

ARE EMISSIONS TRADING SCHEMES A PATHWAY TO ENHANCING TRANSPARENCY UNDER THE PARIS AGREEMENT?

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INTRODUCTION

Article 6.2 of the Paris Agreement (PA) suggests “cooperative approaches” by which Parties could use internationally transferred mitigation outcomes (ITMOs) to achieve their nationally determined contributions (NDCs) and ensure environmental integrity and transparency.¹ The PA recognizes in various articles that the provision of

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1. Paris Agreement, art. 6.2, April 22, 2016, 80 Stat. 271, T.I.A.S. 16-1104.

information is an element of transparency. This includes articles 9, 10, and 11 dealing respectively with the financial mechanism, technology transfer, and support for capacity building.² In addition, article 13 establishes a transparency framework requiring each Party to regularly submit a national greenhouse gas (GHG) inventory, report progress in implementing and achieving its NDC, and engage in a facilitative, multilateral consideration of progress achieved. The information each Party submits shall undergo a technical expert review.³

The text of articles 9, 10, 11, and 13 sketches out only broad criteria. Parties are negotiating the guidance on cooperative approaches and the modalities, procedures, and guidelines (MPGs) for the transparency framework under the auspices of the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Ad Hoc Working Group on the Paris Agreement (APA), respectively.⁴ In November 2017, for example, the negotiations during the 47th session of SBSTA (SBSTA 47) produced the conclusions for article 6.2.⁵ The SBSTA Chair was requested to prepare an informal note that contained draft elements of the guidance on cooperative approaches to facilitate the deliberations at SBSTA 48 in 2018.⁶

Article 6.2 of the PA, in its current wording, does not restrict the type of cooperative approaches by which ITMOs could be applied toward achieving NDCs.⁷ I suggest that the cooperation may take the form of

2. *Id.* at art. 9–11.

3. *Id.* at art. 13.7, 13.11.

4. United Nations Framework Convention on Climate Change, Conference of the Parties, *Rep. of the Conference of the Parties on Its Twenty-First Session*, ¶¶ 36, 91, U.N. Doc. FCCC/CP/2015/10/Add.1 (Jan. 29, 2016) [hereinafter *Decision 1/CP.21*]. As I analyze later, however, the two negotiating tracks have reflected on many issues that are interconnected and overlapped, such as transparency, environmental integrity, and avoidance of double counting.

5. United Nations Framework Convention on Climate Change, Subsidiary Body for Sci. and Tech. Advice, *Rep. of the Subsidiary Body for Sci. and Tech. Advice on Its Forty-Seventh Session*, ¶¶ 87–92, U.N. Doc. FCCC/SBSTA/2017/7 (Jan. 31, 2018) [hereinafter SBSTA U.N. Doc. FCCC/SBSTA/2017/7].

6. *Id.* at ¶ 91; *see also* Informal Note by the Co-Chairs dated Nov. 12, 2017, Draft Elements for SBSTA Agenda Item 11(a), Guidance on Cooperative Approaches Referred to in Article 6, Paragraph 2, of the Paris Agreement, 1 (3rd iteration) (summarizing the proposed draft elements for Article 6.2 of the Paris Agreement) [hereinafter Draft Elements for SBSTA Agenda Item 11(a)].

7. Many Parties to the PA have supported a flexible application of cooperative approaches, *see, e.g.*, Canada, Submission on SBSTA Item 11(a): Article 6, Paragraph 2, ¶ 4 (Oct. 2017) [hereinafter Canada]; Republic of Korea, Submission on Art 6.2 and 6.4 of the Paris Agreement 2 (Nov. 2017); Australia, Submission on the Content of the Guidance for Article 6.2, Including the Structure and Areas, Issues and Elements to be Addressed 1 (Oct. 2017) [hereinafter Australia]. In the academic literature, *see, e.g.*, Robert N. Stavins, *Market Mechanisms in the Paris Climate Agreement: International Linkage under Article 6.2*, in *THE PARIS AGREEMENT AND BEYOND: INTERNATIONAL CLIMATE CHANGE POLICY POST-2020* 53, 54 (Robert N. Stavins & Robert C. Stowe eds., 2016)

developing and linking emissions trading schemes (ETSs) in different jurisdictions. Parties involved in ETSs could be accountable as well as making the most of carbon markets to enhance transparency.⁸ ETSs have earned increasing support from nations and regional groupings such as New Zealand, Switzerland, South Korea, China and the European Union (EU), and some jurisdictions in Japan, Canada, and the United States (U.S.).⁹ The prevalent literature indicates there are environmental, economic, political, and strategic benefits of operating carbon markets and trading emissions credits across borders.¹⁰ In addition to those benefits, some argue that this is also a good opportunity for enhanced transparency in the PA processes through reporting GHG emissions, accounting, and in sharing information about climate action.¹¹

[hereinafter Stavins]; ANDREI MARCU, ARTICLE 6 OF THE PARIS AGREEMENT: REFLECTIONS ON PARTY SUBMISSIONS BEFORE MARRAKECH 6 (2017) [hereinafter PARTY SUBMISSIONS BEFORE MARRAKECH]; ANDREW HOWARD, THE PARIS AGREEMENT ON CLIMATE CHANGE: ANALYSIS AND COMMENTARY 178, 185 (Daniel Klein et al. eds., 2017).

8. Linking ETSs has been suggested by some Parties, *see, e.g.*, New Zealand, Submission to SBSTA on Article 6.2 of the Paris Agreement, ¶ 11 (Sept. 2017); Republic of Mali on Behalf of the African Group of Negotiators, Submission on Guidance on Cooperative Approaches Referred to in Article 6, Paragraph 2, of the Paris Agreement 2 (Oct. 2017); Papua New Guinea, Submission on Article 6.2 SBSTA 47 Agenda Item 11 (a), ¶¶ 4–7 (Sept. 2017). Also, a rapidly growing body of literature has suggested that article 6.2 serve as the basis for future linkages among domestic ETSs, *see, e.g.*, Stavins, *supra* note 7, at 54; HOWARD, *supra* note 7, at 185; PARTY SUBMISSIONS BEFORE MARRAKECH, *supra* note 7, at 7; Michael Mehling & Benjamin Görlach, *Multilateral Linking of Emissions Trading Systems 2* (MIT Ctr. for Energy and Env'tl. Pol'y Res., Working Paper No. 2016-009, 2016).

9. The ETS mainly includes cap-and-trade, baseline-and-credit, and baseline-and-offset systems. According to the World Bank's data (as of April 1, 2018), there are 24 ETS initiatives in place, consisting of 36 national jurisdictions and 25 subnational jurisdictions, and covering 5 GtCO₂e and 9.9% of global GHG emissions. The percentage of 9.9 will rise to 15.1 if China operates its national ETS. Besides the ETS, carbon tax is another major carbon pricing initiative. It has been implemented and scheduled by 24 national jurisdictions and 2 subnational jurisdictions, covering 3 GtCO₂e and 5.3% of global GHG emissions. *See Carbon Pricing Dashboard*, WORLD BANK, (last updated Apr. 1, 2018) http://carbonpricingdashboard.worldbank.org/map_data [<https://perma.cc/7DLJ-5CE8>]; *see also* WORLD BANK, ECOFYS & VIVID ECONOMICS, STATE AND TRENDS OF CARBON PRICING 2017 25 (2017) (depicting graphs that show 81 NDCs Parties submitted consider the use of carbon pricing and these NDCs cover 55% of global GHG emissions).

10. *See, e.g.*, Stavins, *supra* note 7, at 53–54 (discussing in detail the advantages and disadvantages of linking ETSs); Mehling & Görlach, *supra* note 8, at 1–2; Michael Mehling, *Linking of Emissions Trading Schemes*, in LEGAL ASPECTS OF CARBON TRADING: KYOTO, COPENHAGEN & BEYOND 108, 108–110 (David Freestone & Charlotte Streck eds., 2009); JACKSON EWING, ROADMAP TO A NORTHEAST ASIAN CARBON MARKET 29–33 (2016); Jessica F. Green, *Don't Link Carbon Markets* (2017) 543 NATURE 484 (arguing that linking would “deliver greater complexity and fewer emissions cuts.”).

11. There is a growing body of literature turning attention to “transparency” in the ETS-related discussions. *See* Felicity Deane et al., *Principles of Transparency in Emissions Trading Schemes: The Chinese Experience*, 6 TRANSNAT'L ENVTL. L. 87, 94 (2017) (indicating that the Californian scheme increases transparency by making emissions and compliance data public); *see also* Michael Mehling & Erik Haites, *Mechanisms for Linking Emissions Trading Schemes*, 9 CLIMATE

This Article investigates how ETSs can enhance transparency in tracking GHG emissions and other climate efforts in the PA context. I will proceed with four sections as follows. The first two sections identify key issues and governance challenges for operationalizing cooperative approaches and market-related transparency provisions of the PA. It draws mainly from Parties' submissions and the discussions around these provisions. In each section, I locate and discuss the innovative aspects of the PA that could support future ETS initiatives and compare those aspects to the market mechanisms and the measurement, reporting, and verification (MRV) system in the pre-PA era. Next, I examine how developing domestic ETSs and linking them can enhance climate transparency. Section 3 considers the minimum requirements that could qualify an ETS as transparent. Taking China's evolving ETS as an example, I highlight how the process of building MRV capacities for a functional ETS enhances GHG accounting and reporting. Section 4 analyzes how linking ETSs across borders like the linkages between California, Québec, and Ontario can improve data reporting and facilitate information sharing.

I do not try to define "transparency." I examine the PA's provisions regarding market-based approaches and transparency to illustrate how they can become operational with experience and lessons from using ETSs.¹² I hope that the current literature on transparency and ETSs can engage more in analyzing their interactions, and that best practices from either domestic ETSs or bilateral and regional partnerships can inform the negotiation and resolution of the issues left on the agenda of the APA and SBSTA for completing the work program related to the implementation of the PA (PAWP).

POL'Y 169, 177, 182 (2009) (discussing the mechanisms for linking ETSs and noting the need for transparency); Mehling, *supra* note 10, at 123–25, 133; THOMAS L. BREWER & MICHAEL MEHLING, *TRANSPARENCY OF CLIMATE CHANGE POLICIES, MARKETS, AND CORPORATE PRACTICES* 180 (Oxford U Press, 2015).

12. For the definition and elements of transparency in the context of climate governance and the ETS, *see generally* Deane et al., *supra* note 11, at 89–97; Wenqin Liang, *Governing China's Domestic Carbon Market* 18–19 (Feb. 2017) (unpublished Ph.D. thesis, University of British Columbia) (on file with the University of British Columbia Library); BREWER & MEHLING, *supra* note 11, at 181.

I. MARKET-BASED APPROACHES TO CLIMATE COOPERATION

Three instruments—guidance on cooperative approaches (article 6.2); rules, modalities, and procedures for a sustainable development mechanism (article 6.4); and a work program for non-market approaches (article 6.8)—are taking forward the operation of the PA’s article 6 provisions.¹³ The analysis below is in part dedicated to cooperative approaches that may favor the establishment of carbon markets. This way, Parties can transfer mitigation outcomes to achieve GHG emissions reduction goals. Therefore, I focus on articles 6.2 and 6.3 of the PA.

