in province $i$;
- $M$ — The number of the provinces and/or cities covered by ETS; and
- $N$ — The number of the sectors covered by ETS.
International pledges & national legally binding targets

- **NDC under the Paris Agreement**
  - To achieve the peaking of carbon dioxide emissions *around 2030 and making best efforts to peak early*;
  - To lower carbon dioxide emissions per unit of GDP by 60-65% by 2030 from the 2005 level; and
  - To increase the share of non-fossil fuels in primary energy consumption to around 20% by 2030.

- **National targets for the 13th Five-Year-Plan (2016-2020)**
  - Energy intensity target: reduce 15% relative to 2015
  - Carbon intensity target: reduce 18% relative to 2015
  - Non-fossil energy target: 15% of non-fossil fuels in primary energy supply by 2020
CO2 emissions paths for China’s NDC under consideration of three uncertainties from C-GEM

Uncertainties:
- Economic growth rate
- AEEI rate
- Subsidy for renewables

There are 27 scenarios in total and many scenarios are very close to and overlapped by the scenarios shown in the figure.
Floor carbon prices distribution over time in terms of Paris agreement implementation
Some new development

- New national conference on ETS promotion
  - Organized by MEE on 5-6 September
  - Participants: representatives from local DRC, local environment agency, and power companies

- Directive on cap-setting and allowance allocation
  - Proposed by NDRC and approved by the State Council in November 2016
  - Revision has been conducted by MEE

- Allowance allocation protocol for power generation sector
  - Subcategorization – three benchmarks
  - Benchmark stringency – under discussion
  - Enhanced support for nature gas electricity and heat
Some issues to be addressed

- ETS legislation
- Construction of ETS platforms
  - Trading platform
  - Registration
- ETS design
  - Sectoral benchmark development
  - Innovative auction options
  - Market stability mechanisms
  - Offset mechanisms
  - Integration of regional pilot ETS with the national ETS
- New capacity building
  - Training of provincial and local climate change governmental officials
Thank you for your attention.
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