BUILDING THE EVIDENCE BASE FOR CARBON MARKET LINKAGE IN NORTHEAST ASIA

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WHITE PAPER

Premise: The Asia Society Policy Institute (ASPI) initiative, "Toward a Northeast Asia Carbon Market" (NEACM), seeks to facilitate carbon market cooperation between China, Japan, and the Republic of Korea (hereafter, Korea) through timely and pragmatic policy ideas. ASPI views carbon market cooperation and linkage in Northeast Asia as a long-term, potentially high-impact proposition that could make significant contributions to global climate change efforts. It offers this White Paper on building the evidence base for carbon market linkage in Northeast Asia to this end. The White Paper benefitted from discussion and development at the ASPI-led policy roundtable, "Carbon Market Cooperation in Northeast Asia," held in Hong Kong on March 22-23, 2017.

OBJECTIVE

The White Paper presents the case for carbon market cooperation in Northeast Asia, briefly reviews challenges and barriers to such cooperation, and recommends pathways for extending the evidence base from which such cooperation could extend. In doing so the White Paper seeks to present a coherent and timely research agenda that answers key questions and challenges relating to carbon market linkage prospects and processes in Northeast Asia. ASPI is commissioning work on each of these agenda topics to yield pragmatic, policy-relevant analysis.

CORE ARGUMENTS

I. The Case for Pursuing Linkage in Northeast Asia

- With China, Japan, and Korea representing roughly 30 percent of total global emissions and each pursuing domestic carbon market policies, calls for them to link their respective markets are becoming louder.
- Linking Northeast Asian carbon markets could have economic, environmental, and strategic benefits for the countries involved, while also signaling global climate leadership by the region as a whole.
- Most importantly, carbon market cooperation in Northeast Asia could be an impactful tool for addressing global climate change challenges.

II. Challenges and Barriers

- China, Japan, and Korea are currently focused on designing and operating effective domestic carbon markets.

- The design of carbon markets differs in each country, as does the place of these markets in their host country's wider economic, environmental, and political context.

- China's move from pilots to a national market is presenting challenges within the country about future market designs and operations, and its intensity-based emissions reduction targets create unique linkage obstacles.

- Japan's lack of a national carbon market creates parity issues for its regional linkage prospects, even as it possesses dwindling emissions reduction options at home.

- Korea's lack of regulatory stability and difficulty providing appealing emissions-reducing options through its domestic market creates prospective linkage challenges.

- Beyond market design, China, Japan, and Korea have complex historical, economic, and diplomatic relationships that have the capacity to cause additional challenges to linkage efforts.

III. Extending the Evidence-Base Now

- Deep national-level market links are years away from taking hold in Northeast Asia, with such links emerging from 2020 offering the earliest plausible timeframe.

- This does not mean that technical and track II diplomatic work on these issues should be delayed; as lead-times for building the linkage foundation in other contexts show the value of early action.

- It is an ideal time for producing policy-relevant research that can help shape policy decisions on carbon market linkage in Northeast Asia.

IV. Research Agenda

- What do 'linkage ready' markets mean for China, Japan, and Korea?

- What are the most constructive steps to take between 2018 and 2020 to build the foundation for regional market linkage?

- How could China, Japan, and Korea create tradeable units from their differing cap and market designs and Nationally Determined Commitments (NDCs), and will linking lead to convergent and/or stronger future mitigation goals?

- What are the benefits of prospective market linkage for China, Japan, and Korea?

- What are the most formidable barriers to linking carbon markets in China, Japan, and Korea? What are some of the solutions that can help overcome these barriers?

- What will the economic impacts of emissions trading systems (ETSs) in Northeast Asia be with and without linkage?

- What are the mitigation value and environmental co-benefits for plausible forms of regional market linkage?

- What limited linkage approaches and restrictions can help make market integration more palatable for Northeast Asian policymakers?

- How could subnational carbon market links operate in Northeast Asia?

- Could multinational corporations operating in Northeast Asia's multiple markets account for credits in an integrated or quasi-linked fashion across jurisdictions?
- How can Northeast Asian countries effectively utilize international carbon market principles and policies?

- What institutional frameworks and cooperative mechanisms for constructing market linkage arrangements—including but not limited to memoranda of understanding, periodic reviews, and de-linkage provisions—are most fitting for Northeast Asia?