The agreement provides broad outlines for what voluntary cooperation could look like even when thorny issues that could enhance their implementation remain “reasonably ambiguous.”¹⁴ Previous U.N. climate change negotiations, especially those under SBSTA, featured intense discussions on the clarification and interpretation of those issues in an attempt to complete the guidance referred to in article 6.2, that would constitute an important part of the PAWP.¹⁵ Decision 1/CP.21 requested that SBSTA should develop a guidance that the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) adopts at its first session.¹⁶ It specifically identified the need for guidance on avoiding double counting when Parties adjust their GHG emissions and removals covered by their NDCs.¹⁷ SBSTA 45 noted Parties’ efforts to discuss articles 6.2 and 6.3 and their determination to reach “a common understanding of the matters related to the guidance.”¹⁸

13. United Nations Framework Convention on Climate Change, Subsidiary Body for Sci. and Tech. Advice, *Rep. of the Subsidiary Body for Sci. and Tech. Advice on Its Forty-Sixth Session*, ¶¶ 100–26, U.N. Doc. FCCC/SBSTA/2017/4 (Jun. 30, 2017) [hereinafter SBSTA U.N. Doc. FCCC/SBSTA/2017/4]; *Decision 1/CP.21*, *supra* note 4, at ¶¶ 36–40.

14. ANDREI MARCU, GOVERNANCE OF ARTICLE 6 OF THE PARIS AGREEMENT AND LESSONS LEARNED FROM THE KYOTO PROTOCOL 1 (2017) [hereinafter GOVERNANCE OF ARTICLE 6]; Stavins, *supra* note 7, at 55.

15. See *Decision 1/CP.21*, *supra* note 4, at ¶ 36; United Nations Framework Convention on Climate Change, Subsidiary Body for Sci. and Tech. Advice, *Rep. of the Subsidiary Body for Sci. and Tech. Advice on its forty-fourth session*, ¶¶ 93–96, U.N. Doc. FCCC/SBSTA/2016/2 (Jul. 27, 2016); United Nations Framework Convention on Climate Change, Subsidiary Body for Sci. and Tech. Advice, *Rep. of the Subsidiary Body for Sci. and Tech. Advice on its forty-fifth session*, ¶¶ 81–88, U.N. Doc. FCCC/SBSTA/2016/4 (Jan. 31, 2017) [hereinafter SBSTA U.N. Doc. FCCC/SBSTA/2016/4]; SBSTA U.N. Doc. FCCC/SBSTA/2017/4, *supra* note 13, at ¶¶ 100–08; SBSTA U.N. Doc. FCCC/SBSTA/2017/7, *supra* note 5, at ¶¶ 87–92.

16. *Decision 1/CP.21*, *supra* note 4, at ¶ 36.

17. *Id.*

18. SBSTA U.N. Doc. FCCC/SBSTA/2016/4, *supra* note 15, at ¶ 84.

The informal note prepared by the co-chairs for discussing article 6.2, which recorded Parties' contributions at SBSTA 47, gives some insights to the content and tone of the guidance. With that said, the elements in this note are preliminary and "should not be considered as final or exhaustive in any way."¹⁹ In Table 1, I list the elements that are relevant to the discussion in this Article. Some of them will be discussed in greater detail below.

Table 1: Select Draft Elements of the Guidance on Cooperative Approaches²⁰

Principles	Voluntary participation; environmental integrity; sustainable development; maintaining national prerogative and bottom-up approaches; multilateral rule-based system; addressing negative social and economic impacts
Definitions	Acquiring Party; creating/issuing Party; transferring Party; using Party; cooperative approaches; corresponding adjustment; double counting (claiming, issuance, registration, use); environmental integrity; ITMOs
Governance	CMA's role; oversight arrangements: article 6.2 body (or not) or under other processes (articles 4.13, 13, 15); role of the secretariat of the U.N. Framework Convention on Climate Change (UNFCCC)
Guidance for a Party Using/Transferring in ITMOs ²¹	Participation requirements; source of ITMOs; accounting and reporting by a Party using ITMOs toward its NDC; demonstrating the role of ITMOs in achieving NDC
Infrastructure	National registry; standard reporting table; national buffer registry; national registry connected to a centrally accessible distributed ledger; blockchain ²²
Participation Requirements	Requirements for all participating Parties (e.g., status under the PA; NDC qualification; NDC communication and maintenance; NDC target type; fulfillment of transparency requirements); further requirements for a Party that creates/issues or transfers ITMOs or that uses ITMOs toward

19. Draft Elements for SBSTA Agenda Item 11(a), *supra* note 6.

20. *Id.* For a complete list of elements, potential elements, and possible further elements, see especially its parts 2, 6–14.

21. *See id.* at part 9 (also suggesting guidance for a Party that creates/issues or transfers out ITMOs).

22. *See id.* at part 10 (mentioning blockchain and distributed ledger technology in the SBSTA negotiation for the first time); *see also* Norway, Submission to SBSTA on Article 6 of the Paris Agreement 4 (Oct. 2017) (suggesting that blockchain and distributed ledger technology be considered for keeping track of ITMOs). More about blockchain, climate change, and market schemes see, e.g., TIMIEBI AGANABA-JEANTY ET AL., BLOCKCHAIN CLIMATECUP ROUND TABLE (2017); WORLD BANK GROUP, BLOCKCHAIN AND EMERGING DIGITAL TECHNOLOGIES FOR ENHANCING POST-2020 CLIMATE MARKETS (2018).

	NDC (e.g., authorization under article 6.3; recording the use or transfer of ITMOs)
Accounting	Basis for accounting; specific guidance for Parties that create/issue or transfer ITMOs or that use ITMOs toward NDCs; limits on such creation/issuance, transfer or use; timing of corresponding adjustments
Reporting	Reporting for all participating Parties (e.g., corresponding adjustment; demonstrating the environmental integrity of transferred ITMOs; evidence that ITMOs are real, permanent, additional, and verified; establishment and updates of accounting approach; information on Party of origin of ITMOs); further requirements for a Party that creates/issues or transfers ITMOs or that uses ITMOs toward NDC (e.g., authorization under article 6.3; how such creation, transfer or use fulfills the requirements of sustainable development and environmental integrity)
Review	Oversight arrangements: article 6.2 body (or not) or specific compliance procedures or under other processes (articles 4.13, 13, 15) or no review

The governance of cooperative approaches and the scope and definition of ITMOs are open questions.²³ They need further examination to see if they can be feasible means of fulfilling NDCs. The wording of articles 6.2 and 6.3 does not appear to keep the governance of cooperative approaches within the PA, in that neither article requires decisions to be made by the CMA.²⁴ Cooperation may be “bilateral, plurilateral, and possibly multilateral,” or involve the “linking of cap-and-trade systems, or other types of trading systems.”²⁵ Some Parties whose submissions favored a broad interpretation, which allows a wide spectrum of cooperation that involves ITMOs, shared this view.²⁶ Others saw the scope of article 6.2 in

23. See Draft Elements for SBSTA Agenda Item 11(a), *supra* note 6, at part 6 (g) (noting that Parties considered ITMOs may be defined by the CMA or by Parties that would implement cooperative approaches); see also Andrei Marcu, *Article 6 of the Paris Agreement: Structure, Interpretation, Possible Outcomes*, in MARKET MECHANISMS AND THE PARIS AGREEMENT 59, 62 (Robert N. Stavins & Robert C. Stowe eds., 2017) (presenting views towards the question of “whether ITMOs need to be quantified in CO₂-equivalent terms only.”).

24. GOVERNANCE OF ARTICLE 6, *supra* note 14, at 3; PARTY SUBMISSIONS BEFORE MARRAKECH, *supra* note 7, at 6; Stavins, *supra* note 7, at 54.

25. PARTY SUBMISSIONS BEFORE MARRAKECH, *supra* note 7, at 6; see also MICHAEL A. MEHLING ET AL., LINKING HETEROGENEOUS CLIMATE POLICIES (CONSISTENT WITH THE PARIS AGREEMENT) 3–5 (2017) [hereinafter MEHLING ET AL., LINKING CLIMATE POLICIES].

26. See, e.g., Canada, *supra* note 7, at ¶ 4 (believing that article 6.2 “is intended to create a flexible, evolving space that encourages the development of new and innovative bottom-up approaches and experimentation with a variety of methods.”); Republic of Korea, Submission on Art. 6

particular as similar to the trading of assigned amount units between Annex B Parties under article 17 of the Kyoto Protocol (KP).²⁷

While engaging in voluntary cooperation, Parties are still obligated to “promote sustainable development and ensure environmental integrity and transparency, including in governance” and to avoid double counting. This is obvious given the use of “shall” in article 6.2.²⁸ Submissions by some Parties suggested the governance of environmental integrity and transparency should be on a centralized basis. However, most Parties “see implementation of [such] provisions as being left to cooperating [P]arties, through transparency provisions.”²⁹ This seems to be a more useful idea because the approach being devised for article 6.2 should differ from the KP’s centralized market mechanisms. The Joint Implementation (JI) Supervisory Committee and the Clean Development Mechanism (CDM) Executive Board are governing the JI and the CDM under the authority of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP).³⁰ However, the KP Parties’ experience with the CDM decreased their enthusiasm because its centralized governance led to a bureaucratic and inflexible process that failed to fully address their

of the Paris Agreement 2 (Apr. 2017) (stating that “the guidance under Art. 6.2 needs to be developed in a way that various bilateral and plurilateral approaches can be accommodated.”).

27. See, e.g., Brazil, Views on the Guidance Referred to in Article 6, Paragraph 2, of the Paris Agreement, ¶ 15 (Mar. 2017) (considering that the PA’s article 6.2 “is analogous to” the KP’s article 17), [hereinafter Brazil]. For a summary of Parties’ roundtable discussion on article 6.2 in conjunction with SBSTA 47, see Informal Document by Co-Facilitators dated Nov. 6, 2017, Round-Table Discussion Among Parties Held on 5 November 2017, SBSTA 47 Agenda Item 11(a): Guidance on Cooperative Approaches Referred to in Article 6, Paragraph 2, of the Paris Agreement [hereinafter SBSTA Roundtable Document]. For an overview of Parties’ previous submissions relating to article 6, see ANDREI MARCU, ISSUES FOR DISCUSSION TO OPERATIONALIZE ARTICLE 6 OF THE PARIS AGREEMENT (2017) [hereinafter MARCU, OPERATIONALIZE ARTICLE 6]; ANDREI MARCU, INTERNATIONAL COOPERATION UNDER ARTICLE 6 OF THE PARIS AGREEMENT: REFLECTIONS BEFORE SB 44 (2017) [hereinafter MARCU, REFLECTIONS BEFORE SB 44].

28. Paris Agreement, *supra* note 1, at art. 6.2. For more detailed discussions on environmental integrity, see Draft Elements for SBSTA Agenda Item 11(a), *supra* note 6, at part 6(f) (suggesting its possible elements: not increasing global emissions; quality of units; accounting rules); see also LAMBERT SCHNEIDER ET AL., ENVIRONMENTAL INTEGRITY UNDER ARTICLE 6 OF THE PARIS AGREEMENT 11 (2017) (defining environmental integrity as “the use of international transfers does not result in higher global GHG emissions than if the mitigation targets in NDCs had been achieved only through domestic mitigation action, without international transfers.”).

29. For detailed analyses see, e.g., GOVERNANCE OF ARTICLE 6, *supra* note 14, at 3–4, 7; SBSTA Roundtable Document, *supra* note 27, at 2; ANDREI MARCU ET AL., ISSUES AND OPTIONS: ELEMENTS FOR TEXT UNDER ARTICLE 6 7–8 (2017) (addressing some issues that are key to ensuring environmental integrity and transparency) [hereinafter MARCU ET AL., ISSUES AND OPTIONS].

30. Kyoto Protocol to the United Nations Framework Convention on Climate Change, art. 6, 12, Dec. 11, 1997, 2303 U.N.T.S. 162.

needs.³¹ That situation should be avoided through the cooperative approaches offered under the PA.

