

Dialogue Facility on ETS Development in Asia ETS Coverage and Cap Setting

Meeting Summary

Overview

The Asia Society Policy Institute is convening a series of private dialogue meetings that brings together experts in emissions trading system (ETS) development from select Asian jurisdictions. This initiative seeks to support the successful design and implementation of national ETSs in Asia, while building foundations for future market connectivity at Asian and international levels.

This meeting, held on January 27–28, 2021, by videoconference, focused on two of the most fundamental aspects of an ETS: coverage and cap setting. The meeting participants shared experiences, challenges, and solutions in deciding which sectors and entities to include, the type of cap-setting approach, the level and trajectory of the cap, how to align the cap with mid- and long-term greenhouse gas reduction targets, how to build political and stakeholder support for cap levels, and the role an ETS can play in achieving net-zero emission goals.

Felix Matthes of Öko-Institut presented an introduction to the topics from a theoretical and conceptual perspective to set the scene for the international case studies and for experience sharing from Asian jurisdictions.

Case studies on ETS coverage, cap setting, and role of ETS in net-zero goals, including learning points for Asian jurisdictions, were presented for

- EU-ETS
- California's Cap-and-Trade Program
- Regional Greenhouse Gas Initiative (RGGI)

Asian approaches on ETS coverage and cap setting, including challenges and solutions, were presented for

- China
- Korea
- Japan
- Indonesia
- Vietnam

The detailed meeting agenda is provided in Annex 1.

Participants included policymakers, supporting officials, and experts directly involved in the design and implementation of ETSs in Asia and internationally.

Summary

ETS coverage

Deciding which sectors, entities, and greenhouse gases should be included

All jurisdictions focus their ETSs on the largest installations so that a high proportion of emissions can be captured while keeping the monitoring, reporting, and verification costs manageable.

The EU-ETS was guided by the 80:20 principle (i.e., 80% of emissions from 20% of the installations) and focused on CO₂, with non-CO₂ greenhouse gases only covered where accurate monitoring was possible. A gradual expansion of sectors has taken place over time. The EU-ETS covers CO₂ from power and heat generation from installations with a thermal capacity of at least 20 MW, energy-intensive industry sectors (including oil refineries, steel, aluminum, metals, cement, lime, glass, ceramics, pulp, paper, and chemicals) and commercial aviation.¹ It also includes N₂O from production of nitric, adipic, and glyoxylic acids and glyoxal and perfluorocarbons (PFCs) from aluminum production. In some sectors, only plants above a certain size are included. Overall, the EU-ETS covers approximately 40% of EU's emissions.

China's national ETS is developing in a similar direction. The key energy-intensive sectors will be covered, initially the power sector, followed by cement, aluminum, and steel and then potentially additional sectors under a dynamic expansion approach. The system will initially cover CO₂, potentially followed by N₂O and HFC from industry. Guiding criteria include scale of emissions, data quality, abatement potential, and cost-effectiveness.

Korea has adopted a consistent approach in its K-ETS by including all entities emitting at least 125,000 tCO₂e per year or having an installation emitting at least 25,000 tCO₂e, covering six greenhouse gases regulated by the Kyoto Protocol² and including indirect emissions from electricity and heat as well as direct emissions. No special sectoral considerations have been given except that public transport companies were excluded in the first two phases,³ although they are now included in Phase 3. Korea's approach results in relatively large coverage of more than 70% of national greenhouse gas emissions.

California's Cap-and-Trade Program also covers a high proportion (approximately 80%) of total emissions by including emissions from electricity importers, natural gas suppliers, and transportation fuel suppliers, as well as large industrial sources and electricity generators with emissions of at least 25,000 tCO₂e per year.

The RGGI program focuses on only the power sector, covering installations of at least 25 MW.

Including the power sector when it is difficult to pass-through carbon costs to electricity prices

The importance of including the power sector in an ETS was emphasized through the example of Germany, where in 2020 the EU-ETS carbon price resulted in a reduction in power sector emissions of 40 Mt CO₂e through fuel switching from coal to gas.

In many Asian jurisdictions, the government closely controls the dispatch of power stations and the wholesale and retail prices of electricity so that the carbon price may not easily provide the proper emission reduction incentive for the power sector.

