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A MULTILATERAL AGREEMENT ON CARBON PRICING AND IMPLICATIONS FOR DEVELOPING COUNTRIES

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ABSTRACT

Climate change is an urgent issue facing all nations. A carbon pricing measure can be a cost-effective way to address climate change issues but would need to be implemented on a global scale and at an appropriate price level. This article considers options for creating a multilateral carbon pricing framework and implications for developing countries. It analyzes three options: a global carbon tax, adoption of emissions trading systems with progressive tightening of emissions targets, and a global agreement on minimum carbon prices. It argues that the latter can be an optimal option to the extent that the agreement applies to major carbon emitters and provides differential prices for developing countries. The global framework could be supplemented with unilateral border carbon adjustments to encourage compliance, but the legality of such adjustments must be considered in light of international trade law and the principle of common but differentiated responsibility.

I. INTRODUCTION

Climate change causes and effects are global. This point is lucidly stated and underscored by the latest report from the Intergovernmental Panel on Climate Change (IPCC).¹ Human beings have historically emitted greenhouse gases, including carbon dioxide, raising the atmospheric temperature by at least 1.5°C above pre-industrial levels. Extreme weather has and continues to occur more often and become a more apparent phenomenon across the continents of the globe. Yet, developed countries are not acting to reduce carbon emissions adequately and developing countries are set to continue to emit.² While the impacts of global warming up to and above 1.5°C, and some potential effects of mitigation measures required to limit warming to 1.5°C, affect everyone, such impacts and effects fall disproportionately on the poor and vulnerable, as pointed out in a 2018 special report by the IPCC.³ If the common goal of limiting global warming to 1.5°C is to be reached, closing the gap between

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¹ IPCC, CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS CONTRIBUTION OF WORKING GROUP I TO THE SIXTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (Valérie Masson-Delmotte, et al. eds., 2021) (hereinafter IPCC CLIMATE CHANGE 2021).

² UNEP AND UNEP DTU PARTNERSHIP, EMISSIONS GAP REPORT 2020, 13–17 (2020), available at <https://www.unep.org/emissions-gap-report-2020>.

³ IPCC, SPECIAL REPORT GLOBAL WARMING OF 1.5°C, Ch 1 Executive Summary (2018), available at <https://www.ipcc.ch/sr15/> (hereinafter IPCC SPECIAL REPORT).

mere rhetorical commitments to reduce emissions and actual action is crucial and it is imperative to do it in an equitable way.

As climate change issues are global, so must the solutions be. In an increasingly warming world, there is a strong and compelling case for a global tax or similar reform measure that is inclusive of addressing climate change issues. A number of jurisdictions have announced ambitious unilateral carbon emissions reduction goals.⁴ Some have taken legislative measures to implement carbon pricing, either through a carbon tax or an emissions trading scheme (ETS) or a combination of both, to mitigate carbon emissions,⁵ although more needs to be done with actual enforcement. Some focus has been on using destination taxes or border adjustments to counter the competitive disadvantages and carbon leakage from introducing domestic carbon pricing measures. The border carbon adjustment (BCA), proposed recently by the EU, is an example of this policy. This allows the EU, as a common market for tariff purposes, to impose a carbon price on some targeted goods imported from jurisdictions with weaker climate policies.⁶

A global green tax reform, or more broadly a global carbon pricing framework with credible carbon prices, would be beneficial for all jurisdictions through maximizing the aggregate effect of carbon pricing in emissions reductions. However, there may be a question as to whether developing countries in particular would accept the imposition of carbon pricing at a certain price level since such a measure may drive investors to countries that do not have that measure. It is also unclear how much revenue the measure might raise. On the other hand, if developing countries choose not to introduce carbon pricing at a certain price level, their exports may be subject to BCAs in jurisdictions imposing a carbon tax or an ETS. The goal of achieving emissions reduction, and thereby limiting global warming, could also be affected. The fiscal and environmental impacts on developing countries' environmental protection and economic development cannot be overlooked when considering green taxation or similar measures across borders.

⁴ For example, the US has set a target of achieving a 50-52% reduction of greenhouse gas emissions below 2005 levels by 2030; see White House, *Fact Sheet: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies* (22 April 2021), at <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>. China has pledged that it aims to have carbon emissions peak before 2030 and achieve carbon neutrality by 2060: see People's Daily, *China Emissions Reduction Commitments to Boost Global Climate Action* (Oct. 12, 2020), available at http://www.gov.cn/xinwen/2020-10/12/content_5550452.htm. The European Union has adopted an ambitious target of cutting carbon emissions by at least 55% by 2030 compared with 1990 levels; see European Commission, *2030 Climate & Energy Framework*, at https://ec.europa.eu/clima/policies/strategies/2030_en. According to the United Nations, eighty-six updated or new Nationally Determined Contributions (NDCs) have been submitted by 113 Parties to the Paris Agreement under the United Nations Framework Convention on Climate Change, Dec. 12, 2015 (hereinafter Paris Agreement) as at July 30, 2021. See United Nations Framework Convention on Climate Change Secretariat (United Nations Climate Change) Press Release, Full NDC Synthesis Report: Some Progress, but Still a Big Concern (Sept. 17, 2021), at <https://unfccc.int/news/full-ndc-synthesis-report-some-progress-but-still-a-big-concern>.

⁵ WORLD BANK, STATE AND TRENDS OF CARBON PRICING 2021, 21–25 (2021) (hereinafter WORLD BANK STATE AND TRENDS OF CARBON PRICING).

⁶ The EU proposal for a BCA was adopted by the European Commission on July 14, 2021. See European Commission, *Carbon Border Adjustment Mechanism*, at https://ec.europa.eu/taxation_customs/green-taxation-0/carbon-border-adjustment-mechanism_en (visited Nov. 21, 2021).

This article considers options for creating a global carbon pricing framework to address climate change, and the implications of the various options for developing countries. There is no uniform definition on the generic term “developing countries” or “developing economies”. The article uses the World Bank categorization of countries or economies by income group to refer to developing countries or economies as those that are defined as low, lower-middle, and upper-middle income, measured by gross national income per capita.⁷ Developed countries are classified by the World Bank as high-income economies.

In considering options for a global carbon pricing framework, the article first examines why carbon is special, and, when compared with other matters, requires a multilateral solution and considers the most cost-effective way to do it. This is contained in Part II following the Introduction. Part III then discusses the options available for a global carbon pricing framework, canvassing their feasibility and adoption by developing countries. The discussion particularly focuses on the option of a global minimum carbon price framework based on a proposal made by the International Monetary Fund (IMF).⁸ The global minimum carbon price option may include differential treatment for developing countries and be supplemented with transfers of financial resources from developed countries to developing countries to help the latter implement a minimum carbon price prescribed in an internationally coordinated agreement.⁹ A global carbon pricing framework with differentiated minimum prices would be necessary for equitable reasons in terms of climate crises and the interests and needs of developing countries for their continued development. The purpose of considering the minimum price option is to canvass the extent to which a multilaterally coordinated framework on carbon pricing could be established to help achieve the common goal of limiting the rise in global temperature while simultaneously facilitating developing countries to consider and implement a minimum carbon price (or other reduction policy).

Building upon the above analysis, Part IV examines the role of BCAs in facilitating the development and implementation of a multilateral agreement on minimum carbon prices. It suggests that BCAs could be used to encourage parties’ compliance with the obligations in the agreement. However, BCAs, as unilateral actions, need to be carefully designed to be compatible with international trade law, primarily WTO rules, and satisfy the principle of

⁷ World Bank, *How Does the World Bank Classify Countries*, at <https://datahelpdesk.worldbank.org/knowledgebase/articles/378834-how-does-the-world-bank-classify-countries> (visited Nov. 21, 2021).

⁸ See Ian Parry, Simon Black & James Roaf, *Proposal for an International Carbon Pricing Floor among Large Emitters* (IMF Staff Climate Notes 2021/001); see also Ian Parry, *Five Things to Know about Carbon Pricing*, FIN. & DEV. 10, 11 (Sept. 2021), available at <https://www.imf.org/external/pubs/ft/fandd/2021/09/pdf/five-things-to-know-about-carbon-pricing-parry.pdf>.

⁹ The United Nations Framework Convention on Climate Change, May 9, 1992, 1771 UNTS 107, U.N. Doc. A/AC.237/18 (Part II)/Add.1 (hereinafter UNFCCC), and the Kyoto Protocol to the UNFCCC, Dec. 11, 1997, UN Doc. FCCC/CP/1997/7/Add. 1 (hereinafter Kyoto Protocol), state that developed countries shall provide financial resources to assist developing countries in implementing the Convention. The UNFCCC established a Financial Mechanism to provide funds for developing countries. The Kyoto Protocol also recognizes the need of the Financial Mechanism to fund activities by developing countries. See United Nations Climate Change, *Climate Finance in the Negotiations*, at <https://unfccc.int/topics/climate-finance/the-big-picture/climate-finance-in-the-negotiations> (visited Nov. 21, 2021).

common but differentiated responsibility (CBDR) under international environmental law if their ultimate purpose is to encourage more developing countries to adopt ambitious reduction policies to address climate change, rather than serve as a disguised trade restriction. The article concludes with a summary of main findings in Part V.

II. CARBON PRICING

A. *Why Carbon is Special and How to Deal with It*

The first question is what makes carbon different from most other issues. The answer may be obvious. That is, greenhouse gas emissions, particularly carbon dioxide—the primary greenhouse gas emitted through human activities—pose a common, serious threat to all people on the planet. Just in the summer of 2021 alone, flooding in Europe turned entire towns into rivers; the Chinese city of Zhengzhou witnessed a year’s worth of rain in three days; and unprecedented heatwaves were experienced such as on the northern Pacific coast of North America and Turkey where temperatures of 49.1°C in Turkey were recorded.¹⁰ These most recent disasters are just a reminder that the climate crisis pays no respect to borders.

