

China's national emissions trading program: an overview

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China's climate policy initiative

International pledges & national legally binding targets

- **Copenhagen Climate Conference in 2009**
 - To lower carbon dioxide emissions per unit of GDP by 40-45% by 2020 from the 2005 level; and
 - To increase the share of non-fossil fuels in primary energy consumption to around 15% by 2020.
- **Paris Climate Conference in 2015**
 - 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.
- **The 12th Five-Year-Plan (2011-2015)**
 - Energy intensity target: reduce 16% relative to 2010
 - Carbon intensity target: reduce 17% relative to 2010
 - Non-fossil energy target: 11.4% of non-fossil fuels in primary energy supply by 2015.
- **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

The contexts of China's national ETS construction program

- China has been taking “*decreasing the economy's carbon intensity* (currently two times high of US)” as a primary way to control its CO2 emissions;
- Over 70% of China's energy-related emissions comes from energy sector and industry sector where more 70% of the emissions is from *the 7000 largest emitting companies*;
- Over 70% of China's electricity is used in industry sector and electricity generation is responsible for approximately one half of China's total coal consumption;
- The price of electricity, natural gas, and oil products (gasoline and diesel) is heavily controlled by the government rather than determined by the market; and
- The government favors ETS more than energy efficiency investment subsidy program and carbon tax.

The national ETS is defined by a set of performance standards in energy-intensive sectors

$$CAP_{ets} = \sum_i^M \sum_j^N \delta_{ij} B_j Q_{ij}$$

B_j - The national benchmark physical emissions intensity or performance standard of sector j ;

Q_{ij} - The total physical output of sector j in province i ;

δ_{ij} - The benchmark stringency adjustment factor of sector j in province i ($0 < \delta_{ij} \leq 1$);

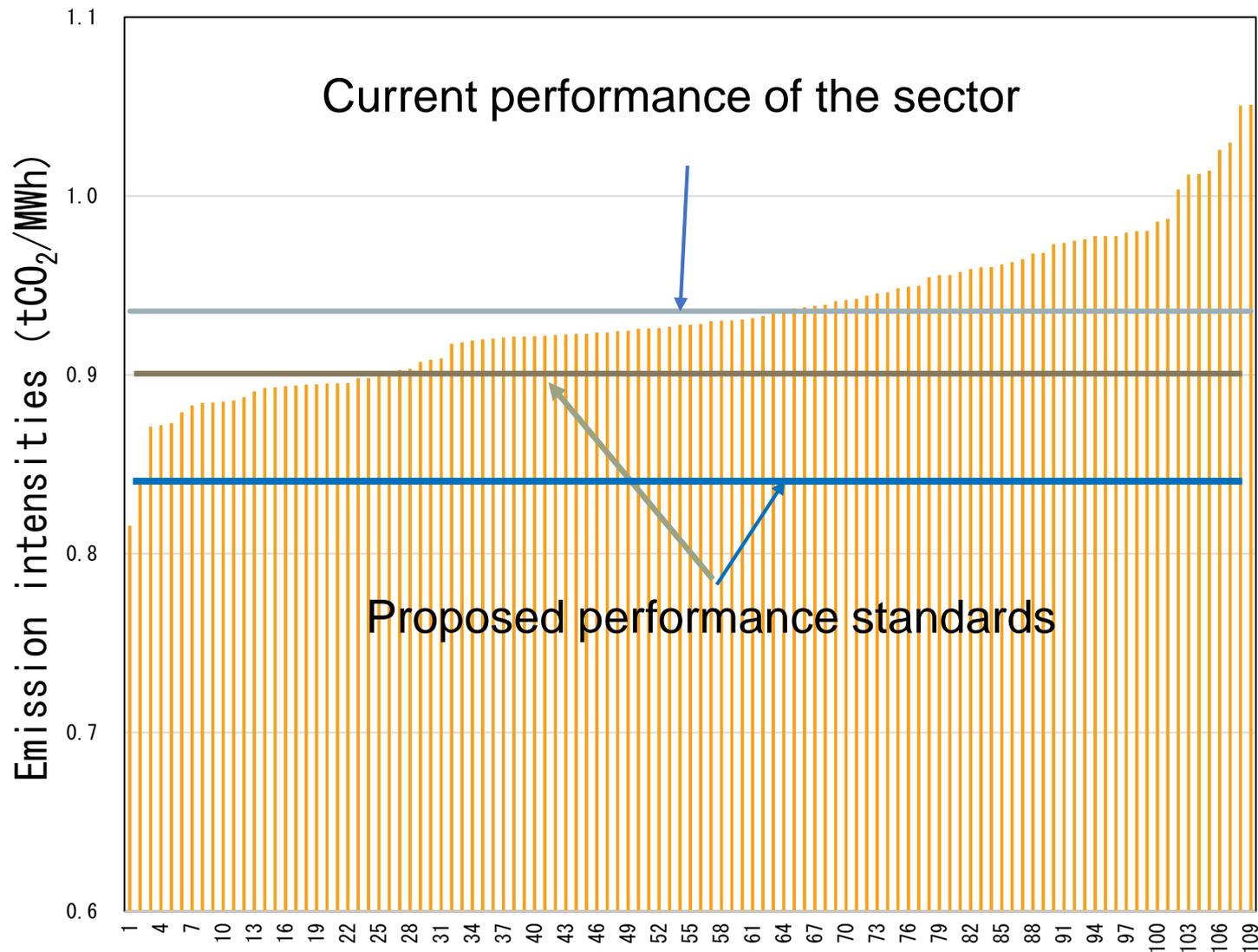
M - The number of the sectors covered by ETS; and

N - The number of the provinces/cities covered by ETS

Some highlights of China's national ETS design (cap setting, allowance allocation and coverage)

- The design follows experience with regional pilots.
- It is consistent with the pledge and national targets which focus on “decreasing emission intensity of the economy”.
- It focuses on the 7000 electricity and energy-intensive companies which contribute to one half of China's total CO2 emissions.
- It is also consistent with concerns about difficulties passing on costs to final energy users, and regulate both *direct emissions* and *indirect emissions* associated with the uses of electricity and heat.
- It encourages local governments to adopt more stringent performance standards/benchmarks.

The approach for setting a sectoral performance standard



The allowances allocation for a company covered by the ETS

- A two-step allowance allocation based on sectoral performance standard

$$a = \rho q_0 b \quad \textit{initial allocation}$$
$$aa = qb - \rho q_0 b \quad \textit{adjustment}$$

q_0 - The physical output of the enterprises in the previous year;

b - The sectoral benchmark physical emissions intensity;

ρ - The initial allocation factor ($\rho < 1$);

a - The initial allocation at the start of the year;

q - The actual physical output of the enterprises in a year;

aa - The addition allowances that an enterprise would receive at the designed time of next year.

Important official documents on China's national ETS construction program

1. *The Guidelines of national carbon emissions trading system (ETS) construction*, approved by the State Council, was released by the National Development and Reform Commission (NDRC) on December 18, 2017.
2. *The Guidelines of cap-setting and allowance allocation of the national ETS* was approved by the State Council in November 2016 and should be released by (NDRC) early this year.
3. *The Protocols of enterprises emissions data reporting* for 8 energy supply and manufacturing sectors has been used and improved since 2014.
4. *The draft Protocols of allowance allocation* for 3 sectors (Power and heat generation, cement and aluminum electrolysis) were used in the allowance allocation trials organized by NDRC in May 2017 in two provinces (Sichuan and Jiangsu).
5. *Regulations on national ETS* is under the approval of the State Council.

Thank you for your attention.

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