¹ Until 2023, the EU-ETS will apply only to flights between airports in the European Economic Area (EEA).

² CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆.

³ The exclusion was part of the measures to promote the use of public transport.

An interim solution adopted by the K-ETS and China's pilot ETSs is to include indirect emissions from purchased electricity and heat in the scope of the ETS. This can be used to control demand, although it does not impact fuel mix decisions in the power sector.

A longer-term and better solution is to create the regulatory arrangements that enable carbon cost pass-through to electricity prices and carbon costs to be reflected in power station dispatch decisions. In Korea, the full pass-through of the fuel cost (including carbon cost) to the retail electricity tariff has been in place since the start of this year, and regulations are expected in the next one to two years to include the carbon cost in the marginal cost of electricity generation to facilitate fuel switching to low-carbon fuels. China continues to work toward partial liberalization of its power market, which could open up pathways for future carbon cost pass-through.

ETS cap setting

Deciding the type of cap-setting approach and the level of the cap

The international case studies (EU-ETS, California Cap-and-Trade, and RGGI) as well as the K-ETS have an absolute cap that decreases year by year in line with the total emission reduction targets of the jurisdiction.

In contrast, China's national ETS is, at least initially, an output-based approach with tradable performance standard benchmarks applied to each entity covered by the system, without an absolute cap on emissions. This could be an appropriate choice at the very initial stage, enabling political difficulties to be overcome. The disadvantage, however, is that without an absolute cap the system does not guarantee achievement of emission reduction targets and does not create the best incentives for entities to reduce emissions - it may actually result in increases in output and emissions from some entities.

With an absolute cap, there can be concerns about competitiveness impacts on industry, dealing with economic uncertainties and allowing industrial growth plans. Competitiveness concerns can be addressed by suitable carbon leakage mitigation measures such as free allocation, economic uncertainties can be addressed by market stability measures,⁴ and industrial growth can be supported by "new entrants reserves" that provide allowances to new and expanded facilities.

Best practice in determining the level and trajectory of the cap (and the overarching national greenhouse gas reduction targets) requires detailed technical and economic modeling including development of marginal abatement cost curves, energy sector modeling, assessment of impacts on industrial competitiveness, macroeconomic modeling, and so on. This should take into account the impact of other policies directly or indirectly impacting greenhouse gas emissions of the covered sectors as well as relevant trading partners' policies.

Different approaches are taken in "burden sharing" of total emission reduction targets between ETS and non-ETS emission sources, for example, with the EU basing reduction targets (and hence the EU-ETS cap) on equal marginal abatement costs and the K-ETS basing them on shares of historic emissions. The former approach seeks to achieve an economically efficient solution across the whole economy, whereas the latter should be clearer and easier to implement.

⁴ These provide controls on the carbon market based on the amount of allowances in circulation (such as the EU's Market Stability Reserve) or carbon price levels (such as in California and RGGI).

Aligning ETSs with net-zero emission goals

The long-term trajectory of the cap matters a great deal. It provides policy clarity and predictability and is a signal to market participants. Furthermore, a long-term cap toward zero will play a major role in helping jurisdictions achieve their net-zero goals.

The EU-ETS, California's Cap-and-Trade Program, and K-ETS are all undergoing reviews in 2021 on how their caps and other relevant design elements can be revised to align with meeting net-zero emission goals. The first step is to consider how the mid-term (2030) target should be adjusted to align with achievement of the long-term target, with the second step considering how the ETS should contribute to the mid-term target. In all these jurisdictions, the ETS will be an important policy to achieve these goals.

The significance and challenge of these potential changes were illustrated by an analysis indicating that the K-ETS cap may need to decrease by 8% to 11% per year from 2030. This is a much steeper reduction than current ETS caps (in the EU, Korea, and California), which range in their reductions between 2% and 4% per year. As such, carbon prices are set to rise significantly.

At the same time, achieving net-zero goals was shown to not impair economic growth. For example, the latest modeling from the EU shows a continual decoupling of GHG emissions and economic growth, with a forecast increase in GDP of around 50% from now in achieving net zero by 2050.

It is interesting that sectors that have previously been resistant to carbon pricing, such as the German steel industry, are now in favor of it to support the transition to deep decarbonization technologies required to achieve net-zero goals such as hydrogen steelmaking.