The more decentralized governance of the PA's article 6.2 may incentivize the participation of developed country Parties that have circumvented cooperation through the KP's market mechanisms. Article 6.2 may also encourage participation of non-Annex B Parties to the KP, which assume non-binding targets and cannot use the international emissions trading under the KP's article 17. For example, as neither Canada nor the U.S. is Party to the KP, the KP's market mechanisms did not apply to them. Now, they can make the most of the PA's article 6.2. Though the U.S. will in fact be withdrawing from the PA, the U.S. is still a Party until the conditions for withdrawal under article 28 are fulfilled.³² Article 6.2 is also appealing to countries like China and Korea, which are non-Annex B Parties to the KP, and are now enthusiastically using ETSs to help achieve their NDCs.³³ The bottom-up initiatives, such as linkages of ETSs among Parties or even subnational entities, are therefore promising. Though article 6.2 only mentions Parties, when read together with article 6.3, it reveals the potential participation of non-Party entities if the use of ITMOs is authorized by participating Parties.³⁴ Section 4 of this Article will provide a detailed analysis of linking subnational ETSs and its relation to the PA's articles 6.2 and 6.3.

II. MARKET-RELATED TRANSPARENCY

This section discusses the PA provisions relevant to both market-based cooperation and transparency of climate action. International rules on the MRV system have evolved over the past few years. The established MRV system, under the UNFCCC, runs "different, but seemingly parallel,

31. GOVERNANCE OF ARTICLE 6, *supra* note 14, at 2, 4; *see also* ROBERT O. KEOHANE & DAVID G. VICTOR, *THE REGIME COMPLEX FOR CLIMATE CHANGE* 19 (2011) (taking the CDM and the KP's "docking" rules as typical examples of the "counterproductive rigidities that are often built into comprehensive regimes.").

32. *See* Paris Agreement, *supra* note 1, at art. 28 (specifying the procedure for withdrawing from the PA).

33. DEP'T OF CLIMATE CHANGE, NAT'L DEV. & REFORM COMM'N OF CHINA (中国国家发展和改革委员会应对气候变化司), *强化应对气候变化行动中国国家自主贡献* [ENHANCED ACTIONS ON CLIMATE CHANGE: CHINA'S INTENDED NATIONALLY DETERMINED CONTRIBUTIONS] 3, 14 (2015).

34. Paris Agreement, *supra* note 1, at art. 6.2–6.3.

standards for developing and developed country [P]arties.”³⁵ By contrast, the PA obligates each Party to “prepare, communicate and maintain” NDCs and pursue domestic mitigation measures to fulfill their contributions.³⁶ Also, the PA has an enhanced and flexible transparency framework which “shall build upon and eventually supersede” the existing MRV system.³⁷ The PA refers to transparency throughout its text, and article 13 in particular requires Parties to regularly report on their GHG emissions, removals, implementation efforts, and to submit reports for expert and peer review.³⁸ Parties are now negotiating and developing the MPGs for this transparency framework to be included in the PAWP.³⁹

While the detailed MPGs are subject to further negotiation, a review of the instruments available from negotiations to date may illustrate the outlook for the incoming framework and inform what should be considered for realizing transparency in market-based cooperation. At an MPGs workshop before APA 1-3, experts from the Parties and regional groups discussed article 6 in the context of relevant information necessary to track progress toward implementing and achieving NDC goals.⁴⁰ Some suggested that only Parties that use article 6 report on their use of this article, and that separate guidance for tracking ITMOs be developed under SBSTA and

35. Deane et al., *supra* note 11, at 90.

36. Paris Agreement, *supra* note 1, at art. 4.2.

37. *Transparency of Support Under the Paris Agreement*, UNITED NATIONS (May 2, 2017), http://unfccc.int/cooperation_and_support/financial_mechanism/items/10121.php [<https://perma.cc/7GVG-K9D4>]. For a detailed comparison of the PA’s transparency framework and the UNFCCC’s MRV system, see YAMIDE DAGNET ET AL., MAPPING THE LINKAGES BETWEEN THE TRANSPARENCY FRAMEWORK AND OTHER PROVISIONS OF THE PARIS AGREEMENT (2017). However, it should be noted that the pursuit of a bifurcated North-South division, which had its sharpest application in the KP and should be diminishing in the post-PA era, has reemerged in the recent negotiating rounds. Some Parties to the PA suggested two-tier reporting rules for developed and developing countries. See, e.g., Informal Note by the Co-Facilitators dated Nov. 14, 2017, Draft Elements for APA Agenda Item 5, Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement [hereinafter Draft Elements for APA 1-4 Agenda Item 5].

38. Paris Agreement, *supra* note 1, at art. 9–11, 13.7, 13.11.

39. See Ad Hoc Working Grp. on the Paris Agreement, *Rep. of the Ad Hoc Working Grp. on the Paris Agreement on the Third Part of Its First Session*, ¶ 25, U.N. Doc. FCCC/APA/2017/2 (Jun 30, 2017) (inviting Parties to make submissions on agenda item 5) [hereinafter APA U.N. Doc. FCCC/APA/2017/2]; see also Provisional Informal Note by the Co-Facilitators dated May 16, 2017, APA Agenda Item 5, Modalities, Procedures and Guidelines for the Transparency Framework for Action and Support Referred to in Article 13 of the Paris Agreement (capturing views expressed by Parties for developing MPGs).

40. Ad Hoc Working Grp. on the Paris Agreement, *Rep. on the Workshop on the Development of Modalities, Procedures and Guidelines for the Transparency Framework for Action and Support Referred to in Article 13 of the Paris Agreement*, ¶ 42, U.N. Doc. FCCC/APA/2017/INF.2 (May 4, 2017).

linked to tracking progress in the attainment of NDCs under article 4.⁴¹ In the light of Parties' deliberations at APA 1-4, co-facilitators of the MPGs negotiations revealed how article 6 could be addressed through transparency provisions.⁴² The most relevant elements I have identified from their informal note are: national inventory report; information to track progress; technical expert review; and multilateral consideration.⁴³ Each element, as shown in Table 2, has included suggestions for the use of article 6 and cooperative approaches. When it comes to "information to track progress," the facilitators peculiarly noted "information related to article 6"—that is, (1) information concerning ITMO activities (e.g., creation, holding, transfer), cooperative approaches, and how environmental integrity is ensured; (2) institutional arrangements for operating registries, trading systems, and undertaking ITMO activities; and (3) governance and procedural arrangements that ensure double counting is avoided.⁴⁴

Table 2: Select Draft Elements of the MPGs⁴⁵

Overarching Considerations & Guiding Principles	Avoidance of double counting; promoting environmental integrity and transparency; linkage with article 6.2; building on and enhancing the transparency arrangements under the UNFCCC; flexibility to those developing countries that need it given their capacities; facilitating improved reporting and transparency over time
National Inventory Report	National circumstances and institutional arrangements; reporting guidance: methods, sectors and gases (including those covered by article 6 activities), time series, and frequency; constraints and capacity-building needs; improvement plans; submission process; reporting formats and tables (including consistency with agreed rules under article 6.2)
Information to Track Progress	Description and updates of a Party's NDC; progress in implementing its NDC (including information on the application of cooperative approaches); summary of GHG emissions and removals (and their projections); information on Parties' accounting under articles 4.13 and 4.14; information related to article 6; and capacity-building needs

41. *Id.* at ¶¶ 42 (b), (d).

42. Draft Elements for APA 1-4 Agenda Item 5, *supra* note 37.

43. *Id.* at parts B–C, G–H.

44. For a complete list see *id.* at part C.10.

45. *Id.* at parts A–C, G–H.

Technical Expert Review	Increasing transparency of information provided under article 13.7; sharing good practices and lessons learned; identifying best practice examples; assessing the consistency of information with the accounting guidance under article 6.2; information to be reviewed; format and steps (including roles of Parties and the secretariat); review team and institutional arrangements; frequency and timing (and additional requirements for Parties cooperating under article 6)
Multilateral Consideration	Sharing experiences, lessons learned, and best practices from Parties and registered observers; information to be considered (including that on participation in voluntary cooperation under article 6)

Under the SBSTA negotiating track, Parties have reflected on a range of issues concerning the contribution of reporting on article 6 activities to the assessment of efforts made toward Parties' NDCs. "Transparency" was listed as one of the elements in the informal note on article 6.2 that captured Parties' views from their pre-SBSTA 46 submissions and informal consultations during SBSTA 46.⁴⁶ The discussions at SBSTA 47 unfolded more details about transparency requirements for participating in ITMO-related activities. The resulting informal note, as Table 1 outlines, has separate draft elements captioned "accounting," "reporting," and "review," each containing specifics and options for further consideration.⁴⁷

Article 13 connects with article 6.2 such that the MPGs for the transparency framework may guide Parties to report on their practice with respect to sustainable development and environmental integrity.⁴⁸ This is because article 6.2 only explicitly mentions guidance on accounting but less clearly on either sustainable development or environmental integrity. Conversely, the development of guidance and other arrangements under article 6 may inform the reporting (e.g., content, format, and timing) under article 13. The information to track progress for achieving NDCs would necessarily include information relevant to cooperative approaches and the use of ITMOs.⁴⁹ A vivid example of this connection is when drafting

46. Informal Information Note by the Co-Facilitators dated May 17, 2017, SBSTA 46 Agenda Item 10 (a), Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement, at part J.

47. Draft Elements for SBSTA Agenda Item 11(a), *supra* note 6, at parts 12–14.

48. See MARCU, REFLECTIONS BEFORE SB 44, *supra* note 27, at 2 (indicating that there are linkages between article 6 and article 13).

49. In Parties' submissions relating to article 6, *see e.g.*, Brazil, *supra* note 27, at ¶ 13 (stating "the 6.2 guidance would consist of an additional 'layer' for the implementation of transparency

elements for the MPGs, the facilitators had placeholders for outputs from SBSTA regarding information to track progress, article 6-related information, and information to be expert-reviewed.⁵⁰

ETSs and relevant bilateral or plurilateral partnerships indicate an encouraging scenario that should fall within the scope of cooperative approaches. ETSs are closely interrelated to transparency as they apparently influence each other. Analysts have noted the crucial role of transparency in developing and operating ETSs.⁵¹ They also recognize the necessity for a transnational transparency framework due to the greater likelihood of linking ETSs in various jurisdictions.⁵² One key indicator of whether an ETS is transparent is whether it applies uniform rules for the MRV to track compliance, coupled with enforcement measures and liability for non-compliance.⁵³ Such rules and measures support access to accurate and credible emissions data, which helps determine the emission cap for an ETS and the quantity of allowances regulated emitters have to obtain and surrender in a compliance period.⁵⁴ Those emitters are required to regularly report their emissions to competent authorities in accordance with MRV rules.⁵⁵ There are also many emitters that bear no obligation to report but still voluntarily disclose their emissions information.⁵⁶ Voluntary disclosure

commitments under Article 13 and for NDCs accounting under Article 4.13 of the Paris Agreement.”); Australia, *supra* note 7 at 2 (saying “Parties should demonstrate consistency with principles and standards of environmental integrity when they report under Article 13.7 on their use of cooperative approaches.”); *see also* PARTY SUBMISSIONS BEFORE MARRAKECH, *supra* note 7, at 9; DAGNET ET AL., *supra* note 37, at 13.

50. Draft Elements for APA 1-4 Agenda Item 5, *supra* note 37, at parts C.4, 10, G.4.14.

51. ASIAN DEV. BANK, EMISSIONS TRADING SCHEMES AND THEIR LINKING: CHALLENGES AND OPPORTUNITIES IN ASIA AND THE PACIFIC 82 (2016) [hereinafter ADB].