The planet is already 1.1-1.3°C warmer than it was in pre-industrial time, and the atmospheric concentrations of carbon dioxide place the planet on track to be 2.7°C warmer than the pre-industrial baseline by 2100 if national targets made under the Paris Agreement and related policies were honored.¹¹ The results of warming beyond 1.5°C could be catastrophic and irreversible as the 2018 IPCC Special Report already highlighted.¹² The IPCC Special Report also warned that the risks and economic costs of climate change are disproportionately greater in developing countries, and climate change, if unchecked, could displace many people, mostly in the developing world.¹³ There is still time to prevent catastrophic results, but as the 2021 IPCC report states, the window for limiting global warming to 1.5°C is significantly narrowed and it is vital to achieve 100 percent of carbon emissions reductions, i.e., carbon neutrality, by 2050.¹⁴ This requires a global effort.

In addressing climate change issues, countries have pledged various reduction goals. Importantly, translating these pledges into actual reductions is imperative to arrest the dangerous rise in global temperature. Carbon pricing is considered a most cost-effective way, among a number of policy instruments including direct command-and-control, to reduce carbon emissions.¹⁵ As a market-based instrument, carbon pricing can take different forms, most commonly as a carbon tax or an ETS. Underpinning carbon pricing is the theory of

¹⁰ *Burning Down the House*, THE ECONOMIST 15–17 (Jul. 24, 2021).

¹¹ *Id.* The article cited the research result by Climate Action Tracker, a non-governmental organization. The article further explained that revised pledges formally submitted by countries to the United Nations (UN) in the run-up to the COP26 held in November 2021 could help keep warming to 2.4°C.

¹² IPCC [SPECIAL REPORT](#), *supra* note 3, at 177–81.

¹³ *Id.*; see also Amar Bhattacharya & Nicholas Stern, *Our Last, Best Change on Climate*, FIN. & DEV. 6, 7 (Sept. 2021), available at <https://www.imf.org/external/pubs/ft/fandd/2021/09/pdf/bhattacharya-stern-COP26-climate-issue.pdf>.

¹⁴ IPCC CLIMATE CHANGE 2021, *supra* note 1, at 17, 36–37 (Summary for Policy Makers); Ch. 4, 103.

¹⁵ International Monetary Fund (IMF), *Fiscal Policies for Paris Climate Strategies—from Principle to Practice* 14 (IMF Policy Paper 19/010, 2019).

externalities, which refer to the external costs of carbon emissions on the public.¹⁶ Both a carbon tax and an ETS put a price on carbon dioxide emitted so that those responsible for damage caused by emissions pay the associated social costs. A carbon tax is straightforward to administer, providing certainty about future emissions prices. By comparison, an ETS establishes a price for emissions by allowing emitters to trade allowances for emission units, providing certainty about the environmental impact.¹⁷

By providing a price signal, the two types of market-based instruments allow emitters to decide whether to reduce emissions or to continue emitting and pay for it. It helps achieve desired environmental outcomes in the least-cost way while preserving market autonomy. It is because of these advantages that carbon pricing has gained momentum throughout the world in recent years. The latest report from the World Bank shows that sixty-four carbon pricing initiatives are in operation and these initiatives would cover 21.5 percent of global greenhouse gas emissions.¹⁸

B. The Status Quo and Developing Countries

For carbon pricing to work as the most cost-effective way to mitigate emissions, it needs to be applied at a credible price level everywhere. If it were not applied global then, from an environmental perspective, businesses may be motivated to move production or investment to those jurisdictions with looser emissions regulations or lower prices on carbon, the so-called carbon leakage problem.¹⁹ Despite the prospect that carbon pricing offers the cheapest way to cut emissions, its global reach is limited. The sixty-four carbon pricing initiatives cover only forty-five national jurisdictions, with some initiatives at subnational jurisdictional levels.²⁰ Table 1 maps the carbon pricing initiatives by jurisdiction, and includes level of development, CO₂ emissions and carbon pricing measures.

¹⁶ See John Hawkins, *One Hundred Years Ago. The Book That Inspired the Carbon Price: Pigou's The Economics of Welfare*, 77 HIST. ECON. REV. 61, 61–62, 66–67 (2020); FISCAL POLICY TO MITIGATE CLIMATE CHANGE: A GUIDE FOR POLICYMAKERS (Ian W. H. Parry, Ruud de Mooij & Michael Keen eds., 2012), available at <https://www.elibrary.imf.org/view/books/071/12762-9781616353933-en/12762-9781616353933-en-book.xml>.

¹⁷ For more details of the differences between a carbon tax and an ETS, see World Bank, *Carbon Pricing Dashboard: What is Carbon Pricing?*, at <https://carbonpricingdashboard.worldbank.org/what-carbon-pricing> (visited Nov. 21, 2021).

¹⁸ WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 21.

¹⁹ See Rolf H. Weber, *Border Tax Adjustment – Legal Perspective*, 133 CLIMATIC CHANGE 407, 409–10 (2015); see also Stuart Evans, Michael A. Mehling, Robert A. Ritz & Paul Sammon, *Border Carbon Adjustments and Industrial Competitiveness in a European Green Deal*, 21 CLIMATE POL'Y 307, 307 (2021).

²⁰ World Bank, *Carbon Pricing Dashboard*, at <https://carbonpricingdashboard.worldbank.org/> (visited Nov. 21, 2021).

Table 1 Mapping the Carbon Pricing Initiatives (as of April 2021)²¹

Economy	Income group	Carbon tax/ETS	Status	CO ₂ Emissions (kt) 2018	Price (US)	% of CO ₂ in Global Total
East Asia & Pacific						
Brunei Darussalam	High income	ETS or Carbon tax	Under consideration ²²	7140		0.0210%
China	Upper middle income	Beijing Pilot ETS	Implemented	10313460 (total China)	\$4.32	30.2971%
		Chongqing pilot ETS	Implemented		\$3.71	
		Fujian pilot ETS	Implemented		\$1.25	
		Guangdong pilot ETS	Implemented		\$5.72	
		Hubei pilot ETS	Implemented		\$4.41	
		National ETS	Implemented		No price available	
		Shanghai pilot ETS	Implemented		\$6.32	
		Shenyang pilot ETS	Under consideration			
		Shenzhen pilot ETS	Implemented		\$1.12	
		Tianjin pilot ETS	Implemented		\$3.80	
Indonesia	Lower middle income	ETS or carbon tax	Under consideration	583110		1.7130%
Japan	High income	Carbon tax; ETS	Implemented; Under consideration	1106150	\$2.61	3.2495%
		Saitama ETS	Implemented		\$5.42	
		Tokyo ETS	Implemented		\$4.87	
Korea, Rep	High income	ETS	Implemented	630870	\$15.89	1.8533%

²¹ The tables and charts in this article are prepared by the author with assistance of research assistants. Sources are from World Bank, *Carbon Pricing Dashboard*, at <https://carbonpricingdashboard.worldbank.org/> (visited Nov. 21, 2021); World Bank, *The World by Income and Region*, at <https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html>; World Bank, *CO₂ Emissions (kt)*, at https://data.worldbank.org/indicator/EN.ATM.CO2E.KT?name_desc=false; and World Bank, *Member Countries*, at <https://www.worldbank.org/en/about/leadership/members>. Table 1 is organized regionally with an alphabetical order of individual countries within each region.

²² The 2021 World Bank report notes that “Carbon pricing initiatives are considered ‘under consideration’ if the government has announced its intention to work towards the implementation of a carbon pricing initiative and this has been formally confirmed by official government sources.” WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 22.

New Zealand	High income	ETS	Implemented	32210	\$25.76	0.0946%
Singapore	High income	Carbon tax	Implemented	47360	\$3.71	0.1391%
Thailand	Upper middle income	ETS or carbon tax	Under consideration	257860		0.7575%
Vietnam	Lower middle income	ETS or carbon tax	Under consideration	257860		0.7575%
Europe & Central Asia						
EU	High income	EU ETS (all EU members) ²³	Implemented		\$49.78	0.0000%
		Austria Carbon tax/ETS	Under consideration	63180		0.1856%
		Denmark Carbon tax	Implemented	33380	Fossil fuels (\$28.14); F-gases (\$23.65)	0.0981%
		Estonia Carbon tax	Implemented	16000	\$2.35	0.0470%
		Finland Carbon tax	Implemented	44360	Transport fuels (\$72.83); Other fossil fuels (\$62.25)	0.1303%
		France Carbon tax	Implemented	309960	\$52.39	0.9105%
		Germany ETS ²⁴	Implemented	709540	\$29.36	2.0844%
		Ireland Carbon tax	Implemented	37110	39.35 (transport fuels)	0.1090%
		Latvia Carbon tax	Implemented	7630	\$14.10	0.0224%
		Luxembourg Carbon tax	Implemented	9320	Diesel fuel (\$40.12); All fossil fuels (\$23.49)	0.0274%
		Netherlands Carbon tax	Implemented	151170	\$35.24	0.4441%
		Poland Carbon tax	Implemented	312740	\$0.08	0.9187%
		Portugal Carbon tax	Implemented	49780	\$28.19	0.1462%
		Slovenia Carbon tax	Implemented	14050	\$20.32	0.0413%
		Spain Carbon tax	Implemented	258340	\$17.62	0.7589%

²³ The EU ETS applies to 27 EU member states, plus Iceland, Liechtenstein, and Norway.

²⁴ Germany introduced a national fuel ETS with effect from January 1, 2021, covering all fuel emissions not regulated under the EU ETS. WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 24, 66.

