Carbon Pricing and the Power Sector: Illustration with China and Thailand case studies

UNFCCC Asia Pacific Climate Week, 08th July 2021
National circumstances make each country’s power sector unique

- Domestic energy resources and past development strategies result in different power mix
- Countries have a unique power market regulation system. But most of them do not take into account the cost of externalities
Carbon pricing can support cost-effective power decarbonisation

ETS can cost-effectively peak power sector CO₂ emissions well before 2030 for China

- A $40/tCO₂ carbon price can deliver 11% additional CO₂ emission reduction for Thailand in 2030 from the projected level based on the Power Development Plan

Source: IEA data
Carbon pricing can trigger multiple layers of actions in the power sector

**Power generation**

In 2030, China ETS could yield 333Mt CO₂ additional emissions reduction mainly by encouraging more efficient coal to run more and displace generation and capacity from less efficient coal.

A $40/tCO₂ carbon price in 2030 could reduce the running hour of coal power plant with generation down by 66% in Thailand, which encourage consideration for retrofit, repurpose or early retirement strategy.

**Early retirement or retrofitting**

Carbon price can be a key driver for technology innovation. Thanks to incentives provided by the China ETS, CCUS technology could enter the generation mix by 2030 and could help avoid 291Mt CO₂ emission in 2035.

A $40/tCO₂ carbon price could reduce the running hour of coal power plant with generation down by 66% in Thailand, which encourage consideration for retrofit, repurpose or early retirement strategy.

**Investments**

A $40/tCO₂ carbon price in 2030 could reduce the running hour of coal power plant with generation down by 66% in Thailand, which encourage consideration for retrofit, repurpose or early retirement strategy.

Carbon pricing may lead to **increase in the cost of electricity**, which could potentially help encourage more efficient use of resource but face strong social and political challenges that should and can be addressed.

**Consumption**

A $40/tCO₂ carbon price could generate over 3 Billion USD revenue in 2030 for Thailand and an ETS with auction could generate 99 Billion USD revenue in 2035 for China to further accelerate clean energy transition and mitigate distributional effect.

**Use of carbon pricing revenues**

A $40/tCO₂ carbon price could generate over 3 Billion USD revenue in 2030 for Thailand and an ETS with auction could generate 99 Billion USD revenue in 2035 for China to further accelerate clean energy transition and mitigate distributional effect.