52. Deane et al., *supra* note 11, at 95; *see also* Joe Kruger & Christian Egenhofer, *Confidence Through Compliance in Emissions Trading Markets*, 6 SUSTAINABLE L. & POL’Y, no. 2, 2006, at 3 (indicating that market participants and the public are more likely to trust carbon markets when they are transparent); GOVERNANCE OF ARTICLE 6, *supra* note 14, at 3 (indicating that transparency is a fundamental principle for an international carbon market); BREWER & MEHLING, *supra* note 11, at 182 (indicating that international governance structures are crucial to market integrity).

53. Some jurisdictions with ETSs adopt enforcement measures for non-compliance. For example, California has regulations providing penalties for non-compliance by regulated entities, such as failing to surrender compliance instruments to fulfill their compliance obligation. *See* the text accompanying note 61. *See also* Table 4 below for China’s enforcement measures including liabilities for non-compliance. BREWER & MEHLING, *supra* note 11 at 189–90; ADB, *supra* note 51, at 85 (indicating that uniform trading infrastructure and common oversight can ensure transparency).

54. ADB, *supra* note 51, at 78.

55. *Id.* at 27.

56. Julia Rosen, *Here’s What Happens When Companies Actually Track Their CO2 Emissions*, VOX (Apr. 3, 2016, 9:10 AM), <https://www.vox.com/2016/4/3/11350404/corporate-carbon-footprint> [https://perma.cc/G3FN-LKU2].

complements mandatory reporting and encourages broader public participation.⁵⁷ Governments, companies, investors, and the public can access reliable, consistent, and comparable climate information that can generate benefits both domestically and internationally.⁵⁸

The analysis above shows that a transparent MRV of GHG emissions is essential to an operational ETS. Taking a step further, I argue that the process of building an ETS and linking ETSs in various jurisdictions can enhance transparency in relation to reporting GHG emissions, accounting, and other climate actions, including those in the PA context. Further details of how this can be achieved in practice are discussed in Sections 3 and 4 below.

III. HOW CAN ETSS ENHANCE TRANSPARENCY?

A growing body of evidence on established and emerging ETSs finds some positive contributions that ETSs have made to promoting transparency on climate action. Drawing on the practice in North America and China, this section will show that a transparent MRV is necessary for an effective ETS and developing and operating an ETS can benefit MRV.

A. Evaluating Transparency of an ETS

As discussed earlier, having uniform MRV rules in place is pivotal to ensuring the transparency of an ETS. It has also been noted that a transparent ETS should at least possess open platforms for auctioning allowances, have updated and accessible (online) public information, and apply national frameworks that are in conformity with international standards.⁵⁹ Developing these features is therefore necessary for an ETS to effectively promote transparency.

57. This Article does not engage in the discussion of voluntary disclosure. For more details see, e.g., FLORENCE DEPOERS, THOMAS JEANJEAN & TIPHAINÉ JÉRÔME, VOLUNTARY DISCLOSURE OF GREENHOUSE GAS EMISSIONS: CONTRASTING THE CARBON DISCLOSURE PROJECT AND CORPORATE REPORTS (2016) (discussing in detail about voluntary disclosure). See generally Gail Elizabeth Henderson, *The Materiality of Climate Change and the Role of Voluntary Disclosure*, COMP. RES. IN L. & POL. ECON., no. 47, 2009 (explaining the current disclosure requirements and how voluntary disclosure can fill the gaps).

58. See generally YAMIDE DAGNET ET AL., *supra* note 37, at 6 (discussing the benefits of transparency to various stakeholders).

59. Deane et al., *supra* note 11, at 95–96 (also considering the freedom of information legislation in addition to the three elements as mentioned); see also Liang, *supra* note 12, at 18–19;

Jurisdictions with established or comparatively mature ETSs have scaled up or designed new rules for operating those ETSs. California's cap-and-trade (C&T) program has been "praised for its highly transparent and inclusive consultation process."⁶⁰ It is equipped with a set of legislation and regulations to safeguard its operation. For instance, its rules provide detailed requirements on compliance instruments, registration, GHG allowance and allocation, compliance by covered entities, trading and banking, linkage to external ETSs, offset credits, and enforcement and penalties.⁶¹ The Air Resources Board (ARB), which governs the C&T program, held a public hearing on June 29, 2017 to consider proposed amendments to the Mandatory GHG Emissions Reporting.⁶² The ARB runs a website that announces and updates C&T-related legal instruments and system operation information.⁶³

It is worth noting that California built its C&T program in accordance with the design recommendations from the Western Climate Initiative (WCI); the WCI is a regional, market-based cooperative forum to address climate change involving some American states and Canadian provinces.⁶⁴ The WCI published instruments that took note of partner jurisdictions' consensus on policy recommendations and detailed designs for the C&T program.⁶⁵ The WCI's 2010 Design emphasizes timely access to critical

BREWER & MEHLING, *supra* note 11, at 183 (noting the noticeable progress in transparency for voluntary carbon markets).

60. Deane et al., *supra* note 11, at 93.

61. See generally CAL. CODE REGS. tit. 17, § 95801-96022 (2018) (showing California's cap-and-trade system regulations).

62. See generally CAL. AIR RES. BD., *Amendments to the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions* (2017) (showing the amendments made to the regulation for the mandatory reporting of greenhouse gas emissions).

63. *Cap-and-Trade Program*, CAL. AIR RES. BD. <https://www.arb.ca.gov/cc/capandtrade/capandtrade.htm> [<https://perma.cc/GXZ8-P27U>] (last visited Feb. 9, 2018).

64. Presently, California and Québec are continuing to work together through the WCI to develop and harmonize their ETS policies. See WCI Inc., <https://www.wci-inc.org> [<https://perma.cc/62FB-ZT3D>] (last visited Sept. 14, 2018) (detailing the continuing work WCI does with California and Québec by providing "administrative and technical services to support the implementation of state and provincial greenhouse gas emissions trading programs."). In 2011, the WCI was incorporated to WCI, Inc., which is a non-profit corporation "providing administrative and technical services to its participants to support and facilitate the implementation of their cap-and-trade programs for reducing greenhouse gas emissions." Agreement on the Harmonization and Integration of Cap-and-Trade Programs for Reducing Greenhouse Gas Emissions, Que.-Cal.-Ont., preamble at ¶ 2, Sept. 22, 2017, Office of the Premier of Ont., <https://news.ontario.ca/opo/en/2017/09/agreement-on-the-harmonization-and-integration-of-cap-and-trade-programs-for-reducing-greenhouse-gas.html> [<https://perma.cc/E2EA-BLMP>] [hereinafter Que.-Cal.-Ont. Agreement].

65. See *Documents and Resources*, WESTERN CLIMATE INITIATIVE, <http://www.westernclimateinitiative.org/documents> [<https://perma.cc/MXW3-9RGN>] (last visited Feb.

information pertaining to program operation, and transparency for each jurisdiction's allowance budget-setting, auctioning, and emission allowance tracking.⁶⁶

Québec and Ontario have also adopted the WCI's recommendations.⁶⁷ These two Canadian provinces have developed similar environmentally rigorous C&T programs and transparency standards. Québec, for example, requires covered entities to report their GHG emissions according to the standards set in the Mandatory Reporting Regulation.⁶⁸ Québec's C&T-relevant legislation and regulations together with information and guides concerning program operation and participation are online and publicly accessible.⁶⁹ Ontario employs comparative measures to ensure the transparency and accountability of its program.⁷⁰ Its Climate Change Mitigation and Low-carbon Economy Act requires an annual status report on the province's Climate Change Action Plan.⁷¹ This report includes information on projects and priorities to be funded by C&T proceeds.⁷²

Furthermore, Québec is determined to align its C&T design and operation with the "concepts and principles" set forth in article 6.2 of the

14, 2018) (allowing access to detailed designs, such as the MRV, emissions limits, program coverage, compliance instruments, allowances distribution, offsets, and linkage).

66. WCI Inc., DESIGN FOR THE WCI REGIONAL PROGRAM 8, 18–20, 23 (2010) [hereinafter WCI DESIGN].

67. Press Release, Office of the Premier of Ont., Québec, Ontario, and California Join Forces to Fight Climate Change (Sept. 22, 2017, 10:51 AM), <https://news.ontario.ca/opo/en/2017/09/quebec-ontario-and-california-join-forces-to-fight-climate-change.html> [<https://perma.cc/JZ3Z-9CTF>]; Erica Morehouse, *Western Climate Initiative Expands: Ontario to Join California-Québec Carbon Market*, ENVTL. DEF. FUND BLOG (Sept. 22, 2017), <http://blogs.edf.org/climatetalks/2017/09/22/western-climate-initiative-expands-ontario-to-join-california-quebec-carbon-market/> [<https://perma.cc/TVU2-XHZD>].

68. GOV'T OF QUE., REGULATION RESPECTING MANDATORY REPORTING OF CERTAIN EMISSIONS OF CONTAMINANTS INTO THE ATMOSPHERE 5 (May 1, 2018).

69. See, e.g., *Québec: A Leader in the Fight Against Climate Change*, QUÉBEC, <http://www.mddelcc.gouv.qc.ca/changementsclimatiques/index-en.htm> [<https://perma.cc/WFJ2-JU63>] (last visited Feb. 7, 2018) (touting Québec's provincial government and their support of companies, municipalities, and private citizens in the transition to a low carbon world through implementation of measures set out in the 2013-2020 Climate Change Action Plan).

70. ENVTL. COMM'R OF ONT., FACING CLIMATE CHANGE: GREENHOUSE GAS PROGRESS REPORT 2016 77 (2016).

71. Climate Change Mitigation and Low-Carbon Economy Act, S.O. 2016, c 7, art. 8 (Can.). It should be noted that Ontario's new administration introduced the Cap-and-Trade Cancellation Act in July 2018 to repeal the Climate Change Mitigation and Low-carbon Economy Act. See *Bill 4, Cap and Trade Cancellation Act, 2018*, LEGISLATIVE ASSEMBLY OF ONTARIO (2nd Reading Sept. 13, 2018), <https://www.ola.org/en/legislative-business/bills/parliament-42/session-1/bill-4> [<https://perma.cc/T66S-5T67>].

72. *Cap and Trade in Ontario*, ONTARIO, <https://www.ontario.ca/page/cap-and-trade-ontario> [<https://perma.cc/FRU5-KJCQ>] (last updated Jul. 25, 2018).

PA.⁷³ In fact, Québec submitted comments on guidance regarding article 6.2 to the SBSTA.⁷⁴ Its submission addressed the transparency of the province's C&T program and the main program features aimed at achieving environmental integrity.⁷⁵ Québec also reported that it had developed its program in conformity with “the environmental integrity standards set out in decision 2/CP.17, paragraph 79 and 1/CP.18, paragraph 42 in the sense that it must deliver GHG emission reductions that are real, verifiable, permanent and additional, while avoiding double counting.”⁷⁶

B. Building MRV Capacity to Enhance Transparency

Developing and operating ETSs builds MRV capacity, especially in emerging markets. Effective ETSs rely on accurate and updated data to help set the overall emissions limit and the allowance allocation plan. ETSs incentivize the establishment of MRV rules, which ensures transparency. Also, emission data gathered through new MRV regulatory systems could be valuable to existing initiatives. For example, integrating such MRV data with national GHG inventories for energy auditing and reporting can improve both GHG emissions and energy data collection.⁷⁷

China's evolving ETS is one of the emerging and inspiring stories. Between 2013 and 2014, the world's biggest GHG emitter launched pilot ETSs in Beijing, Tianjin, Shanghai, Guangdong, Shenzhen, Hubei, and Chongqing. As of September 2016, they involved some 3000 key enterprises in over 20 industries.⁷⁸ In December 2016, Fujian also started its ETS with a focus on carbon sinks.⁷⁹ Concurrently, a national ETS (NETS)

73. Compare Que., Can. to the United Nations Framework Convention on Climate Change Subsidiary Body for Sci. and Tech. Advice 3 (Oct. 2016), [hereinafter Oct. 2016 Submission by Que., Can.] (describing how Québec's C&T system is designed to prevent double counting) with Paris Agreement, *supra* note 1, art. 6.2 (requiring Parties to avoid double counting).