		Sweden Carbon tax	Implemented	36000	\$137.24	0.1058%
Iceland	High income	EU ETS and Carbon tax	Implemented	2200	EU ETS \$49.78; Fossil fuels (\$34.83) and F- gases (\$19.79)	0.0065%
Kazakhstan	Upper middle income	ETS	Implemented	220450	\$1.18	0.6476%
Liechtenstein	High income	EU ETS and Carbon tax	Implemented	140	EU ETS \$49.78; Carbon tax \$101.47	0.0004%
Montenegro	Upper middle income	ETS or carbon tax	Under consideration	2520	\$28.19	0.0074%
Norway	High income	EU ETS and Carbon tax	Implemented	37350	EU ETS \$49.78; Carbon tax \$69.33 (upper) and \$3.87 (lower)	0.1097%
Russian Federation	Upper middle income			1607550		4.7224%
		Sakhalin ETS	Under consideration			
Serbia	Upper middle income	ETS or carbon tax	Under consideration	45540		0.1338%
Switzerland	High income	ETS and Carbon tax	Implemented	37480	ETS \$46.10; Carbon tax \$101.47	0.1101%
Turkey	Upper middle income	ETS or Carbon tax	Under consideration	412970		1.2132%
Ukraine	Lower middle income	Carbon tax; ETS	Implemented; Under consideration	185370	Carbon tax \$0.36	0.5445%
United Kingdom	High income	ETS ²⁵ and Carbon tax	Implemented	358800	\$24.80	1.0540%
Latin America & Caribbean						
Argentina	Upper middle income	Carbon tax	Implemented	177410	\$5.54	0.5212%
Brazil	Upper middle income	ETS or Carbon tax	Under consideration	427710		1.2565%
Chile	High income	ETS; Carbon tax	Under consideration; Implemented	86620	\$5.00	0.2545%
Colombia	Upper middle income	Carbon tax; ETS	Implemented; Under consideration	79490	\$5.00	0.2335%

²⁵ The UK ETS has been in operation since January 1, 2021 as the UK officially departed from the EU and the EU ETS on December 31, 2020. The design features of the UK ETS closely resemble those of the EU ETS Phase 4. WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 71.

Mexico	Upper middle income	Carbon tax and ETS	Implemented	472140	Carbon tax \$3.18 (upper) and \$0.36 (lower)	1.3870%
		Tamaulipas carbon tax			\$12.72	
		Zacatecas carbon tax			\$12.23	
North America						
Canada	High income	Alberta ETS	Implemented	574400	Alberta \$31.83	1.6874%
		British Columbia ETS and carbon tax	Implemented		ETS \$19.90; carbon tax \$35.81	
		Canada federal OBPS - ETS	Implemented		\$31.83	
		Canada federal fuel charge - ETS	Implemented		\$31.83	
		Manitoba ETS/Carbon tax	Under consideration		ETS (\$19.90); Carbon tax (\$19.90)	
		New Brunswick ETS; Carbon tax	Under consideration; Implemented		Carbon tax \$31.83	
		Newfoundland & Labrador PSS (ETS) and carbon tax	Implemented		PSS (\$23.88); Carbon tax (\$23.88)	
		Northwest Territories carbon tax	Implemented		\$23.88	
		Nova Scotia ETS	Implemented		\$19.66	
		Ontario ETS	Scheduled			
		Quebec ETS	Implemented		\$17.94	
		Saskatchewan ETS	Implemented		\$31.83	
		Prince Edward Island carbon tax	Implemented		\$23.88	
United States	High income	California ETS	Implemented	4981300	\$17.94	14.6332%
		Massachusetts ETS	Implemented		\$6.50	
		Oregon ETS	Under consideration			

		Hawaii carbon tax	Under consideration			
		Pennsylvania ETS	Under consideration			
		RGGI ETS	Implemented		\$8.69	
South Asia						
Pakistan	Lower middle income	ETS or carbon tax	Under consideration	208370		0.6121%
Sub Saharan Arica						
Côte d'Ivoire	Lower middle income	Carbon tax	Under consideration	9910		0.0291%
Senegal	Lower middle income	ETS or Carbon tax	Under consideration	9860		0.0290%
South Africa	Upper middle income	Carbon tax	Implemented	433250	\$9.15	1.2727%

Among the listed regional, national, and subnational jurisdictions that are covered by carbon pricing initiatives, around 65 percent are high-income economies, i.e., developed economies. The initiatives have not been adopted in any low-income economies, i.e., those at the bottom level of global revenue distribution. Lower-middle income economies only account for around 10.5 percent of jurisdictions with carbon pricing measures. The majority of jurisdictions having carbon pricing measures, i.e., high-income economies, are responsible for around 31.3 percent of global carbon emissions, while upper-middle and lower-middle income jurisdictions with carbon pricing account for around 42.8 percent and 3.7 percent of global emissions respectively. The distribution of economies with carbon pricing measures and their relevant share of emissions in global carbon emissions are illustrated in the following charts. A caveat is that while a jurisdiction is responsible for a certain percentage of global carbon emissions, it does not necessarily mean that all their carbon emissions are covered by the relevant carbon pricing measures.²⁶

²⁶ The World Bank 2021 Report on carbon pricing uses greenhouse gas emissions to discuss various issues. It notes that China's ETS covers 7.38% of global greenhouse gas emissions; the Germany and UK ETSs cover 0.74% and 0.36%, respectively, of global greenhouse gas emissions. These coverages are all below the relevant jurisdiction's total share in the global greenhouse gas emissions: WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 23.

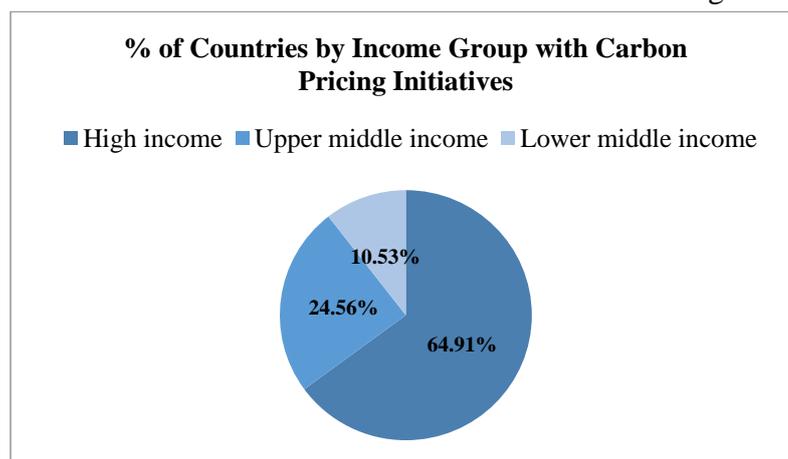
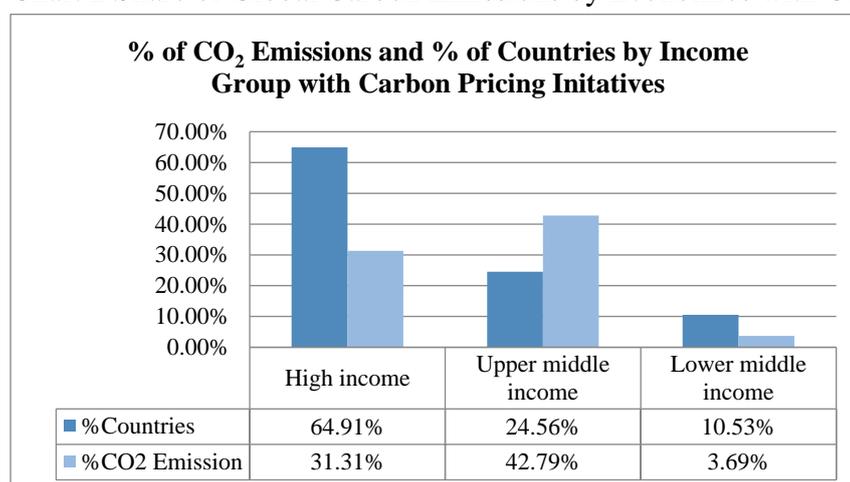
Chart 1 Distribution of Economies with Carbon Pricing²⁷

Chart 2 Share of Global Carbon Emissions by Economies with Carbon Pricing



China, as the world's largest greenhouse gas emitter and an upper-middle income economy, has very recently rolled out its local pilot ETSs nationwide, making it the world's largest carbon market covering 7.38 percent of global greenhouse gas emissions.²⁸ The second largest emitter, the United States (US), lacks a national carbon pricing measure but does have several subnational measures that are either implemented or under consideration. All EU member states have implemented an EU ETS with some, such as Finland, France, Germany, and Sweden, also having a domestic carbon tax or an additional ETS.²⁹

²⁷ The computation of Charts 1 and 2 includes all World Bank member countries that have carbon pricing measures. Although Liechtenstein applies an EU ETS, it is not a World Bank member and thus not included in the computation of the Charts.

²⁸ WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 21, 23.

²⁹ See Table 1 above; see also Elke Asen, *Carbon Taxes in Europe*, TAX FOUNDATION (Oct. 8, 2020), at <https://taxfoundation.org/carbon-taxes-in-europe-2020/>.

Carbon prices in the covered jurisdictions vary significantly, ranging from below US\$0.5 to around US\$137 as at 1 April 2021, as shown in Table 1.³⁰ Many jurisdictions' carbon prices are not high enough to meet the goal of limiting global warming to 2°C as stated in the Paris Agreement and only 3.76 percent of global emissions are covered by a price at or above the range of US\$40-80 per ton of carbon dioxide required in 2020 to reach that goal.³¹ As suggested, a price that exceeds this range is needed if the goal of limiting global warming to 1.5°C over the next decade is to be achieved.³²

Strikingly, around 70 percent of the 189 member countries of the World Bank have not adopted any carbon pricing measures as shown in Table 2 below. These countries do not include jurisdictions with carbon pricing under consideration as noted in Table 1. Among these countries without carbon pricing, 13.6 percent are high-income economies which together contribute 4.3 percent of global carbon emissions. The total share of carbon emissions by low-income economies is almost negligible, i.e., below 0.4 percent of the global total. The majority of the countries without carbon pricing measures are lower-middle income economies which are responsible for around 12.8 percent of global carbon emissions. India stands out in these lower-middle income economies. Depending on the specific dataset, India is often ranked as the world's third largest greenhouse gas emitter or the world's third largest carbon dioxide emitter.³³ As a lower-middle income economy, India may have concerns about the economic effects of a domestic carbon pricing measure. Its climate policies will have significant impacts not only on its own environment but also the global emissions reduction effort.