V. Conclusion

- Differences between markets in China, Japan, and Korea reveal the very complementarities that make regional market cooperation and select linkage symbiotically advantageous.

- The 2018–2020 period will shape the longer-term landscape of carbon pricing in Northeast Asia, and regional countries should collaborate now to build a foundation for more extensive carbon market cooperation in the future.

- Northeast Asia is in the formative phase of carbon market construction, with an opportunity to synergize some aspects of their carbon market policies in order to create high-impact future possibilities.

I. THE CASE FOR PURSUING LINKAGE IN NORTHEAST ASIA

China, Japan, and the Republic of Korea (hereafter, Korea) are emerging as major players in the global carbon trading landscape. China is moving from piloting multi-year emissions trading systems (ETSs) in cities and provinces to a national scheme set to roll-out by early 2018. Korea already operates the first national ETS in Asia, which is moving into a second phase in 2018 that will see it begin to price allowances and open up further to international market connections. Japan's linked ETSs in Tokyo and Saitama Prefecture continue to operate effectively, as does Japan's voluntary national scheme and a unique international offset program.

With the three Northeast Asian countries representing roughly 30 percent of total global emissions, and connected already by deep economic ties and shared environmental challenges, calls for them to link their respective markets are becoming louder and more regular. Linking could have economic,

environmental, and strategic benefits. Economically, linking could reduce the costs of emissions-reductions by creating options for purchasing credits that are cheaper than those available at home. Links could also increase the number of buyers and sellers in ways that increase market liquidity, and reduce carbon price volatility by expanding market scope and lessening the influence of powerful individual players.

Environmentally, links could cut carbon price differentials across the region in ways that minimize the movement of emitting activities from one jurisdiction to another (leakage), and in some cases promote cleaner local environments through reducing conventional pollution (a co-benefit). Most importantly, lower emissions-reduction costs could enable more ambitious climate change goals. Strategically, linking Northeast Asia's markets could provide confidence-building measures for wider regional relationships, and create a more level playing field for countries already inextricably connected by trade and geopolitical challenges and opportunities. It could also demonstrate global climate change leadership in Northeast Asia by signaling a commitment to long-term multilateral actions that are impactful and nuanced, and in doing so increase the impact of China, Japan, and Korea in international forums.

II. CHALLENGES AND BARRIERS

Regional linkage is also a difficult prospect. China, Japan, and Korea are each focused primarily on designing and operating effective domestic carbon markets. While creating the opportunities outlined above, linkage also adds layers of technical and diplomatic complexity that will take time and political will to reconcile. Each system has unique characteristics that reflect their domestic contexts, and the role that each country sees their ETS playing.

China seeks future development alongside cleaner environments, narrower income disparities, and a greater emphasis on high-value segments of the global economy. It is launching a national ETS not just to address climate change, but also as a tool to help usher in this new era. While it orients around greenhouse gas mitigation, China's ETS is also important in the minds of Chinese leadership as a way to curtail crippling air pollution, encourage growth in emergent sectors, and transfer wealth to peripheral provinces. As such, it exists within a complicated and often overlapping environmental policy space marked by existing and proposed policies for energy efficiency, air pollution, and renewable energy. These policy tools, which include a newly-launched tradeable green certificate scheme to support clean energy, expand the risk of double-counting and create complex interactions with the supply and demand of carbon credits. There are also myriad questions about inter-ministerial and city-provincial-central government coordination.

China's national ETS builds from subnational pilot systems, and its development has been marked by uncertainty, delay, and dwindling near-term ambition. Initially slated for 2016, only months prior to its planned rollout basic questions remained on when the scheme would start, what the rules would be, where it would be housed, and who would participate. Issues of precise coverage, allowance allocation, and compliance obligations continue to plague regulators at the time of this writing. Initial ETS coverage was first pared-down to power generation, aluminum, cement, and aviation, with China ultimately likely to opt for a power-sector only ETS in response to lingering uncertainties and industry concerns. The national system may have no compliance obligations for the first two years, making it a soft launch geared more toward getting market rules and operations in place than to having a discernable climate change impact.

Most challengingly for regional linkage, China's ETS is based on tradeable performance standards (TPSs) rather than absolute caps. TPS trade calls on government administrators to determine a maximum emission intensity relative to the output of a given firm. Firms with emission rates below the standard earn tradable credits, while those that exceed the standard must purchase allowances to cover the excess. The TPS approach has the advantage of adapting to economic changes, but also creates questions about linking to other schemes that are based on unmoving emissions limits.