74. Oct. 2016 Submission by Que., Can., *supra* note 73; Que., Can. to the United Nations Framework Convention on Climate Change Subsidiary Body for Sci. and Tech. Advice (Mar. 2017) [hereinafter Mar. 2017 Submission by Que., Can.].

75. Mar. 2017 Submission by Que., Can., *supra* note 74, at 2–4; Oct. 2016 Submission by Que., Can., *supra* note 73, at 3–5.

76. Oct. 2016 Submission by Que., Can., *supra* note 73, at 3.

77. ADB, *supra* note 51, at 64.

78. See NAT'L DEV. AND REFORM COMM'N, CHINA'S POLICIES AND ACTIONS FOR ADDRESSING CLIMATE CHANGE 48 (2017) [CHINA CLIMATE CHANGE 2017].

79. *Id.*; INTERIM MEASURES FOR THE ADMINISTRATION OF CARBON EMISSIONS TRADING IN FUJIAN PROVINCE, art. 6, 30 (Sept. 30, 2016), http://www.fujian.gov.cn/zc/zfxxgkl/gkml/jgzz/fgfz/201610/t20161002_1135886.htm [<https://perma.cc/5W6X-BV57>] (in Chinese).

has been under development since 2014.⁸⁰ The National Development and Reform Commission (NDRC) is the department within the State Council responsible for developing and managing the ETS nationwide.⁸¹ On December 18, 2017, the NDRC announced a detailed plan for building the NETS that marked its official launch.⁸² It is intended to start with the electricity generation industry, and gradually include more industries and tradable products.⁸³ The following figure presents a draft timeline the NDRC plans to roll out the NETS.⁸⁴

80. See NAT'L DEV. AND REFORM COMM'N, CHINA'S POLICIES AND ACTIONS FOR ADDRESSING CLIMATE CHANGE 40–41 (2016) [CHINA CLIMATE CHANGE 2016].

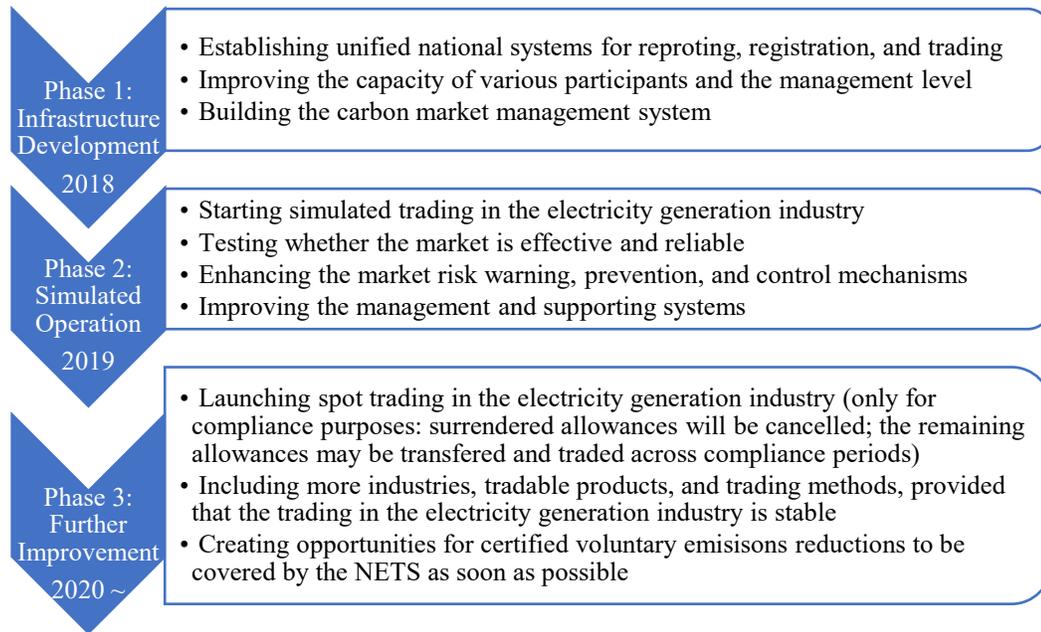
81. But with the ongoing institutional reform within the State Council, the responsibility in relation to climate change and emission reduction is shifting to the newly formed Ministry of Ecology and Environment. See STATE COUNCIL, NOTICE ON INSTITUTIONAL SETTINGS (Mar. 24, 2018), http://www.gov.cn/zhengce/content/2018-03/24/content_5277121.htm [<https://perma.cc/VRG8-4XYL>] (in Chinese); *The State Council Institutional Reform Plan*, XINHUA (Mar. 17, 2018), http://www.xinhuanet.com/politics/2018lh/2018-03/17/c_1122552185.htm [<https://perma.cc/5ZYC-5RKV>] (in Chinese); see also Jackson Ewing, *Tough Tasks for China's New Environment Ministry*, THE DIPLOMAT (Mar. 17, 2018), <https://thediplomat.com/2018/03/tough-tasks-for-chinas-new-environment-ministry/> [<https://perma.cc/UG9U-PZRL>].

82. NAT'L DEV. AND REFORM COMM'N, NOTICE ON ISSUING THE PLAN FOR BUILDING THE NATIONAL CARBON EMISSIONS TRADING MARKET (ELECTRICITY GENERATION INDUSTRY) (Dec. 18, 2017), http://qhs.ndrc.gov.cn/zcfg/201712/t20171220_871133.html [<https://perma.cc/TS2Q-9Y8H>] (in Chinese), with the attachment PLAN FOR BUILDING THE NATIONAL CARBON EMISSIONS TRADING MARKET (ELECTRICITY GENERATION INDUSTRY), <http://qhs.ndrc.gov.cn/zcfg/201712/W020171220577324953088.pdf> [<https://perma.cc/FZ2Q-SRE6>] (in Chinese) [hereinafter NETS PLAN]; see also *National Carbon Emissions Trading Scheme Launched*, NAT'L DEV. AND REFORM COMM'N (Dec. 20, 2017), http://qhs.ndrc.gov.cn/gzdt/201712/t20171220_871173.html [<https://perma.cc/AS98-JYVE>] (in Chinese). For assessments of the NETS, see, e.g., Jocelyn Timperley, *Q&A: How Will China's New Carbon Trading Scheme Work?* CARBON BRIEF (Jan. 29, 2018, 3:46 PM), <https://www.carbonbrief.org/qa-how-will-chinas-new-carbon-trading-scheme-work> [<https://perma.cc/QNK6-WTAR>].

83. NETS PLAN, *supra* note 82, at 2. This plan consists of eight parts: (1) general requirements: guidelines, principles, objectives; (2) market elements: trading participants, tradable products, platforms; (3) participants: key emitters; regulatory authorities; verification bodies; (4) institutional development: MRV system, allowance management, trading rules; (5) allowance management in the electricity generation industry: allowance allocation and surrender; (6) supporting systems: reporting, registration, trading, transaction settlement; (7) pilot ETSs in transition; (8) safeguard measures: organization and leadership, fulfillment of responsibilities, capacity building, and guidance and knowledge sharing.

84. *Id.* at 3. Notably, this plan would be a living instrument because the development and reform departments under the State Council, in conjunction with other relevant departments, may adjust and improve the plan as required on a timely basis. See *id.* at 6–7.

Figure 1: Roadmap for the NETS



Operating pilot ETSs have facilitated GHG emission reporting in China. Prior to launching those pilots, China did not have a national or regional GHG accounting and reporting system.⁸⁵ So far, all the jurisdictions with pilot ETSs have adopted local rules on GHG emissions. These jurisdictions have formulated methods and guidelines for counting emissions from key enterprises. They have also established reporting platforms.⁸⁶ Nationally, China's commitment to GHG emissions profile disclosure was written into the State Council's GHG Control Plan for the 13th Five-Year Plan (2016–2020).⁸⁷ The NDRC has circulated

85. See CHINA CLIMATE CHANGE 2016, *supra* note 80, at 44–47; Angel Hsu, Chandan Yan & Yaping Cheng, *Addressing Gaps in China's Environmental Data: The Existing Landscape* 24 (Yale Data Driven, Working Paper, Jan. 2017) (emphasizing a lack of a standardized MRV system).

86. Ling Chen, *China and Asia-Pacific Carbon Markets*, THE DIPLOMAT (Jun. 2, 2017), <https://thediplomat.com/2017/06/china-and-asia-pacific-carbon-markets/> [<https://perma.cc/7UPZ-3SKU>]; see also CHINA CLIMATE CHANGE 2016, *supra* note 80, at 46–47.

87. STATE COUNCIL, WORK PLAN FOR CONTROLLING GREENHOUSE GAS EMISSIONS DURING THE 13TH FIVE-YEAR PLAN, part 8 (3) (Nov. 4, 2016), http://www.gov.cn/zhengce/content/2016-11/04/content_5128619.htm [<https://perma.cc/YDH6-Z5DJ>] (in Chinese).

departmental rules and policy prescriptions.⁸⁸ The NDRC also submitted the Draft NETS Regulations to the State Council for review and discussion.⁸⁹

Table 3 is a summary of the legislation and applicable policies. These instruments stipulate reporting requirements, including general GHG reporting rules and the reporting-related provisions designed for the ETS. Table 4 further illustrates who must report, what to report, and how to report. This table also contains information on verification of reporting and enforcement measures.⁹⁰

88. All the instruments are available at <http://qhs.ndrc.gov.cn/zcfg/> [https://perma.cc/GCY9-VNZY] (in Chinese) (last visited Mar. 20, 2018).

89. See GENERAL OFFICE OF THE STATE COUNCIL, NOTICE ON ISSUING THE STATE COUNCIL'S 2016 LEGISLATIVE WORK PLAN, part 3(4) (Apr. 13, 2016), http://www.gov.cn/zhengce/content/2016-04/13/content_5063670.htm [https://perma.cc/E7LD-3PYA] (in Chinese); CHINA CLIMATE CHANGE 2017, *supra* note 78, at 45, 47.

90. In China's legislative system, the National People's Congress (NPC) and its Standing Committee enact and amend laws. The State Council formulates administrative regulations. The ministries and competent authorities of the (vice) ministerial level under the State Council issue departmental rules and measures. Laws prevail over administrative regulations, followed by departmental rules and measures. For detailed analyses of their formulation, hierarchy, and resolution of conflicts, see *China's Legislative System*, THE NATIONAL PEOPLE'S CONGRESS OF THE PEOPLE'S REPUBLIC OF CHINA, http://www.npc.gov.cn/englishnpc/about/2007-11/20/content_1373257.htm [https://perma.cc/MZ57-J8ZU] (last visited Feb. 5, 2018) (describing China's legal and legislative system); *Meetings of the Standing Committee and Their Procedures*, THE NATIONAL PEOPLE'S CONGRESS OF THE PEOPLE'S REPUBLIC OF CHINA, http://www.npc.gov.cn/englishnpc/Organization/2007-11/15/content_1373019.htm [https://perma.cc/H5H5-BXJF] (last visited Feb. 9, 2018) (describing how bills are deliberated). See also LEGISLATION LAW OF THE PEOPLE'S REPUBLIC OF CHINA (amended Mar. 15, 2015), http://www.npc.gov.cn/npc/dbdhhy/12_3/2015-03/18/content_1930713.htm [https://perma.cc/GBR6-G87C] (in Chinese).