Table 2 Economies without Carbon Pricing³⁴

Income Group	#Countries	%Countries without CP	%Countries Per World Bank Member	CO ₂ (kt) 2018	% of CO ₂ in Global Total
High income	18	13.64%	9.52%	1476800	4.34%
Upper middle income	39	29.55%	20.63%	971450	2.85%
Lower middle income	48	36.36%	25.40%	4343420	12.76%
Low income	26	19.70%	13.76%	127770	0.37%
Venezuela, RB ³⁵	1	0.76%	0.53%	138160	0.41%
Grand Total	132	100.00%	69.84%	7057600	20.73%

³⁰ WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 26.

³¹ *Id.* at 25.

³² *Id.*

³³ See, e.g., Robert Rapier, *The World's Top 10 Carbon Dioxide Emitters*, FORBES (Dec. 4, 2019), at <https://www.forbes.com/sites/rpapier/2019/12/04/the-worlds-top-10-carbon-dioxide-emitters/?sh=437a12912d04>; Johannes Friedrich, Mengpin Ge & Andrew Pickens, *This Interactive Chart Shows Changes in the World's Top 10 Emitters*, WORLD RESOURCES INSTITUTE (Dec. 10, 2020), at <https://www.wri.org/insights/interactive-chart-shows-changes-worlds-top-10-emitters>.

³⁴ Sources are the same as those for Table 1. See note 21, *supra*.

³⁵ The World Bank has temporarily unclassified Venezuela in July 2021 pending release of revised national accounts statistics. World Bank, *World Bank Country and Lending Groups*, at <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups> (visited Dec. 7, 2021).

The two charts below show the distribution of economies who are World Bank members without carbon pricing and the relevant shares of these economies in global carbon emissions.

Chart 3 Distribution of Economies without Carbon Pricing

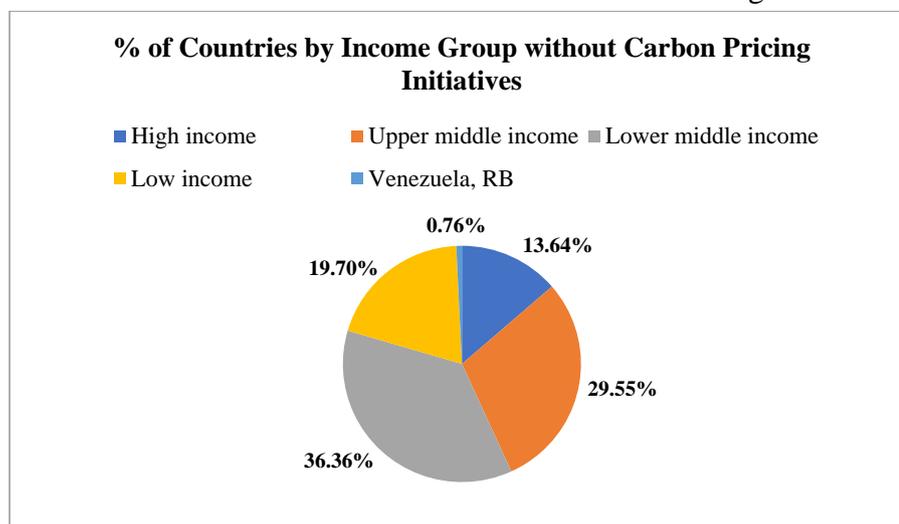
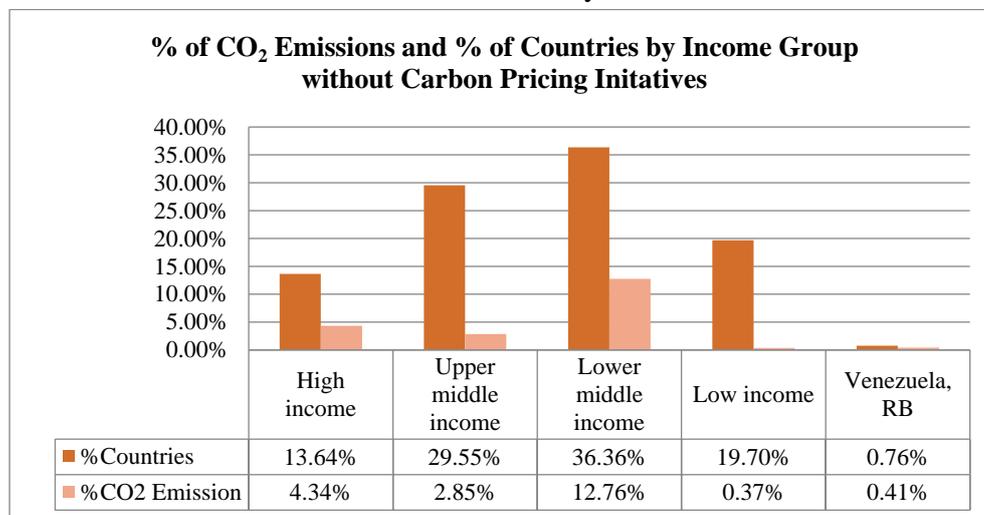


Chart 4 Share of Global Carbon Emissions by Economies without Carbon Pricing



Currently, the application of carbon pricing measures has two major limitations. First, carbon pricing is limited to a small proportion of countries or economies and most low or lower-middle income countries do not have one. Second, carbon prices in many jurisdictions with carbon pricing are significantly below the required price level to limit global warming to well below 2°C.

Developing countries would have a variety of reasons for choosing not to adopt a carbon pricing measure. The main reason or concern might relate to domestic economic growth and business competitiveness. While the poorest countries, i.e., low-income economies, contribute, individually and altogether, a meagre share of global carbon

emissions, they are the most vulnerable to climate change risks. The majority of countries without carbon pricing are lower-middle income economies, and they may continue to emit alongside their economic development over the next decade. If developing countries are to contribute to the carbon pricing initiative, they will have to strike a delicate balance between economic growth and environmental protection, thereby avoiding developing the economy at the expense of the environment.

Developing countries, particularly low or lower-middle income jurisdictions, are the least able to afford consequences of climate change, and yet they have limited capacity with respect to finance, technology, institutional capacity and other related areas to prevent and respond to the impacts of climate change.³⁶ As some major carbon emitters are developing countries and carbon prices need to be significantly raised to achieve reduction goals, a critical question arises as to how to develop a global carbon pricing framework that imposes credible carbon prices for effective reduction while taking into account the circumstances of developing countries to implement the needed price level.

III. OPTIONS FOR A MULTILATERAL CARBON PRICING FRAMEWORK

A. *Options in Theory*

There are a variety of ways to reduce carbon emissions and this article focuses on market-based instruments, namely carbon pricing, for emissions reduction. Carbon pricing can be implemented unilaterally, bilaterally (or collectively within a trading block) or through a multilateral framework. Unilateral actions could hinder cooperation between jurisdictions in both trade and the environment.³⁷ Bilateral agreements are also unlikely to achieve the common goal of limiting global warming as emissions can occur outside of the contracting jurisdictions. A multilateral response, implementing the carbon pricing instrument, would be an optimal way to address the collective challenges of global warming in a cost-effective manner. Assuming this is not disputed, what options are there to make carbon pricing a global reach and what is the best approach so as to not prejudice developing countries but, at the same time, bring them into the global framework?

In theory, there are three options.³⁸ The first is a universally applied environmental tax on carbon. The second is adoption of ETSs by all jurisdictions with annual, progressive tightening of emissions targets. The third one is a global minimum carbon price. The first two

³⁶ UNCTAD, *Green Industrial Policies Key for Developing Countries to Adapt to Climate Change* (Oct. 28, 2021), at <https://unctad.org/news/green-industrial-policies-key-developing-countries-adapt-climate-change> (visited Dec. 7, 2021); Navin Singh Khadka, *Climate Change: Low-income Countries 'Can't Keep Up' with Impacts*, BBC (Aug. 8, 2021), at <https://www.bbc.com/news/world-58080083>. See also Xianchun Tan, Kaiwei Zhu, Xiaoyan Meng, Baihe Gu, Yi Wang, Fanxin Meng, Gengyuan Liu, Tangqi Tu & Hui Li, *Research on the Status and Priority Needs of Developing Countries to Address Climate Change*, 289 J. CLEANER PRODUCTION 125669, 9–11, 13–15 (2021). The article particularly notes the needs or requirements of developing countries for technology, finance, infrastructure, and capacity building in different areas of mitigation and adaptation.

³⁷ Michael A. Mehling, Harro van Asselt, Kasturi Das, Susanne Droeger & Cleo Verkuijl, *Designing Border Carbon Adjustments for Enhanced Climate Action*, 113 AJIL 433, 481 (2019); Bastian Ljunggren, *Border Carbon Adjustments – Stuck between a Rock and a Hard Place?* 30 (Stockholm University Faculty of Law, September 2019); Weber, *supra* note 19, at 411.

³⁸ These options are inspired by the IMF publication on an international carbon price floor. See Parry, Black & Roaf, *supra* note 8.

options may coexist, that is, a jurisdiction can choose to have either a carbon tax or an ETS or both, as an explicit carbon pricing instrument. These two options will need a multilateral agreement to be enforceable among all jurisdictions. Realistically these options may be unachievable given the difficulty of reaching a global consensus that mandates all jurisdictions adopt a carbon pricing measure and ensuring enforcement of the measure. Currently there are 195 signatories to the Paris Agreement.³⁹ While it is relatively easy for individual jurisdictions to make national reduction pledges on their own initiative, it would be very difficult to get all the signatories to agree on a uniform policy action as views on how to reduce carbon emissions and whether a uniform action is fair and suits all differ significantly between developed and developing countries.⁴⁰ This is in contrast to what is claimed as a breakthrough in a global consensus on international tax reforms for the digitalized economy, which was reached by 137 member jurisdictions of the Organisation for Economic Co-operation and Development (OECD)/G20 Inclusive Framework on BEPS in October 2021 and which would bring revenue to those jurisdictions to varying degrees if the agreed solutions can be effectively transformed into enforceable multilateral agreements.⁴¹ The recent global consensus on tax reforms, pending on materialization of actual multilateral agreements, may mean some foreseeable benefits, in the form of tax revenues, while a global carbon pricing agreement may lead to some immediate costs with benefits in the form of improved environment and sustainable economic development in some remote future.