Japan seeks to meet its climate change goals during a lingering period of energy uncertainty. The 2011 Fukushima nuclear disaster continues to loom over Japanese energy decisions, with scant public confidence in the safety of Japan's nuclear sector—which had supplied 30 percent of Japan's electricity production—and calls to phase-out nuclear power entirely. While that may or may not ultimately happen (some nuclear currently remains in Japan's future energy plans), it is unlikely that nuclear will reach pre-Fukushima levels in the foreseeable future, and virtually certain that it will not expand to the levels previously foreseen (some 60 percent of its energy mix by 2100). With Japan facing natural and self-inflicted regulatory barriers to renewable energy expansion, it is replacing the lost nuclear capacity largely with fossil fuels. Given Japan's high development status, and the fact that is already a global energy efficiency leader, it has few cost-effective domestic options for lowering emissions in-line with its climate change commitments—to say nothing of the more ambitious commitments it will be called-on to make in the future.

This scenario incentivizes establishing international market links that offer Japan cheaper emissions options than it currently has available, but there are structural impediments to this path. Japan has no national ETS, instead operating a subnational scheme with linked markets in Tokyo and Saitama Prefecture; a voluntary national system used by companies for reporting and corporate social responsibility purposes (J-Credit); and an international offset program called the Joint Crediting Mechanism (JCM) in which Japan invests in emissions reductions in developing countries in exchange for part of the credits that these projects yield. While the country has nearly two decades of experience with domestic emissions trading, it has no current plans of legislating or regulating toward a mandatory national system. This creates parity challenges for its ability to link with markets in China and Korea, and may encourage Japan to simply double-down on its JCM efforts at the expense of more impactful—but also more complicated—regional links in Northeast Asia.

Korea meanwhile has rapidly transitioned from a poor post-war state in the early 1950s, to a major industrial player by the 1970s, to a modern, digitized economy in the 21st century. This change brought pronounced environmental challenges alongside it, which Korea is attempting to address with command and control regulations and its nascent national carbon market. The market—the Korean ETS (KETS)—is the first national system in Asia and at this writing is moving from the 1st to the 2nd of a three-phase process that runs to 2025.

Since the KETS launched in 2015 it has been plagued by a lack of liquidity and the sense among major firms that it offers few pathways for significantly driving down abatement costs. In 2017, Korea's Ministry of Strategy and Finance (MOSF) implemented market stabilization measures to address supply-demand imbalances, restrict excessively banking credits, increase borrowing provisions, and bring forward the introduction of international market mechanisms from 2021 to 2018. Still, the characteristics of the Korean economy—particularly its dependence on energy-intensive industries and high volume of fossil fuel imports—are making market-driven domestic emissions reductions difficult. These difficulties are amplified by regulatory uncertainty, which creates questions about the future of

the KETS operations while eroding confidence in the staying power of green investment incentives. In a telling vacillation, since its inception the KETS mandate has vacillated between the Ministry of Environment (MOE) and the MOSF. Such wavering makes it difficult to secure the confidence of domestic stakeholders, and even more so prospective regional partners.

III. EXTENDING THE EVIDENCE-BASE NOW

The differences and challenges detailed above mean that deep, national-level market links are years away from taking hold in Northeast Asia, with such links emerging from 2020 offering the earliest plausible timeline. This does not mean that technical and track II diplomatic work on these issues should be delayed. For market linkage in Northeast Asia to be possible, targeted research needs to be pursued now to help policymakers consider the core questions they face. Lead-times for building the linkage foundation in other contexts show the value of early action. The Norwegian market was conceived in the early 2000s, launched in 2005, and linked with the EU in 2008. Linkage was considered and worked toward from its early days of formulation, not just after its 2005 launch. California and Quebec likewise studied and adopted many of the same market design principles and held frequent technical discussions during the years of their development to ensure a degree of harmonization across targeted rules and designs. This allowed them to link the markets just one year after launching operations.

Building from multiple closed-door technical and policy dialogues, public panels, private consultations, and desk research, ASPI offers the following research agenda for extending the foundation for related carbon market linkage efforts in Northeast Asia. ASPI is commissioning research from regional and international experts that cover each topic, and will usher the resulting papers through an editorial, publication, and translation process. Upon publication, ASPI will work with partners to seek traction for this work in key policymaking circles.