Table 3: Key Policies and Legislation concerning Reporting GHG Emissions in China

Authority	Instrument	Year
The State Council submitting to the National People's Congress for approval	12th Five-Year Plan for Economic and Social Development (FYP) [国民经济和社会发展第十二个五年规划纲要] ⁹¹	2011
	13th FYP [国民经济和社会发展第十三个五年规划纲要] ⁹²	2016
The State Council	Work Plan for Controlling Greenhouse Gas Emissions (GHG Control Plan) during the 12th FYP [“十二五”控制温室气体排放工作方案] ⁹³	2011
	Integrated Reform Plan for the Ecological Civilization System [生态文明体制改革总体方案] ⁹⁴	2015
	GHG Control Plan during the 13th FYP [“十三五”控制温室气体排放工作方案]	2016
NDRC	Notice on Reporting Greenhouse Gas Emissions of Key Enterprises and Public Institutions (GHG Reporting Notice) [组织开展重点企业（事）业单位温室气体排放报告工作的通知]	2014
	Interim Measures for the Administration of Carbon Emissions Trading (Interim ETS Measures) [碳排放权交易管理暂行条例] ⁹⁵	
	Accounting Methodologies and Reporting Guidelines for Greenhouse	2013–2015

91. THE 12TH FIVE-YEAR PLAN FOR ECONOMIC AND SOCIAL DEVELOPMENT OF CHINA 2011-2015, ch. 21, § 1 (trans., British Chamber of Commerce) (2011) (determining to build an effective GHG accounting system and gradually develop an ETS). The FYP is to set forth China's strategic intentions in a five-year circle. It defines major objectives, initiatives and measures for economic and social development. It also serves as a guide for market participants and an important basis for government to perform its duties.

92. THE 13TH FIVE-YEAR PLAN FOR ECONOMIC AND SOCIAL DEVELOPMENT OF THE PEOPLE'S REPUBLIC OF CHINA 2016–2020 ch. 46, § 1 (trans., Compilation and Translation Bureau, Central Committee of the Communist Party of China) (2016) (determining to develop a national ETS and implement MRV and allowance management in key enterprises).

93. The GHG Control Plan is to achieve the FYP's goals with respect to GHG emission control and low-carbon development. Both the plans during the 12th and 13th FYPs have specific parts dedicated to the development and operation of the ETS.

94. See especially its part 8(42) (having similar provisions as the 12th and 13th FYPs on the ETS). More about this plan see *Full Text: Integrated Reform Plan for Promoting Ecological Progress*, XINHUA (Sept. 21, 2015), http://www.xinhuanet.com/english/china/2015-09/21/c_134646023.htm [<https://perma.cc/9GGX-NRRW>].

95. NAT'L DEV. AND REFORM COMM'N, INTERIM MEASURES FOR THE ADMINISTRATION OF CARBON EMISSIONS TRADING (Jan. 10, 2015), http://qhs.ndrc.gov.cn/zcfg/201412/t20141212_652007.html [<https://perma.cc/RU6U-TEEP>] (in Chinese) [hereinafter Interim ETS Measures]. These measures were formulated to implement the 12th FYP and relevant GHG Control Plan. They provide general requirements for allowance management, emissions trading, verification and allowance surrender, supervision and governance, and liabilities. In particular, the departments responsible for the ETS are required to announce in due course the scope of industries, types of GHGs, and standards for determining key emitters (art. 6). As shown in Tables 3 and 4, the NDRC has specified some of the issues in a series of notices/orders, such as the GHG Reporting Notice and the NETS Plan. Its General Office issued the Reporting Guidelines, the NETS Launching Notice, and the 2016-2017 MRV Notice.

	Gas Emissions of Enterprises in 24 Industries (Trial) (Reporting Guidelines) [24 个行业企业温室气体排放核算方法与报告指南 (试行)]	
	Notice on Earnestly Completing the Key Work for Launching the National Carbon Emissions Trading Market (NETS Launching Notice) [关于切实做好全国碳排放权交易市场启动重点工作的通知]	2016
	Notice on Completing the Work on Carbon Emissions Reporting and Verification and the Plan for Emissions Monitoring in 2016 and 2017 (2016-2017 MRV Notice) [关于做好 2016、2017 年度碳排放报告与核查及排放监测计划制定工作的通知]	2017
	Plan for Building the National Carbon Emissions Trading Market (Electricity Generation Industry) (NETS Plan) [全国碳排放权交易市场建设方案 (发电行业)] ⁹⁶	
NDRC submitting to the State Council for review and discussion	Draft Regulations on the Administration of National Carbon Emissions Trading (Draft NETS Regulations) [碳排放权交易管理条例]	2015–present

Table 4: Details for the Reporting Framework⁹⁷

Who must report	GHG Reporting Notice: (1) enterprises or public institutions that have legal personality or entities that use independent accounting and are considered as legal persons; (2) GHG emissions in 2010 \geq 13000 tons of CO ₂ e or comprehensive energy use \geq 5000 tons of standard coal equivalent (TCE)
	NETS Launching Notice: (1) enterprises that have legal personality or use independent accounting in eight industries: petrochemicals, chemicals, building materials, iron and steel, non-ferrous metals, paper, electricity, and aviation; (2) comprehensive energy use in either 2013, 2014, or 2015 \geq 10000 TCE
	2016-2017 MRV Notice: (1) enterprises or other economic entities in eight industries: petrochemicals, chemicals, building materials, iron and steel, non-ferrous metals, paper, electricity, ⁹⁸ and aviation; (2) GHG emissions in any year from 2013 to 2017 \geq 26000 tons of CO ₂ e or comprehensive energy use \geq 10000 TCE
What to report	GHG Reporting Notice: (1) the emissions of, if any, CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, and SF ₆ ; ⁹⁹ (2) the information of reporting

96. Although the title specifies that it is for the electricity generation industry, many provisions of this plan (see note 83) are general requirements and could implicate other industries.

97. The information in Table 4 was selected and summarized from the instruments in Table 3.

98. The NDRC considers captive power plants in any industry that meet the condition of GHG emissions in (2) as the enterprises in the electricity industry.

99. In addition to the six GHGs, the Interim ETS Measures added NF₃, see art. 47 (defining GHGs as “natural and man-made gaseous components that absorb and reemit infrared radiation in the atmosphere, including CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, and NF₃”).

	<p>entities; (3) annual total emissions and emissions by source (from fossil fuel combustion, industrial production, or attributable to the consumption of purchased electricity and heat); (4) if any, emissions outside the place where an entity is registered</p> <p>NETS Launching Notice: (1) annual GHG emissions in 2013, 2014 and 2015; (2) other relevant basic data</p> <p>2016-2017 MRV Notice: (1) annual GHG emissions in 2016 and 2017; (2) other relevant basic data; (3) emissions monitoring plan</p>
How to report	<p>GHG Reporting Notice: (1) reporting entities measuring and reporting to provincial climate change authorities (by March 30 of each year); (2) provincial authorities assessing and verifying; (3) consolidation report submitted to NDRC (by June 30 of each year)</p> <p>NETS Launching Notice: (1) local authorities (assisted by industry associations and state-owned enterprise groups) making draft lists of emitters to be included in the NETS; NDRC cross-checking the lists; (2) emitters on the lists following the Reporting Guidelines to measure and report; (3) third-party verifying; local authorities assessing and verifying; individual emitter reports and consolidated data submitted to NDRC</p> <p>2016-2017 MRV Notice (similar to the NETS Launching Notice but with two additions): (1) enterprises in the aviation industry copying their reports to the Civil Aviation Administration of China; (2) spot check, expert review, and other methods used for report assessment and verification</p>
Verification	Reference Qualification on Third-Party Verification Bodies and Verifiers; Reference Guidance on Third-Party Verification ¹⁰⁰
Enforcement measures	<p>Credit management system; blacklist for non-compliance exposure¹⁰¹</p> <p>Administrative penalties, liability for damages and/or criminal liability for key emitters, verification bodies, trading agencies, and other participants¹⁰²</p>

100. These two references were attached to the NETS Launching Notice. They provide basic requirements for third-party verification bodies and verifiers, as well as verification procedures, reports and formats. The Interim ETS Measures also contain some general requirements for verification, especially in its chapter 4. The NDRC is presently researching the development of administrative measures for third-party verification bodies. *See* NDRC GENERAL OFFICE, NOTICE ON EARNESTLY COMPLETING THE KEY WORK FOR LAUNCHING THE NATIONAL CARBON EMISSIONS TRADING MARKET, part 2(3) (Jan. 11, 2016), http://www.ndrc.gov.cn/gzdt/201601/t20160122_772150.html [<https://perma.cc/SN79-ZM49>] (in Chinese).

101. *See* Interim ETS Measures, *supra* note 95, at art. 38–39 (requiring the establishment of a credit management system that could review and maintain the credit records of key emitters, verification bodies, trading agencies, and other practitioners, as well as a blacklist that could expose those severely violating law and being dishonest).

102. *See id.*, ch. 6. This entire chapter is dedicated to “Liability.” For example, key emitters who refuse to fulfill reporting obligations or to submit verification reports will be ordered by provincial ETS authorities to make corrections within a time limit. Those failing to do so will be given administrative penalties pursuant to law (art. 40.1). For verification bodies, when issuing false reports, making major errors, using or publicizing trade secrets of entities being verified without consent, or

China's transition to the NETS is pushing progress in the MRV system. China does so by broadening the coverage of GHGs and emitters, solidifying the ETS legislation from departmental rules into administrative regulations, unifying the rules, and creating greater potential for linking with other carbon markets. In addition to the progress made in law and policy, China is presently exploring new technologies like blockchain applicable to managing carbon assets that can nurture transparency and trust.¹⁰³ This effort is in concert with the UNFCCC-facilitated initiative on blockchain and distributed ledger technology in support of climate action.¹⁰⁴ China's experience with developing the ETS and MRV may encourage other countries without mature MRV systems to use market-based approaches to realize their emission reduction targets and operate more transparent schemes.¹⁰⁵

IV. LINKING ETSS ENHANCES TRANSPARENCY

The national, subnational, and regional ETSS operating in some Parties to the PA have either already been linked or will likely be linked in future.

conducting other illegal activities, they will be given administrative penalties by provincial ETS authorities pursuant to law and reported to the national ETS authority. They will be suspended should the violation be severe. Pursuant to law, they will bear liability for payment of an award of damages for causing financial loss to key emitters or even criminal liability for committing crimes (art. 42).

103. IBM, *Energy-Blockchain Labs and IBM Create Carbon Credit Management Platform Using Hyperledger Fabric on the IBM Cloud*, PR NEWSWIRE (Mar. 20, 2017), <http://www.prnewswire.com/news-releases/energy-blockchain-labs-and-ibm-create-carbon-credit-management-platform-using-hyperledger-fabric-on-the-ibm-cloud-300425910.html> [<https://perma.cc/WB5L-ZTT4>].

104. *Blockchain Technology Can Boost Climate Action: UNFCCC Recognizes Potential*, UNITED NATIONS (Jun. 1, 2017), <https://unfccc.int/news/how-blockchain-technology-could-boost-climate-action> [<https://perma.cc/N9DJ-BCKA>]; *UN Supports Blockchain Technology for Climate Action*, UNFCCC (Jan. 22, 2018), <https://cop23.unfccc.int/news/un-supports-blockchain-technology-for-climate-action> [<https://perma.cc/UNX9-P993>] (introducing the Climate Chain Coalition and its shared principles and values).