Another problem with the two options is their rigidity. Both options require an explicit carbon price, and, as such, both do not count other policy actions that can help yield desired reduction outcomes. Adopting an explicit carbon pricing measure, however, could be difficult in some jurisdictions due to political and other reasons.⁴² In such circumstances, there would be an impasse in the international negotiations for a universally applied carbon

³⁹ Paris Agreement, *supra* note 4, available at United Nations Treaty Collection, 7.d Paris Agreement, <https://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XXVII/XXVII-7-d.en.pdf>. The document notes there are 195 signatories or 191 Parties to the United Nations Framework Convention on Climate Change (UNFCCC) under the Paris Agreement as at September 24, 2021. The Paris Agreement is a legally binding international treaty, and it has entered into force on November 4, 2016.

⁴⁰ See Robyn Eckersley, *Moving Forward in the Climate Negotiations: Multilateralism or Minilateralism?*, 12 GLOBAL ENVTL. POL. 24 (2012); Alexander Thompson & Daniel Verdier, *Multilateralism, Bilateralism, and Regime Design*, 58 INT'L STUD. Q. 15, 22, 24(2014); Joana Castro Pereira & Eduardo Viola, *Climate Multilateralism within the United Nations Framework Convention on Climate Change*, in OXFORD RESEARCH ENCYCLOPEDIA OF CLIMATE SCIENCE (Hans von Storch ed., 2020), at <https://doi.org/10.1093/acrefore/9780190228620.013.639> (visited Dec. 7, 2021); Nikos Tsafos, *How Climate Ambition Can Save Multilateralism*, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES (Jan. 22, 2021), at <https://www.csis.org/analysis/how-climate-ambition-can-save-multilateralism>.

⁴¹ OECD, *International Community Strikes a Ground-breaking Tax Deal for the Digital Age* (Oct. 8, 2021), at <https://www.oecd.org/tax/international-community-strikes-a-ground-breaking-tax-deal-for-the-digital-age.htm>; OECD/G20 Inclusive Framework on BEPS, *Statement on a Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy* (Oct. 8, 2021). The term BEPS refers to base erosion and profit shifting, which is mainly about multinational enterprise tax avoidance and evasion. BEPS practices cause considerable revenue losses annually, i.e., around 4-10% of the global corporate income tax revenue. See OECD, *International Collaboration to End Tax Avoidance*, at <https://www.oecd.org/tax/beps/> (visited Dec. 7, 2021).

⁴² Parry, Black & Roaf, *supra* note 8, at 8–9. An obstacle, as mentioned in the publication, is that significantly raising energy prices may be perceived by policymakers as politically sensitive. Also, it would be difficult to increase energy prices if they are already high relative to those in competitor jurisdictions.

tax or progressively enhanced country-level emissions targets that are agreed upon by all involved parties.

Further, in the case of a universal carbon tax, the relevant carbon price that needs to be set at the level required to reach the goal of limiting global warming may be appropriate to a high-income economy but can be too high to apply in developing economies, particularly those that are considered poor and vulnerable. On the other hand, a carbon tax imposed at low prices may exert limited effects on reducing carbon emissions. While the option of ETSs with progressively tightened emissions targets could accommodate different carbon price levels through setting up different country-level emissions targets, it would be challenging to reach a multilateral agreement on such targets due to the zero-sum problem where one jurisdiction adopts a weaker target thereby compelling other jurisdictions to impose stricter targets.⁴³

The above analysis suggests that the two options are besieged with some critical impediments: primarily the difficulty of reaching a global consensus among a large number of parties to the Paris Agreement,⁴⁴ and the uncertainty about establishing a carbon price level that is high enough to achieve the reduction goals, especially when the options are applied in a way that pays no or little regard to the interests and needs of developing countries. It is unclear whether the existing coordinating mechanisms, mainly the Conference of the Parties for the United Nations Framework Convention on Climate Change (UNFCCC),⁴⁵ would consider and move forward the two options at the international level given the two impediments. Some alternative responses may be needed, and a global minimum carbon price framework can be such an alternative. The extent to which it is feasible and can be designed to encourage developing countries to adopt reduction policies without compromising economic development needs to be carefully examined.

B. A Global Minimum Carbon Price and Developing Countries

A global minimum carbon price, or an international carbon price floor such as the one proposed by the IMF, places a floor on carbon prices across several large emitters and allows flexible accommodation of domestic non-pricing regulatory policies that achieve the equivalent emissions reductions to pricing.⁴⁶

A global minimum carbon price does not mean it is itself a carbon tax. As a market-based tool, a carbon tax sets a price on carbon by applying an explicit rate to the carbon content of fossil fuels, i.e., a price per ton of carbon dioxide equivalent.⁴⁷ The tax, like any other tax, directly sends a price signal to users or consumers when they purchase or use

⁴³ *Id.* at 9. The publication cites an earlier study on the topical area: Martin L. Weitzman, *Voting on Prices vs. Voting on Quantities in a World Climate Assembly*, 71 RES. IN ECON. 199 (2017).

⁴⁴ For the number of Parties, see United Nations Treaty Collection, *supra* note 39.

⁴⁵ United Nations Climate Change, *Conference of the Parties (COP)*, at <https://unfccc.int/process/bodies/supreme-bodies/conference-of-the-parties-cop> (visited Nov. 22, 2021). The COP is the “supreme decision-making body of the Convention” according to the information provided on the webpage. For the Parties to the Convention, see United Nations Climate Change, *List of Parties*, at <https://unfccc.int/process/parties-non-party-stakeholders/parties-convention-and-observer-states> (visited Nov. 22, 2021).

⁴⁶ For the key design features of the IMF proposal, see Parry, Black & Roaf, *supra* note 8, at 2–3, 7–9.

⁴⁷ World Bank, *Carbon Pricing Dashboard: What is Carbon Pricing?*, at <https://carbonpricingdashboard.worldbank.org/what-carbon-pricing> (visited Nov. 21, 2021).

products with a carbon footprint, which may motivate them to modify their behavior, such as shifting to cleaner alternatives, in order to avoid the costs embedded in the tax. A minimum carbon price or a price floor can be easily applied under a tax. That is, it sets a minimum tax rate that jurisdictions need to apply.⁴⁸ This would help prevent jurisdictions from adopting a low carbon tax rate that is ineffective to yield required reduction outcomes.

Such a price floor can be applied beyond a tax system. For example, in jurisdictions with an ETS, a price floor that is considered necessary to achieve reduction targets can be implemented so that emissions permits or allowances are sold at or above that predetermined price.⁴⁹ This would incentivize targeted businesses to assume decarbonization activities and promote investment in clean technologies. In addition, a price floor can be applied through non-pricing regulations, such as standards on fuel quality, vehicle emission standards and alike that lead to equivalent outcomes as pricing. Ultimately a price floor, in whatever form, coordinates policy actions and the required or pledged reduction targets.

A global minimum carbon price would be necessary because, even if jurisdictions adopt a carbon tax or an ETS, when the carbon price is too low, the imposition of the price would not lead to desired environmental outcomes. In a low carbon price environment, there is limited incentive to change behavior to reduce emissions and to invest in clean energy. Only when the carbon price is strong enough can businesses and individuals be effectively motivated to reduce emissions. Also, without a minimum carbon price, a jurisdiction can impose a lower price, which would entice businesses in high carbon price jurisdictions away, leading to carbon leakage. A minimum price would prevent carbon leakage to varying degrees depending on the price level. Simply, the failure to price carbon adequately is ineffectual. Currently, carbon prices in many jurisdictions with carbon pricing measures are far below the level of US\$40–80 needed in 2020 to meet the goal of limiting the rise in global temperature to 2°C.⁵⁰ As found in the IMF proposal, at the current pace of growth in global carbon emissions, additional measures equivalent to a global carbon tax of around US\$75 per ton of carbon dioxide by 2030 are needed in order to limit global warming to well below 2°C by 2030.⁵¹

The option of a global minimum carbon price could be an effective way to step up required actions among jurisdictions if the major obstacles facing the other two options can be overcome, i.e., reaching a global agreement and setting up a credible carbon price. The IMF proposal includes several design features that may help address the major obstacles. First, it is designed to start with a small number of large carbon emitting jurisdictions,

⁴⁸ A carbon price floor imposed in a tax system is analogous to the most recently proposed and endorsed global minimum corporate tax rate by members of the OECD/G20 Inclusive Framework on base erosion and profit shifting (BEPS). The global minimum corporate tax rate puts a floor to prevent the race-to-the-bottom competition over corporate income taxes among jurisdictions. See OECD, *Statement on a Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy* (Jul. 1, 2021).

⁴⁹ WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 60. The World Bank report notes that a price floor could include the provision of an open option for businesses to sell allowances at a fixed price or the regulator buying allowances on the secondary market to maintain that price.

⁵⁰ *Id.* at 25.

⁵¹ Parry, Black & Roaf, *supra* note 8, at 1.

including China, India, the EU and the US.⁵² According to the latest available data on carbon emissions, the top three national carbon emitters, i.e., China, India and the US, account for around half of global carbon emissions.⁵³ By 2030, they would account for 57 percent of baseline carbon emissions, and, including the EU as a common market and the fourth largest carbon emitter, will constitute 65 percent of global carbon emissions.⁵⁴ Other major carbon emitters include Canada, Germany, Iran, Japan, Russia, Saudi Arabia, and South Korea.⁵⁵ Except for Iran and Saudi Arabia, all of these other carbon emitters have introduced carbon pricing, or have carbon pricing under consideration, at national or subnational levels as shown in Table 1. Reaching an agreement among a small fraction of large emitters would be comparatively easier than procuring a global consensus among a larger number of jurisdictions. If all the targeted jurisdictions committed to implement a carbon price floor, the impact on global carbon emissions reduction will be significant.