The drive toward net-zero-compatible ETSs will be further strengthened by the likely imposition of trade penalties by those jurisdictions that have adopted such ambitious policies against those that have not. Related to this was a discussion of the EU's proposed Carbon Border Adjustment Mechanism (CBAM). A credible and equivalent carbon price, and hence comparable ambition level to the EU-ETS cap, would be necessary to avoid penalties under the CBAM.

Engaging with relevant stakeholders

Both the EU and California provide examples of best practice in how to engage with stakeholders to support successful cap setting and ETS implementation.

The European Commission involved a comprehensive range of stakeholders in policy design, talked with industry and learnt together, explained what they were doing with energy and industry departments, and recognized that it was important to simply get started, knowing that improvements would be made in time. California engaged in multiple years of policy discussions as a member of the Western Climate Initiative to help shape the ETS design, had extensive communication and engagement with key stakeholders through a variety of events and expert advisory groups, and undertook broad education and communication efforts with the public.

Annex 1: Agenda

Day One: January 27, 2021 (Wednesday)		
Session 1: Welcome and introduction		
5 mins	Welcome remarks and introduction	Alistair Ritchie Asia Society Policy Institute
20 mins	Economic theory of ETS coverage and cap setting and key considerations for Asian jurisdictions	Felix Matthes Öko-Institut
Session 2: EU case study and learning points for Asian jurisdictions		
20 mins	EU-ETS experience and learning points on coverage and cap setting	Jos Delbeke and Peter Vis European University Institute
20 mins	Q&A and discussion	
Session 3: China experience, challenges, and solutions		
10 mins	3a) Coverage of China's national ETS – deciding which industrial sectors and entities should be included	Tong Qing Tsinghua University, China
15 mins	Q&A and discussion	
10 mins	3b) Cap setting of China's national ETS – how to transition from intensity-based to absolute control cap and how to decide the level and trajectory of the cap	Duan Maosheng Tsinghua University, China
15 mins	Q&A and discussion	
10 mins	Break	
Session 4: Korea experience, challenges, and solutions		
10 mins	Experience in deciding ETS coverage and setting the Phase 3 K-ETS cap, including challenges, solutions, and learning points for other jurisdictions	Changhwan Lee Ministry of Environment, Korea
15 mins	Q&A and discussion	
5 mins	Summary of Day One and expectations for Day Two	Alistair Ritchie

Day Two: January 28, 2021 (Thursday)

Session 5: Welcome and introduction

5 mins Review of Day One and introduction to Day Two Jackson Ewing
Duke University/ASPI

Session 6: U.S. case study and learning points for Asian jurisdictions

15 mins 6a) California Cap-and-Trade Program experience and learning points on ETS coverage and cap setting including role in California's carbon neutrality goal Jason Gray
California Air Resources Board

15 mins 6b) Regional Greenhouse Gas Initiative (RGGI) experience and learning points on ETS coverage and cap setting Anna Ngai
RGGI, Inc.

20 mins Q&A and discussion

Session 7: Korea experience, challenges, and solutions

10 mins K-ETS and its alignment with net zero – how to revise and strengthen the carbon pricing system to align with Korea's net-zero GHG emission target Seung Jick Yoo
Sookmyung Women's University, Korea

15 mins Q&A and discussion

Session 8: Japan potential approaches

10 mins Thoughts and questions on coverage and cap setting in the context of a potential national ETS in Japan Toshi Arimura
Waseda University, Japan

15 mins Q&A and discussion

10 mins Break

Session 9: Indonesia potential approaches

10 mins Indonesia's planned ETS – how to include power and industry sectors, set the level/trajectory of the cap, align with national targets, and engage stakeholders Dida Gardera
Coordinating Ministry for Economic Affairs, Indonesia

15 mins Q&A and discussion

Session 10: Vietnam potential approaches

10 mins Vietnam's planned ETS – how to decide coverage, whether to have relative or absolute cap, set the level/trajectory of the cap and align with national targets Hoang Van Tam
Ministry of Industry and Trade, Vietnam

15 mins Q&A and discussion

Session 11: Further Q&A and discussion

10 mins Further Q&A and discussion

Session 12: Closing session

5 mins Summary and expectations for future meetings. Alistair Ritchie
Asia Society Policy Institute