The commissioned research will address 12 research topics within the categories of: A) carbon markets in Northeast Asia and regional linkage prospects; B) opportunities and challenges; C) linkage options; and D) institutional frameworks and cooperative mechanisms.

IV. RESEARCH AGENDA

A) Carbon markets in Northeast Asia and regional linkage prospects

1. **What do ‘linkage ready’ markets mean for China, Japan, and Korea?**

   Regional political support for crafting and amending domestic markets to make future linkage possible is growing, but more continuity is needed on the characteristics each market must have for such an outcome to take hold. There is a need to understand both the political and technical sides of linkage-readiness. Politically, transparency is lacking on the positions of the three governments and how they view and prioritize future linkage prospects. Technically, more analysis is required on the market designs and practices that need to be harmonized to make domestic markets linkage ready, and how the countries can pursue this outcome.

2. **What are the most constructive steps to take between 2018 and 2020 to build the foundation for regional market linkage?**

   Tangible actions can create limited or provisional market links and set the foundation for future progress. Comparative research is needed on the relevance of offset market connections, subnational and sector-based links, linked corporate accounting, and/or other near-term steps to evaluate their potential value. This work should also investigate process-oriented steps needed to build the linkage foundation, including epistemic community engagement, the prioritization of linkage on regional political agendas, and its presence at relevant diplomatic forums.

3. **How could China, Japan, and Korea create tradeable units from their differing cap and market designs and Nationally Determined Commitments (NDCs), and will linking lead to convergent and/or stronger future mitigation goals?**

   Comparative analysis among the NDCs and carbon markets in Northeast Asia is needed to make credit recognition across markets possible. Markets cover different entities and sectors using different currencies and caps. China's trade of TPS credits is especially unlike Japanese and Korean systems, which use hard caps. Trading units across heterogeneous systems is possible, and has been achieved elsewhere, but analysis is needed on specific approaches that could be taken in the Northeast Asian context.

B) Opportunities and Challenges of Carbon Market Linkage

4. **What are the benefits of prospective market linkage for China, Japan, and Korea?**

   The 2016 ASPI report, *Toward a Northeast Asian Carbon Market,* argued that tangible benefits would result from carbon market linkage in Northeast Asia. More exploration of these benefits is required to deepen the evidence for economic, environmental, and strategic gains that are possible at national, regional, and international levels. Among other issues, this work needs to assess how the gains are distributed among the three countries, as well as the benefits of linkage for global climate change efforts.

5. **What are the most formidable barriers to linking carbon markets in China, Japan, and Korea? What are some of the solutions that can help overcome these barriers?**

   Barriers to market linkage in Northeast Asia abound. The markets are in different phases, have different designs, cover different jurisdictions and sectors, and have different overall purposes within their respective countries. Beyond the markets, China, Japan, and Korea have complex relationships that include historical animosity, economic competitiveness, and geopolitical friction. Solutions to these two broad sets of barriers will entail varied forms of technical creativity on the one hand, and diplomatic facilitation on the other. Analysis is needed on the most promising paths.

6. **What will the economic impacts of ETSs in Northeast Asia be with and without linkage?**

   Core reasons for developing ETSs in any context are to reduce marginal abatement costs, and many ETS designs will also create revenues that can defray other public costs or be invested

toward public goods. These economic impacts exist in different ways in domestic and linkage scenarios. Quantitatively-driven research is needed that evaluates domestic systems, builds linkage scenarios, and models different linkage outcomes. Computable general equilibrium models and regression analyses have shown promise in evaluating other ETS cases, and should be applied to Northeast Asia to provide robust impact estimates for policymakers.

7. **What are the mitigation values and environmental co-benefits for plausible forms of regional market linkage?**

   The ultimate goal of linking ETSs is not to reduce costs; reducing costs is a means toward adopting more ambitious environmental targets. A mix of qualitative and quantitative approaches should analyze the near and long-term social and environmental value for various market linkage scenarios (direct, indirect, restriction-based, etc.) at national, regional, and international levels. These outcomes must address greenhouse gas emissions reductions, along with major co-benefits such as conventional air pollution abatement and the erosion of leakage risks.

C. Linkage Options in Northeast Asia

8. **What limited linkage approaches and restrictions can help make market integration more palatable for Northeast Asia's policymakers?**

   Northeast Asia is not currently on a path toward full, national-level linkage in the near-term. Targeted, partial links with limitations and restrictions are essential first steps. Quantitative limits for accepting regional credits, cap-leveling discount and exchange rates, sector limitations, and other tools are available. Research is needed on which restrictions hold the most promise.