Second, instead of applying a uniform carbon price floor, the proposal is designed to apply different floors depending on the development level of the targeted jurisdictions.⁵⁶ It suggests three floors, with the highest of US\$75 applying to advanced economies (e.g., the US), lowest of US\$25 to low-income economies (e.g., India), and a middle level price of US\$50 to high-income emerging economies (e.g., China).⁵⁷ Such differentiated pricing would be necessary in the view of developing countries as it accounts for equity and differentiated responsibilities under international environmental law,⁵⁸ with pricing based on historical emissions and economic capacity of jurisdictions to address emissions mitigation.

Third, the proposal is designed to allow flexible accommodation of reduction instruments.⁵⁹ It acknowledges that the best way to meet a required level of carbon price would be through a carbon tax because it is straightforward, transparent, and easy to monitor.⁶⁰ On the other hand, it considers that a required level of carbon price can also be met through an ETS or other policy approaches at the national level provided they lead to equivalent emissions impacts as a carbon tax does.⁶¹ This design features is in sharp contrast

⁵² *Id.* at 4, 6.

⁵³ World Bank, *CO2 Emissions (kt)*, *supra* note 21. Based on the World Bank dataset, the three countries' total emissions are around 52% of global carbon emissions as of 2018. The three countries have been reported as together accounting for 50.3% of global carbon emissions as of 2018: *see* Rapier, *supra* note 33.

⁵⁴ Parry, Black & Roaf, *supra* note 8, at 4.

⁵⁵ World Bank, *CO2 Emissions (kt)*, *supra* note 21; Rapier, *supra* note 33.

⁵⁶ Parry, Black & Roaf, *supra* note 8, at 7.

⁵⁷ *Id.* at 11.

⁵⁸ The principle of common but differentiated responsibility (CBDR) is rooted in international environmental law. For detailed analysis of the principle, *see* Duncan French, *Developing States and International Environmental Law: The Importance of Differentiated Responsibilities*, 49 INT'L & COMP. L.Q. 35 (2000); Christopher D. Stone, *Common but Differentiated Responsibilities in International Law*, 98 AJIL 276 (2004); LAVANYA RAJAMANI, DIFFERENTIAL TREATMENT IN INTERNATIONAL ENVIRONMENTAL LAW (2006); Zhongxiang Zhang, *Encouraging Developing Country Involvement in a Post-2012 Climate Change Regime: Carrots, Sticks or Both?*, in UNITED NATIONS ENVIRONMENT PROGRAMME, CLIMATE AND TRADE POLICIES IN A POST-2012 WORLD 79 (2009); Sarah Davidson Ladly, *Border Carbon Adjustments, WTO-law and the Principle of Common but Differentiated Responsibilities*, 12 INT' ENVTL. AGREEMENTS: POL., L. & ECON. 63, 68-73 (2012); Ljunggren, *supra* note 37, at 25–28, 34–38.

⁵⁹ Parry, Black & Roaf, *supra* note 8, at 8.

⁶⁰ *Id.*

⁶¹ *Id.*

with the other two options discussed above in that it is more flexible and takes into account the difficulty of introducing an explicit carbon pricing measure in some jurisdictions. It focuses on final reduction outcomes rather than the forms or means through which the outcomes are yielded. This flexibility would help push through negotiations at the international level and allow more space for jurisdictions to take actions based on what is optimal to them in the light of domestic development conditions and legal systems.

The IMF proposal appears promising. It does seem to resolve the two major obstacles associated with the other two options, at least in theory. That is, it averts the difficulty of confronting a large number of parties to reach a multilateral agreement through limiting the application of minimum prices to large carbon emitters, and it reduces the uncertainty about creating a globally credible carbon price level through setting up different levels of minimum carbon prices and allowing flexible reduction policies. With the three design features, many developing countries, which account for 86.4 percent of countries without carbon pricing, would be released from the minimum carbon price requirement (at the initial stage). This would alleviate any pressure in the short term to introduce a carbon pricing measure that might be considered burdensome to businesses and households within their jurisdictions.

C. *The Political Economy Feasibility*

If the option of global minimum carbon prices is limited to the four large emitters—China, India, the EU and the US—only India, as a developing economy, would be impacted as it does not have a carbon tax or an ETS.⁶² The US would have to introduce a federal-level measure or compel those states without carbon pricing to introduce one. If the agreement is applied to all major emitters as noted above, Iran and Saudi Arabia would be impacted as they do not have any carbon pricing measures. While Saudi Arabia is a high-income economy, Iran is not. Introducing a carbon tax or an ETS would directly affect their economies given both countries rely on energy production for development.⁶³ Iran may be particularly concerned as it may lack human and financial resources to implement a carbon pricing measure.⁶⁴ If the scope of targeted jurisdictions extends to G20 members, only three countries, i.e., Australia, India, and Saudi Arabia, would be obliged to introduce carbon pricing measures with required price floors as all other members of the G20 have carbon

⁶² However, India has imposed a coal tax since 2010 and it doubled the coal tax in July 2020. This tax may help reduce carbon emissions as 70% of carbon emissions come from the use of coal in the country as of 2017. It is suggested that to increase the effectiveness of this tax, reforms of subsidies for coal production and usage in power generation would be required. See Asia and Pacific Department and Fiscal Affairs Department, *Fiscal Policies to Address Climate Change in Asia and the Pacific* 14, 23 (IMF No. 21/07, 2021); Kartikeya Singh, *India's Coal Tax is Key to Stabilizing Its Energy Transition* (Center for Strategic and International Studies, 2020), available at <https://www.csis.org/analysis/indias-coal-tax-key-stabilizing-its-energy-transition>.

⁶³ International Energy Agency (IEA), *Largest Producers by Fuel, 2017* (last updated Nov. 26, 2019), at <https://www.iea.org/data-and-statistics/charts/largest-producers-by-fuel-2017>; see also U.S. Energy Information Administration, *What Countries are the Top Producers and Consumers of Oil?* (last updated Jul. 26, 2021), at <https://www.eia.gov/tools/faqs/faq.php?id=709&t=6>.

⁶⁴ Iran is classified as a lower-middle income economy by the World Bank, and it is responsible for 1.85% of global carbon emissions as of 2018. See World Bank, *The World by Income and Region*, at <https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html>; World Bank, *CO2 Emissions (kt)*, *supra* note 21.

pricing at regional, national or subnational levels in effect or under consideration.⁶⁵ Focusing on developing countries, it is India again that would be under the greatest pressure to introduce carbon pricing and at the required price level.

On the other hand, as the global minimum carbon price proposal is designed to be flexible so as to accommodate non-pricing measures that yield reduction outcomes equivalent to pricing, India, and developing countries in general, may utilize regulations, other emission reducing taxes such as a coal tax, and other policy actions to meet reduction targets that an equivalent minimum carbon price would achieve.

The multilateral agreement on minimum carbon prices may be extended, gradually, to more countries including developing countries because of the collective benefits it would produce when more countries act to price carbon adequately,⁶⁶ and the urgent need for countries to make actual enforcement to limit global warming. As such, the agreement should include provisions that allow for future expansion in scope.

As shown in Charts 3 and 4, most countries without carbon pricing are developing countries. Some supplementary measures are needed if the multilateral agreement is aimed to encourage more countries, particularly developing countries, to join. A transparent fiscal transfer mechanism that allocates financial assistance from developed countries to developing countries can be a helpful supplement. Such a transfer mechanism could address international equity issues between developed and developing countries and, at the same time, provide necessary resources and incentives for developing countries to implement carbon pricing for emissions reductions.⁶⁷ There are already mechanisms for such financial support under the UNFCCC and the Kyoto Protocol,⁶⁸ and the commitment of US\$100 billion per year by developed countries is formalized in the Cancun Agreements in 2010, which says “... developed country Parties commit, in the context of meaningful mitigation actions and transparency on implementation, to a goal of mobilizing jointly USD 100 billion per year by 2020 to address the needs of developing countries”.⁶⁹ The commitment was also a central element of the Paris Agreement, where Article 9 requires developed countries to provide financial resources to assist developing countries with respect to both mitigation and adaptation.⁷⁰ These legal obligations, if met,⁷¹ will help address the needs of developing countries in designing and implementing carbon pricing.

⁶⁵ For G20 members, see G20.org, *About the G20*, at <https://www.g20.org/about-the-g20.html> (visited Nov. 22, 2021). For G20 members with carbon pricing, see WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 22.

⁶⁶ Parry, Black & Roaf, *supra* note 8, at 5.

⁶⁷ The international equity issues are considered in the IMF proposal. See Parry, Black & Roaf, *supra* note 8, at 6, 8, 13. See also literature cited at note 36, *supra*, particularly Tan et al., which focuses on the difficulties faced by developing countries seeking to address climate change issues.

⁶⁸ For the mechanism for financial support under the UNFCCC and the Kyoto Protocol, see note 9, *supra*.

⁶⁹ See United Nations Framework Convention on Climate Change, FCCC/CP/2010/7/Add.1, para. 98.

⁷⁰ See Paris Agreement, *supra* note 4.

⁷¹ As informed by the UN Climate Chief in June 2021, the pledge of financial support of USD 100 billion has not been met. Research also found that while there was year-on-year progress in the period of 2015-18, it is unlikely that the commitment of USD 100 billion would be met in 2020. See United Nations Climate Change, *UN Climate Chief Urges Countries to Deliver on USD 100 Billion Pledge* (June 7, 2021), at <https://unfccc.int/news/un-climate-chief-urges-countries-to-deliver-on-usd-100-billion-pledge>; see also INDEPENDENT EXPERT GROUP ON CLIMATE FINANCE, DELIVERING ON THE \$100 BILLION CLIMATE FINANCE

Critical to reaching a multilateral agreement on minimum carbon prices is to establish global minimum prices with differentiated levels among participating jurisdictions. It is however uncertain whether the four largest emitters would agree on the differential carbon price floors suggested in the IMF proposal, in addition to the uncertainty whether they would endorse the minimum carbon price option while other countries have no obligations to apply.