105. *But see* JEFF SWARTZ, CHINA'S NATIONAL EMISSIONS TRADING SYSTEM: IMPLICATIONS FOR CARBON MARKETS AND TRADE 15 (2016) (discussing criticism of China for being too protective of its emissions data and not fully reporting emissions); ALEX LO, CARBON TRADING IN CHINA: ENVIRONMENTAL DISCOURSE AND POLITICS 139–40 (2016) (cautioning that the efforts China has made in preparing the NETS may be compromised by the lack of “a proper design and effective regulation”); Emil Dimantchev, *Calling China's Carbon Markets 'Ambitious' Shows How Low the Bar Has Fallen*, CLIMATE HOME NEWS (Jun. 27, 2017, 5:27 PM), <http://www.climatechangenews.com/2017/06/27/calling-chinas-carbon-market-ambitious-shows-low-bar-fallen/> [<https://perma.cc/L96B-DBXX>] (criticizing the limited information shared by China on its market's key design features such as emissions cap, allowance allocation, and reserve methods, as well as questioning its ambition and effectiveness). Indeed, as shown in Tables 3 and 4, China has made many efforts and progress in addressing those concerns. *See also* Deane et al., *supra* note 11, at 105–06 (observing China's growing attention to the transparency of its pilot ETSS, and that some shortcomings would not necessarily jeopardize the building of a transparent NETS).

Those already linked have mutually accepted each other's compliance instruments to help them achieve GHG reduction targets.¹⁰⁶ This section will discuss established and ongoing ETS linkages and examine the transparency benefits and risks.¹⁰⁷

A. Established and Ongoing Linkages

As early as 2008, Norway linked its ETS with the EU's. Norway incorporated the EU ETS Directive into the European Economic Area Agreement by which they are both bound.¹⁰⁸ This linkage was successful and facilitated by at least two factors: "early consideration for linking to help align system design and a strong political will supported by close trading relations between regions to be linked."¹⁰⁹ By contrast, the negotiations between the EU and Switzerland to link their ETSs started in 2011, and concluded technical negotiations in 2016. However, a linkage agreement is unlikely to enter into force before 2019.¹¹⁰ Arguably, the lack of early consideration of harmonizing key design features slowed down the linking process.¹¹¹ As a result, they had to invest much more time in ensuring compatibility of their systems in terms of: their MRV capacities, the stringency of domestic emissions cap and ambitions, offsets, price control, enforcement measures, and domestic legal issues.¹¹²

106. See generally Que.-Cal.-Ont. Agreement, *supra* note 64, at art. 2 (defining "compliance instruments" as "an instrument, issued by one of the Parties, that can be used by a covered entity or a voluntary participant to fulfill a compliance obligation and having a value corresponding to the emission of one metric ton of CO₂ equivalent greenhouse gas"). For the discussions on the definition and types of linkages see, e.g., Mehling, *supra* note 10, at 112–14; Mehling & Görlach, *supra* note 8, at 3 (discussing the types of multilateral linkages); DANIEL M. BODANSKY ET AL., HARVARD KENNEDY SCHOOL, PROJECT ON CLIMATE AGREEMENTS, FACILITATING LINKAGE OF HETEROGENEOUS REGIONAL, NATIONAL, AND SUB-NATIONAL CLIMATE POLICIES THROUGH A FUTURE INTERNATIONAL AGREEMENT 3–5 (2014).

107. This section pays particular attention to the influence of the U.S. announced withdrawal on the linkages of ETSs.

108. ADB, *supra* note 51, at 70; *Emissions Trading: Commission Announces Linkage EU ETS with Norway, Iceland and Liechtenstein*, EUROPEAN COMMISSION (Oct. 26, 2007), http://europa.eu/rapid/press-release_IP-07-1617_en.htm [<https://perma.cc/Y46T-5XS9>]; INT'L EMISSIONS TRADING ASS'N ET AL., NORWAY: AN EMISSIONS TRADING CASE STUDY 2 (May 2015).

109. ADB, *supra* note 51, at 70.

110. See *Linking the Swiss and EU Emissions Trading Schemes*, SWISS FED. OFFICE FOR THE ENV'T (Jan. 25, 2016), <https://www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/climate-policy/emissions-trading/linking-the-swiss-and-eu-emissions-trading-schemes.html> [<https://perma.cc/LV49-FSW5>] (showing the slow timeline); *EU and Switzerland Join Forces on Emissions Trading*, EUROPEAN COMMISSION (Aug. 16, 2017), https://ec.europa.eu/clima/news/eu-and-switzerland-join-forces-emissions-trading_en [<https://perma.cc/Z9WX-8FKP>].

111. ADB, *supra* note 51, at 70.

112. *Id.* at 73–79.

Another ETS linkage happened in North America in 2013 when California and Québec reached an agreement to harmonize and integrate their C&T programs.¹¹³ The two programs became fully linked in 2014 and now use a common electronic registry and auction platform.¹¹⁴ The tracking system—Compliance Instrument Tracking System Service (CITSS)—supports participating entity registration, ownership tracking, compliance instrument transfer, emissions compliance, and market oversight.¹¹⁵ The CITSS is expected to “ensure rigorous accounting, avoid double counting and prevent market manipulation and fraud.”¹¹⁶ California and Québec also hold regular joint auctions of GHG allowances.¹¹⁷ This is done in a manner that increases market transparency and price discovery. For example, auction information—including clearing price and purchased allowances—is publicly available after the auction.¹¹⁸ The California-Québec market, also known as the WCI regional market, expanded when Ontario formally joined it on January 1, 2018.¹¹⁹

B. Transparency Benefits

Linking ETSs can operate as a peer-review mechanism for the cooperating jurisdictions in terms of their GHG profiles, climate action, and

113. Agreement between the California Air Resources Board and the *Gouvernement Du Québec* concerning the Harmonization and Integration of Cap-and-Trade Programs for Reducing Greenhouse Gas Emissions, Sept. 27, 2013, Cal. Air Res. Bd., https://www.arb.ca.gov/cc/capandtrade/linkage/ca_quebec_linking_agreement_english.pdf [<https://perma.cc/N54Z-BL8Q>].

114. Que.-Cal.-Ont. Agreement, *supra* note 64, at art. 10 (requiring the Parties to develop and use a common electronic registry and auction platform); Oct. 2016 Submission by Que., Can., *supra* note 73, at 2–3; Mar. 2017 Submission by Que., Can., *supra* note 74, at 3.

115. *Compliance Instrument Tracking System Service*, CAL. AIR RES. BOARD, <https://www.arb.ca.gov/cc/capandtrade/markettrackingsystem/markettrackingsystem.htm> [<https://perma.cc/UF4N-GVH2>] (last updated Sept. 24, 2018).

116. Mar. 2017 Submission by Que., Can., *supra* note 74, at 3.

117. See *Archived Auction Information and Results*, CAL. AIR RES. BOARD, https://www.arb.ca.gov/cc/capandtrade/auction/auction_archive.htm [<https://perma.cc/T78S-M9WC>] (last updated Nov. 21, 2018) (archiving the past auction information and results).

118. *GHG Allowance Auction & Reserve Sale Platform*, WCI, INC. (last visited Sept. 17, 2018), <https://www.wci-auction.org/> [<https://perma.cc/R8E9-FCQS>].

119. *Québec, Ontario and California Join Forces to Fight Climate Change*, QUÉBEC PREMIER (Sept. 22, 2017), <http://www.premier-ministre.gouv.qc.ca/actualites/communiqués/details-en.asp?idCommunique=3272> [<https://perma.cc/YY34-JXFU>] (in French). However, Ontario has recently decided to leave the WCI. See Office of the Premier, *Premier Doug Ford Announces the End of the Cap-and-Trade Carbon Tax Era in Ontario* (July 3, 2018, 10:37 AM), <https://news.ontario.ca/opo/en/2018/7/premier-doug-ford-announces-the-end-of-the-cap-and-trade-carbon-tax-era-in-ontario.html> [<https://perma.cc/W5S2-FJVQ>]; *Linkage*, CAL. AIR RES. BOARD, <https://www.arb.ca.gov/cc/capandtrade/linkage/linkage.htm> [<https://perma.cc/7DTV-RRNX>] (last updated Sept. 7, 2018).

associated policy and legislative support. When preparing to link Québec's C&T program with California's or to let Ontario join the WCI regional market, the staff from each system "conducted line-by-line comparisons of the respective program regulations to harmonize them in every respect."¹²⁰ This series of review went well given that all the ETSs were built with the WCI recommendations.¹²¹ The 2010 Design shows whether and how to link individual programs.¹²² "This common framework and rules assure that all linkage candidates have a program of equivalent stringency, to ensure the environmental integrity of the carbon market."¹²³

It is essential to implement the review mechanism by more formal institutional arrangements. California, for example, has incorporated the requirements for review into its legislation. Section 12894(f) of California Government Code stipulates that the Governor of California shall make four findings supporting the linkage request from the ARB before the linkage can take place.¹²⁴ These conditions include: (1) stringency of program requirements for GHG reductions (e.g., emission reduction goals, program and MRV requirements, offsets); (2) enforceability of statutory and regulatory requirements of California; (3) enforceability of requirements from the proposed linking jurisdictions; and (4) liability for failure arising from the linkage.¹²⁵ Based on the review of ARB materials and the consultation with the Attorney General of California, on March 16, 2017, the Governor of California (Edmund G. Brown Jr.) found California's and Ontario's C&T programs met the four requirements for linking.¹²⁶

Québec, California, and Ontario concluded a linkage agreement on September 22, 2017.¹²⁷ It provides a transparent and predictable framework for deeper cooperation. The way Québec, California, and Ontario maintain and advance the review of each program can be a model for future initiatives that seek to ensure transparency. Article 1.2(g) of the agreement

120. DISCUSSION OF FINDINGS REQUIRED BY GOVERNMENT CODE SECTION 12894, CAL. AIR RES. BD. 6 (2017) [hereinafter DISCUSSION OF FINDINGS].

121. See CAL. DEP'T OF JUSTICE, ATTORNEY GENERAL ADVICE TO THE GOVERNOR CONCERNING LINKAGE OF CALIFORNIA AND ONTARIO CAP-AND-TRADE PROGRAM (2017) (discussing some of the regulatory history and consensus between jurisdictions) [hereinafter CA ATTORNEY ADVICE]; *Program Design*, WCI INC., <http://www.wci-inc.org/program-design.php> [<https://perma.cc/4G9Y-BGLQ>] (last visited Feb. 7, 2018).

122. See WCI DESIGN, *supra* note 66, at DD-44–46.

123. Mar. 2017 Submission by Que., Can., *supra* note 74, at 2.

124. CAL. GOV'T CODE § 12894(f) (2012).

125. CA ATTORNEY ADVICE, *supra* note 121.

126. See Letter from Governor Edmund G. Brown Jr. to Mary D. Nichols, Chair, Cal. Air Res. Bd. (Mar. 16, 2017); CA ATTORNEY ADVICE, *supra* note 121; Letter from Mary D. Nichols, Chair, Cal. Air Res. Bd., to Edmund G. Brown Jr., Governor of Cal. (Jan. 30, 2017); DISCUSSION OF FINDINGS, *supra* note 120.