9. **How could subnational carbon market links operate in Northeast Asia?**

   China has operated subnational ETS pilots that will continue in some form alongside/within the national scheme, Japan operates linked subnational schemes in Tokyo and Saitama, and Korea has some subnational accounting measures in place. Linking subnational jurisdictions could have material economic and environmental impacts, while also building confidence toward future linkage expansions. Such approaches require answering questions on site and sector selection, monitoring, reporting, and verification (MRV), accounting, and governance among other issues. They likewise beg questions on national to subnational coordination and jurisdictional authority within each country, which must be reconciled for any linkage process to progress.

10. **Could multinational corporations operating in Northeast Asia's multiple markets account for credits in an integrated or quasi-linked fashion across jurisdictions?**

    Private companies have accounted for emissions across different exchanges in other parts of the world, including through the now-defunct Chicago Climate Exchange in North America, in ways that led to ostensible linkage in the absence of political arrangements. Some carbon market experts and practitioners argue that similar arrangements can be pursued across modern markets, and that these pursuits could occur without delay or further policy changes. This case

needs to be made in more detail, using specific prospective firms, catered to the specific markets of Northeast Asia, and describing specific accounting processes to be used.

D. Institutional Framework and Cooperative Mechanism

11. **How can Northeast Asian countries effectively utilize international carbon market principles and policies?**

    The Paris Agreement on climate change contains market provisions (Article 6) that are scheduled to be operationalized by December 2018. These provisions are designed to facilitate the accounting and reporting of emissions reductions from carbon credits by individual countries against their NDC commitments. Implementation discussions center on the rules by which Article 6 will be carried out, which will affect the approaches taken in China, Japan, and Korea without fundamentally altering the paths they elect to take domestically or regionally. Investigation is needed into the importance—and/or lack thereof—of Article 6 for Northeast Asian countries, as well as how international standards and practices on MRV, accounting, governance, and the like can be best applied regionally. This analysis should also explore how China, Japan, and Korea can cooperate to influence the future operational shape that Article 6 takes.

12. **What institutional framework and cooperative mechanism for constructing market linkage arrangements—including but not limited to memoranda of understanding, periodic reviews, and de-linkage provisions—are most fitting for Northeast Asia?**

    Technical design and political will are only two parts of the linkage equation. Northeast Asian countries must also determine the most promising legal and procedural approaches through which to pursue market links. The options available contain varying levels of formality, flexibility, rigidity, and diplomatic effort required, which need to be explored in the regional context.

V. CONCLUSION

China, Japan, and Korea have different economic and energy contexts, different past and present approaches to carbon market design and operations, and different levels of enthusiasm for regional linkage possibilities in Northeast Asia. Yet some such differences reveal the very complementarities that make regional market cooperation and select linkage symbiotically advantageous. Linking would allow China to drive foreign purchases of its emissions reduction credits, improve its MRV and operational effectiveness to meet additional standards, and develop new investment sources for its expansive economic and energy transition goals. Targeted links would increase Japan's access to cheaper reductions options than it has at home, and be more efficient and impactful than its current domestic and international offset strategies. Korea is set to use international market connections to meet its climate change targets, and connecting with the Chinese market could help widen its currently limited abatement options.

Past linkage efforts demonstrate that while geographic proximity and close economic ties can play a crucial role in building a relationship toward linkage, these factors do not guarantee successful market integration. This is because integrating carbon markets require a series of preliminary steps and pilot

initiatives to be successful. Regardless of what actual steps are pursued, linkage will necessarily be less complicated and easier to achieve when design elements and political considerations are discussed during the initial phases of carbon market development. Because Northeast Asia is in the formative phase of carbon market construction, the countries have an opportunity to synergize some design elements in the near-term, and begin working through economic and geopolitical challenges that accompany market cooperation.

The 2018–2020 period will shape the longer-term landscape of carbon pricing in Northeast Asia. Korea and China will progressively deepen their domestic ETSs and seek to optimize their functionality through experimentation and capacity-building. Japan will review its domestic and international pricing efforts and likely be influenced by the progress in neighboring countries. These countries need to collaborate now to build a foundation for more extensive carbon market cooperation in the future, and they need an evidence-base from which to work.