Currently, among the carbon pricing measures implemented in all the major carbon emitters, only the EU ETS at the regional level and subnational carbon pricing measures in some regions in Canada have carbon prices above the lower end of the price range of US\$40–80 needed in 2020 to meet the goal of limiting global warming to 2°C.⁷² Some EU member states that have separate domestic carbon taxes or ETSs have had a carbon price above the high end of the price range of US\$40–80 as shown in Table 1. However, if the EU is considered as a whole, none of the largest emitters with carbon pricing—China, the EU and the US—have a price meeting the relevant price floors suggested in the IMF proposal. Neither do most of the other major emitters with carbon pricing, namely Canada, Japan, Russia, and South Korea.⁷³

China and India, as developing countries with continuing need to develop their economies to improve living standards of their citizens, would be concerned about the impacts of a minimum carbon price on their domestic economic growth even if the applicable price floors would be lower than that for high-income economies. A price floor of US\$50 suggested in the IMF proposal for upper-middle income economies such as China is currently far above the prevailing price range of US\$1.1–US\$6.3 in the country.⁷⁴ The price floor of US\$25 suggested for low-income economies such as India would be perceived as too high to be adopted by the country given its overall development conditions and its GDP per capita that is notably below the world average as of 2020.⁷⁵ The same is true with the US regarding a suggested price floor of US\$75 for advanced economies. The price floor is much higher than the US domestic local-level price range of US\$6.5–US\$17.9.⁷⁶ It is also higher than carbon prices imposed in some regions in Canada and the EU as a whole. Only Germany, among the major carbon emitters, has a carbon price above the floor of US\$75 when the EU ETS and domestic fuel ETS are aggregated to produce a price of US\$79.14.⁷⁷

COMMITMENT AND TRANSFORMING CLIMATE FINANCE 22, 33 (Dec. 2020), available at https://www.un.org/sites/un2.un.org/files/100_billion_climate_finance_report.pdf; J. Timmons Roberts, Romain Weikmans, Stacy-ann Robinson, David Ciptet, Mizan Khan & Danielle Falzon, *Rebooting a Failed Promise of Climate Finance*, 11 NATURE CLIMATE CHANGE 180 (2021).

⁷² For detail of carbon prices applied in major emitting jurisdictions, see Table 1. For the price range required, see WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 25.

⁷³ For the major emitters, see notes 53, 55 *supra*.

⁷⁴ See Table 1.

⁷⁵ World Bank, *GDP Per Capita (Current US\$)*, at <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD> (visited Dec. 7, 2021). The world average is USD 10,909 as of 2020, while India's GDP per capita is USD 1,901. See also World Bank, *Data for India, World*, at <https://data.worldbank.org/?locations=IN-1W> (visited Dec. 7, 2021); United Nations, *India - Country Profile Implementation of Agenda 21: Review of Progress Made Since the United Nations Conference on Environment and Development, 1992*, at <https://www.un.org/esa/earthsummit/india-cp.htm#chap33> (visited Dec. 7, 2021).

⁷⁶ See Table 1.

⁷⁷ See Table 1; see also WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 26.

The EU's carbon price, nearly US\$50, is the closest to the price floor of US\$75 suggested in the IMF proposal for advanced economies. Some of the EU member states have a separate domestic carbon price well above the floor. Sweden has the highest carbon price among EU members and also in the world, being over US\$137 under its domestic carbon tax.⁷⁸ The EU may agree on a global minimum carbon price with differentiated floors and a high floor for advanced economies, but may still hesitate for two reasons to adopt a multilateral agreement on minimum carbon prices that did not contain provisions that sanction against non-compliance. It is clear that acting alone the EU cannot achieve the common goal of limiting global warming and while a high carbon price in the EU not replicated elsewhere would seriously undermine the EU's business competitiveness.

However, the considerable price gaps between what is ideal and what is real shows there is much to be done in these large emitting jurisdictions. A high carbon price floor for advanced economies is not impossible in view of the EU practices. Lower price floors for developing countries may also not be impossible, even if the floors required in the multilateral agreement would be higher than their current domestic carbon prices. This is on the proviso that transparent transfers of financial resources prescribed in the international climate change law can be effectively operated to help developing countries act on climate policies and that developed countries deliver on their pledges.⁷⁹ Ideally, such a multilateral agreement can be made a binding international treaty to make the measure of minimum carbon prices legally enforceable and ensure international legal obligations of fiscal transfers are met.⁸⁰

A critical question here is how to make a multilateral agreement on global minimum carbon prices achievable at the international level. The minimum price option, even if it were the ideal solution, would not be pursued unless there were sanctions for non-compliance. Without sanctions, international treaties on climate and the environment would be merely assertions of what countries pledge they will do. Also, participation in international climate agreements cannot always be guaranteed as some most recent country practice shows.⁸¹ This suggests that further actions may be needed to foster the development and implementation of the multilateral agreement.

IV. THE ROLE OF BORDER CARBON ADJUSTMENTS

Notwithstanding BCAs have been considered a controversial and somewhat impracticable policy idea,⁸² they have been contemplated by some developed countries and regions. The

⁷⁸ See Table 1; see also WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 26.

⁷⁹ For the fiscal transfer mechanisms, see discussion above and notes 68-71, *supra*.

⁸⁰ The IMF proposal suggests that it would be more feasible to achieve an international agreement on minimum carbon prices if the agreement takes the form of a softer law instrument, but a formal treaty would be needed if compensation mechanisms are included. Parry, Black & Roaf, *supra* note 8, at 6.

⁸¹ Mehling, et al., *supra* note 37, at 434. The authors cite the U.S. withdrawal from the Paris Agreement, *supra* note 4, to emphasize that the international climate regime cannot always bind national states. See also United Nations Treaty Collection, *supra* note 39. The document on the status of the Paris Agreement notes that on November 4, 2019, the U.S. government notified the Secretary-General of its decision to withdraw from the Agreement which took effect on November 4, 2020 in accordance with Art. 28(1) and (2) of the Agreement; but on January 20, 2021, the U.S. government deposited its instrument of acceptance of the Agreement.

⁸² See WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 37.

escalated or strengthened climate ambition in countries and regions in very recent years have increased the willingness of governments to embrace BCAs. The first mover is the EU. In July 2021, the European Commission passed a BCA mechanism, targeting imports of selected carbon-intensive products that are subject to no or lower carbon prices compared with the EU ETS price.⁸³ BCAs are unilateral and thus have been considered the second best option to improve emissions reduction measures after internationally coordinated agreements.⁸⁴ If used alone, BCAs may lead to a proliferation of uncoordinated unilateral systems and create little of the cooperation that is much needed between countries for climate actions, in addition to their potential conflict with international trade law and international environmental law.⁸⁵ However, if a multilateral agreement on carbon pricing is in place, BCAs could be used as a last resort to encourage actual enforcement of the agreement. That is, where it is not possible to establish direct sanctions for non-compliance under a multilateral climate agreement, proxy sanctions may be necessary, and BCAs may be an optimal proxy. Regard must be had to the legality of BCAs in such circumstances in light of relevant international law.

A. *The Rationale and the Practice*

BCAs have been considered in some developed countries in conjunction with domestic emissions reduction schemes.⁸⁶ BCAs generally refer to charges on the embodied carbon in imported products from jurisdictions without adequate carbon pricing and are designed to equalize the costs borne by domestic industries with those incurred by producers in jurisdictions without comparable carbon pricing measures.⁸⁷ BCAs can take different forms depending on the emissions reduction scheme applied in the importing jurisdiction: the mechanism takes the form of a tax payment when the importing jurisdiction operates a carbon tax for carbon emissions reduction and it takes the form of a requirement on importers to purchase emissions allowances when the importing jurisdiction uses an ETS to reduce carbon emissions.⁸⁸

The contemplation of BCAs is often attributed to the two major concerns of those jurisdictions that impose, or propose to impose domestic carbon pricing measures, that is, carbon leakage and competitiveness.⁸⁹ Carbon leakage refers to the situation in which businesses move production from countries imposing climate policies to other countries with

⁸³ European Commission, *Carbon Border Adjustment Mechanism*, *supra* note 6.

⁸⁴ See Julia Reinaud, *Issues behind Competitiveness and Carbon Leakage: Focus on Heavy Industry* 7, 103–04 (International Energy Agency (IEA) Information Paper, OECD/IEA 2008); see also Weber, *supra* note 19, at 410–11, 417; Ljunggren, *supra* note 37, at 30.

⁸⁵ See, e.g., Weber, *supra* note 19; Mehling, et al., *supra* note 37; Ljunggren, *supra* note 37; French, *supra* note 58; Ladly, *supra* note 58.

⁸⁶ See Ladly, *supra* note 58, at 64; Weber, *supra* note 19, at 407–08; Mehling, et al., *supra* note 37, at 435.

⁸⁷ Parry, Black & Roaf, *supra* note 8, at 3; see also Ladly, *supra* note 58, at 64. Scholars tend to distinguish between border carbon adjustments and border tax adjustments with the former relating to ETSs and the latter to carbon or energy taxes. See also Weber, *supra* note 19, at 408.

⁸⁸ Ladly, *supra* note 58, at 64; Weber, *supra* note 19, at 408.