127. See Que.-Cal.-Ont. Agreement, *supra* note 64.

provides that, “The intended outcome of the harmonization and integration is to enable each Party under its own statutory and regulatory authority to...enable the sharing of information to support effective administration and enforcement of each party’s statutes and regulations.”¹²⁸ In the harmonization and integration process, article 3.2 prescribes that all Parties shall respect the procedural requirements of each Party, “including appropriate and effective openness and transparency of each Party’s public consultations.”¹²⁹ The Parties shall discuss and/or consult with each other before any changes or additions are made to their programs. A sufficient period of time shall be given for public review and comment prior to the adoption of those changes or additions.¹³⁰ During the supervision and enforcement of this agreement, “The Parties shall work cooperatively to maintain market integrity, including preventing fraud, abuse and market manipulation and to ensure the reliability of the joint auction and their respective programs.”¹³¹

Peer review improves data reporting and information sharing between partners; it also incentivizes them to improve their own MRV standards to be equally effective and able to link their ETSs. This addresses the concern that design features in a less stringent ETS can extend to all other linked schemes and compromise the environmental rigor of a market.¹³² Indeed, some authors indicate that trading allowances is more likely to proceed when programs share equivalent MRV and enforcement measures.¹³³ This was the case for Québec when it amended the Mandatory Reporting Regulation. In one instance, Québec added rules to improve the methods for assessing missing data and ensure the accuracy of measured data before linking with California.¹³⁴ Likewise, Ontario amended relevant regulations for implementing and operating a linked C&T program.¹³⁵ Comparing and

128. *Id.* at art. 1.2(g).

129. *Id.* at art. 3.2.

130. *Id.* at art. 4.3.

131. *Id.* at art. 11.1.

132. *See, e.g.,* Mehling, *supra* note 10, at 110 (noting the necessity for harmonization because design features and differences in each scheme may affect the integrity of the overall market).

133. *See, e.g.,* Liang, *supra* note 12, at 118–119.

134. *Id.* at 118.

135. *Regulation Decision Notice: Amendments to the Cap and Trade Program and Reporting Regulations & Service Regulation & Administrative Penalties Regulation*, ENVIRONMENTAL REGISTRY OF ONTARIO (updated Dec. 28, 2017), <http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTMzNTQx&statusId=MjAzODc3> [<https://perma.cc/5BGS-CVA8>].

harmonizing the proposed linked programs—including MRV regulations—enables equivalent market rules, environmental integrity, and compliance requirements among those jurisdictions.¹³⁶

Internationally, Québec brought the linkage issue discussed above to the negotiation of the PAWP development. In its submission to the SBSTA, Québec considered environmental integrity as “a pre-condition for full linking.”¹³⁷ A thorough review of each jurisdiction’s environmental integrity parameters and associated regulations can ensure that “regulatory language variations did not give way to differences of implementation between partner jurisdictions that could jeopardize the implementation, and alter the environmental integrity, of the common market.”¹³⁸ Québec believed that jurisdictions that transfer allowances internationally should demonstrate that environmental integrity is a paramount concern in the design and operation of their programs.¹³⁹ Québec and Ontario also informed the Canadian federal government of their intention to collaborate with California and to establish an accounting mechanism for the flow of GHG emissions allowance within the WCI regional market.¹⁴⁰ As they suggested, this mechanism could inform the interpretation and implementation of the PA’s article 6.2.¹⁴¹ They further stressed that it should ensure “a transparent and data-driven calculation that attributes to each Party its portion of the total [GHG emissions reductions] achieved jointly by the Parties.”¹⁴² They attached great importance to the mechanism’s consistency with relevant national and international principles and criteria concerning environmental integrity and robust accounting.¹⁴³

C. Risks

The practice discussed above reveals how linking ETSs can promote MRV requirements and transparency. Benefits generated from bilateral or regional partnerships could be useful in implementing multilateral agreements such as the PA. The WCI regional partnership is arguably the

136. DISCUSSION OF FINDINGS, *supra* note 120, at 10.
137. Mar. 2017 Submission by Que., Can., *supra* note 74, at 3.
138. *Id.*
139. *Id.* at 2.
140. *Id.* at 4.
141. *Id.*
142. Que.-Cal.-Ont. Agreement, *supra* note 64, at art. 8.1.
143. *Id.* at art. 8.2, 8.4.

best practice for cooperative approaches that involve the adjustment of compliance instruments to realize GHG emissions reduction objectives. However, according to the PA's article 6.3, non-Party cooperation for the achievement of NDCs only counts when participating Parties give authorization.¹⁴⁴ Compliance instruments traded between California, Québec, and Ontario, as this Article suggests, are ITMOs. The U.S. and Canada could authorize—if those subnational entities intend—their efforts to be calculated toward achieving the NDCs of the U.S. and/or Canada.¹⁴⁵

The controversial retreat of the current U.S. federal government from the PA climate regime highlights the question of how mitigation outcomes transferred between non-Party entities can count toward achieving country Parties' NDCs.¹⁴⁶ It is easier to answer when the political environment favors climate action. Currently, Canada has struck a more positive note at the federal level. Pricing carbon pollution constitutes a core element of the Pan-Canadian Framework on Clean Growth and Climate Change announced on December 9, 2016.¹⁴⁷ This plan requires all Canadian jurisdictions to have carbon pricing in place by 2018. In this case, counting mitigation efforts from Ontario's and Québec's C&T programs toward achieving Canada's NDC should not be overly difficult.¹⁴⁸ The question

144. Paris Agreement, *supra* note 1, at art. 6.3.

145. Notably, some Parties did not consider ITMOs as including allowances from C&T programs. See SBSTA Roundtable Document, *supra* note 27, at 2. See also Brazil, *supra* note 27, at ¶ 20 (saying that article 6.2 does not accommodate linkages between domestic, subnational or regional ETSS, given the concerns about the transparency and comparability of mitigation outcomes). As this Article discusses, however, such concerns can be addressed by an ETS that has transparent features as well as a linkage that prioritizes rigorous environmental integrity and transparency.

146. Chen, *supra* note 86.

147. PAN-CAN. FRAMEWORK ON CLEAN GROWTH AND CLIMATE CHANGE (2016). For the status of its implementation, see PAN-CAN. FRAMEWORK ON CLEAN GROWTH AND CLIMATE CHANGE, FIRST ANNUAL SYNTHESIS REPORT ON THE STATUS OF IMPLEMENTATION (2017).

148. See TECHNICAL PAPER ON THE FEDERAL CARBON PRICING BACKSTOP (2017) (seeking to inform and obtain feedback from Canadians and stakeholders about the federal carbon pricing backstop system that would apply in any jurisdiction that has not employed carbon pricing by 2018). This federal plan, however, has come with resistance from provincial governments. See, e.g., Kelly Cryderman & Shawn McCarthy, *Saskatchewan's Scott Moe Seeks Court Opinion on Whether Carbon Tax Is Constitutional*, GLOBAL AND MAIL (Apr. 25, 2018), <https://www.theglobeandmail.com/canada/article-saskatchewan-seeks-court-of-appeal-ruling-on-federal-carbon-tax/> [<https://perma.cc/8TYC-M749>]; Fatima Syed & Steph Wechsler, *Ontario Government Launches Constitutional Court Challenge Against Federal 'Carbon Tax'*, CANADA'S NATIONAL OBSERVER (Sept. 14, 2018), <https://www.nationalobserver.com/2018/09/14/news/ontario-government-launches-constitutional-court-challenge-against-federal-carbon> [<https://perma.cc/S3RU-WUKV>]. Similar legal issues may arise in other countries when their national and subnational governments have divergent opinions with respect to linking ETSS, signing international treaties, and the like. These risks are likely to affect an ETS, including its role in achieving transparency, and need to be carefully addressed in future research.

becomes far more complicated when political support for climate action is absent or faltering. Despite aspiring subnational determination and other efforts to keep the U.S. alive to its PA commitments, its federal notification to the U.N. regarding its intention to withdraw provides an example of the challenges that may arise.¹⁴⁹

Under article 6.3, when a jurisdiction does not obtain approval or is part of a country that is not a Party to the PA, the recognition of ITMOs from the jurisdiction as such remains uncertain. It is a practically important question. The SBSTA should consider providing better guidance on interpreting this provision in relation to participation, eligibility, and requirements. With that said, progress to date has been sporadic. At best, the SBSTA co-chairs mentioned “guidance for participation of other actors” in passing in their most recent informal note.¹⁵⁰ In Parties’ submissions, there were calls for promoting the involvement of non-Party actors like private sectors and subnational governments in the cooperative approaches.¹⁵¹ What is disappointing is that they were merely reiterating the text of article 6.3 (as indicated in Table 1), but without further elaboration on whether and how an ITMO from a non-Party, and short of authorization, could be used toward a Party’s NDC.¹⁵²

CONCLUSION

Developing and linking ETSs is a feasible pathway to enhancing transparency under the PA. Such initiatives contribute to increased transparency through GHG emissions tracking. Other contributions include building stronger MRV capacities and improving access to information regarding the ETS and other climate actions. The established markets have strengthened the MRV for an operational ETS. In emerging markets,

149. Office of the Spokesperson, *Communication Regarding Intent to Withdraw from Paris Agreement*, U.S. DEP’T. OF STATE (Aug. 4, 2017), <https://www.state.gov/t/pa/prs/ps/2017/08/273050.htm> [<https://perma.cc/AL4P-LF87>]. For the U.S. subnational efforts see We Are Still in, *An Open Letter to the International Community and Parties to the Paris Agreement from U.S. State, Local, and Business Leaders* (last visited Sept. 17, 2018), <http://wearestillin.com/> [<https://perma.cc/DP3E-USY3>].

150. Draft Elements for SBSTA Agenda Item 11(a), *supra* note 6, at part 25.

151. *See, e.g.*, Canada, *supra* note 7, at ¶ 4; Australia, *supra* note 7, at 3.

152. It is nonetheless useful to look at efforts beyond international negotiations. *See, e.g.*, MEHLING ET AL., *LINKING CLIMATE POLICIES*, *supra* note 25, at 16–18 (2017) (discussing possible interpretations of article 6.3 with supporting arguments); MARCU ET AL., *ISSUES AND OPTIONS*, *supra* note 29, at 11 (addressing issues concerning authorization).

China's pilot ETSs offer an encouraging story. Its ETSs have facilitated the development of robust accounting and GHG emissions reporting. Through its transition to the NETS, the system is pushing for further advancements in the MRV system. Linkages between cross-border ETSs such as the WCI regional market serve as an avenue for peer-reviewing collaborating partners' climate profiles, their efforts and regulatory support. This improves data reporting and information sharing among the partners, and levels up MRV standards.

This Article suggests that trading emission allowances in linked ETSs falls within the PA's cooperative approaches, given its essential role in promoting transparency, among other benefits. Articles 6.2 and 6.3 of the PA do not seem to restrict their governance within the CMA, and reading them together reveals the possibility for non-Party participation where Parties authorize the use of ITMOs. Decentralized governance is likely to incentivize broader participation as the current global trend indicates that more ETSs and partnerships are likely to emerge. Notably, when an ETS fails the approval requirement or belongs to a non-Party country, whether to recognize its transferred allowances as ITMOs remains uncertain under article 6.3. The SBSTA needs to address this issue when developing the guidance for cooperative approaches.

I hope that further discussions can focus on the relationship between ETSs and climate transparency. The PA's article 6.2 can inform its article 13. The development of guidance on cooperative approaches can inform Parties' regular report of their GHG emissions, removal, and other implementation efforts. If cooperative approaches and ITMOs are used, the information relevant to them should be used to track progress. Conversely, the MPGs designed by the APA may guide Parties to report on the implementation of their obligations as to environmental integrity and sustainable development, which currently lack specific SBSTA work programs to make them become functional. Best practices from bilateral or regional ETS partnerships (e.g., peer review of climate standards and actions) are useful in multilateral contexts to inspire or complement the technical expert review and multilateral consideration of progress. They can also inform policymakers and legislators in emerging markets, and negotiators for developing the PAWP.