⁸⁹ See Ladly, *supra* note 58, at 65–68; Weber, *supra* note 19, at 409–10; WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 37; Evans, et al., *supra* note 19, at 307–08; European Parliament, Policy Department for External Relations, *Trade Related Aspects of a Carbon Border Adjustment Mechanism: A Legal Assessment* 7 (2020).

weaker emission constraints.⁹⁰ From an environmental perspective, this is particularly concerning because the shift of production of carbon-intensive products to jurisdictions with softer environmental regulations or no- or lower carbon prices would undermine the overall effectiveness of reduction policies.⁹¹ Another risk associated with carbon leakage is job relocation as a result of the moving of industries to jurisdictions with less costly reduction policies.⁹² With regard to the competitiveness concern, domestic industries, particularly those carbon-intensive and trade-exposed industries, bear the costs of carbon emissions through either a carbon tax or an ETS and will therefore be at a competitive disadvantage compared with foreign businesses that have not incurred comparable costs in the domestic and international markets.⁹³

Another oft-mentioned rationale for BCAs is leverage, that is, the adjustment mechanisms may incentivize foreign jurisdictions to introduce comparable reduction policies.⁹⁴ The adjustment mechanisms would address the free-rider problem inherent in multilateral environmental responses and could be used by jurisdictions having strict reduction policies as a safeguard against setbacks in international climate negotiations and against non-compliance under international agreements.⁹⁵

These rationales or objectives for applying BCAs will have to take into account constraints under existing international law, primarily the WTO law and the principle of CBDR under international environmental law.⁹⁶ While preventing carbon leakage for effective emissions reduction appears consistent with WTO rules, maintaining

⁹⁰ There are various definitions on carbon leakage. The term is defined as “the increase in CO₂ emissions outside the countries taking domestic mitigation action divided by the reduction in the emissions of these countries” in CLIMATE CHANGE 2007: MITIGATION OF CLIMATE CHANGE - CONTRIBUTION OF WORKING GROUP III TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, “Summary for Policy Makers”, 12 (Bert Metz, et al. eds, 2007). Reinaud defines carbon leakage as “the ratio of emissions increase from a specific sector outside the country (as a result of policy affecting that sector in the country) over the emission reductions in the sector (again, as a result of the environmental policy)”. See Reinaud, *supra* note 84, at 3.

⁹¹ WTO & UNEP, TRADE AND CLIMATE CHANGE: A REPORT BY THE UNITED NATIONS ENVIRONMENT PROGRAMME AND THE WORLD TRADE ORGANIZATION 99 (2009).

⁹² *Id.*

⁹³ Joost Pauwelyn, *Carbon Leakage Measures and Border Tax Adjustments Under WTO Law* 1–5 (Mar. 21, 2012), available at <https://ssrn.com/abstract=2026879>; Evans, et al., *supra* note 19, 308–09. Competitiveness may be defined as a sector or company’s ability to maintain profits and market share. Reinaud, *supra* note 84, at 17. However, *ex post* economic studies of competitiveness have found differing results of carbon pricing measures and environmental regulations, and the effects on competitiveness tend to be small relative to those of other trade factors or are not as strong as those predicated by *ex-ante* models. See Madison Condon & Ada Ignaciuk, *Border Carbon Adjustment and International Trade: A Literature Review* 8 (OECD Trade and Environment Working Papers, No. 2013/06, 2013); Aaron Cosbey, Susanne Droege, Carolyn Fischer & Clayton Munnings, *Developing Guidance for Implementing Border Carbon Adjustments: Lessons, Cautions, and Research Needs from the Literature*, 13 REV. ENVTL. ECON. & POL’Y 3, 6 (2019); WTO & UNEP, *supra* note 91, at 99.

⁹⁴ Weber, *supra* note 19, at 410; Ladly, *supra* note 58, at 67; Cosbey, et al., *supra* note 93, at 10–11.

⁹⁵ Ladly, *supra* note 58, at 67; Jacob Werksman, James Bradbury & Lutz Weischer, *Trade Measures and Climate Change Policy: Searching for Common Ground on an Uneven Playing Field* 2–3 (World Resources Institute, Working Paper, 2009).

⁹⁶ For the literature on CBDR, see note 58, *supra*. WTO law and the principle of CBDR are not completely separate and differentiated treatment is also reflected in WTO law. However, in a broad sense the two sets of international law are distinguishable.

competitiveness and inducing other jurisdictions to adopt similar reduction policies are likely to conflict with WTO rules as well as the principle of CBDR, as discussed below.⁹⁷

BCAs have been under serious consideration by developed countries and regions. As noted above, the EU adopted such a mechanism as part of the legislation of the European Green Deal, making it the first jurisdiction to embrace the unilateral mechanism to facilitate the implementation of domestic reduction policies which have become increasingly stringent.⁹⁸ Several other jurisdictions, including the US, have announced their consideration of introducing a BCA too.⁹⁹ The US is the only country without a national carbon pricing measure to explicitly state its exploration of the mechanism.¹⁰⁰ In fact, the mechanism has been featured in the US climate legislation, such as the American Clean Energy and Security Act of 2009, and proposals by various organizations.¹⁰¹ The EU adoption of a BCA seems to have shown some spill-over effects as Ukraine is set to align its ETS with the EU adjustment requirements and several countries have started to study the effects of the EU mechanism and possible ways for them to avoid paying the charges at the EU border.¹⁰²

From a practical perspective, BCAs are easier to implement than a global minimum carbon price framework because they do not require international consensus and jurisdictions that have strict carbon pricing measures can apply them independently.

B. WTO Constraints and the Principle of CBDR

BCAs are unilateral actions. If they are to be applied, a legal issue arises as to whether those jurisdictions with carbon taxes or ETSs can act within the WTO to prevent other jurisdictions from deliberately circumventing climate change initiatives by refusing to implement carbon taxes or other measures and selling cheaper carbon intensive products into the former.¹⁰³ Also, as BCAs would apply to products imported from developing countries that lack similar carbon pricing measures, developing countries will be particularly concerned about these adjustment mechanisms as the imposition of BCAs may impact their economy and exports.

The legality of BCAs under international trade law and international environmental law has been extensively examined in the literature.¹⁰⁴ If BCAs are to be used as proxy

⁹⁷ Cosbey, et al., *supra* note 93, at 10–11.

⁹⁸ European Commission, *Carbon Border Adjustment Mechanism*, *supra* note 6; WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 37, 66.

⁹⁹ WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 37.

¹⁰⁰ *Id.*

¹⁰¹ Mehling, et al., *supra* note 37, at 451–56; Cosbey, et al., *supra* note 93, at 4. The mechanism is a key component of the 2017 proposal by the U.S. Climate Leadership Council on climate actions. See James A. Baker, Martin Feldstein, Ted Halstead, N. Gregory Mankiw, Henry M. Paulson, George P. Schultz, Thomas Stephenson & Rob Walton, *The Conservative Case for Carbon Dividends*, CLIMATE LEADERSHIP COUNCIL (Feb. 2017), at <https://www.clcouncil.org/media/2017/03/The-Conservative-Case-for-Carbon-Dividends.pdf>.

¹⁰² WORLD BANK, STATE AND TRENDS OF CARBON PRICING, *supra* note 5, at 38.

¹⁰³ This part considers legality of BCAs that apply to imports as these are the main category of BCA proposals. For discussion of BCAs applying to exports, see Mehling, et al., *supra* note 37, at 470–71; Cosbey, et al., *supra* note 93, at 9–10; Joel P. Trachtman, *WTO Law Constraints on Border Tax Adjustment and Tax Credit Mechanisms to Reduce the Competitive Effects of Carbon Taxes*, 70 NAT'L TAX J. 469, 490–91 (2017).

¹⁰⁴ See, e.g., French, *supra* note 58; Stone, *supra* note 58; Gavin Goh, *The World Trade Organization, Kyoto and Energy Tax Adjustments at the Border*, 38 J. WORLD TRADE 395 (2004); Jan McDonald, *Environmental Taxes and International Competitiveness: Do WTO Border Adjustment Rules Constrain Policy Choices*, in CRITICAL ISSUES IN ENVIRONMENTAL TAXATION: INTERNATIONAL AND COMPARATIVE PERSPECTIVES, VOL. II,

sanctions under a multilateral agreement on global minimum carbon prices, two aspects of the legality issue need to be considered: first, what implications WTO law and the principle of CBDR have for BCAs, and second, to what extent BCAs can be aligned with both systems considering the circumstances in which a multilateral agreement on carbon pricing exists. In terms of WTO law, the most relevant are the rules on non-discrimination obligations and the explicit exception for border tax adjustments of the General Agreement on Tariffs and Trade (GATT).¹⁰⁵

Where a BCA is imposed in connection with a carbon tax, it would be determined as a border tax adjustment. Article II:2(a) of the GATT explicitly allows a border tax adjustment, by providing that member countries may impose

“at any time on the importation of any product a charge equivalent to an internal tax imposed consistently with the provision of paragraph 2 of Article III in respect of the like domestic product or in respect of an article from which the imported products has been manufactured or produced in whole or in part”.

This explicit exception is afforded based on the destination principle under an indirect tax such as a value-added tax.¹⁰⁶ The principle is necessary for achieving neutrality in international trade and it applies, in a cross-border context, to tax goods (and services) in the jurisdiction in which final consumption takes place.¹⁰⁷ The destination principle is explicitly stated in the GATT’s Report of the Working Party on Border Tax Adjustments.¹⁰⁸ Under the destination principle, imports are taxed on the same base and at the same rate as domestic products in the importing country while exports are exempt in the exporting country. Border tax adjustments that are allowed under Article II:2(a), however, are conditional upon satisfaction of Article III:2, which stipulates national treatment.¹⁰⁹ Essentially, border tax adjustments must be imposed in a non-discriminatory manner. While it appears clear that BCAs, in conjunction with a carbon tax, can be designed to meet Article II:2(a), it is less certain for BCAs linked to ETSs because the requirement on importers to purchase emissions allowances may constitute an internal regulation under Article III:4 of the GATT, rather than

273 (Hope Ashiabor, et al. eds., 2005); RAJAMANI, *supra* note 58; Joost Pauwelyn, *U.S. Federal Climate Policy and Competitiveness Concerns: The Limits and Options of International Trade Law* (Duke University Nicholas Institute for Environmental Policy Solutions, Working Paper 07-02, April 2007); Matthew Genasci, *Border Tax Adjustments and Emissions Trading: The Implications of International Trade Law for Policy Design*, 2 CARBON & CLIMATE L. REV. 33 (2008); Zhang, *supra* note 58; Peter Holmes, Tom Reilly & Jim Rollo, *Border Carbon Adjustments and the Potential for Protectionism*, 11 CLIMATE POL’Y 883 (2011); Ladly, *supra* note 58; Weber, *supra* note 19; Trachtman, *supra* note 103; Mehling, et al., *supra* note 37; James Bacchus, *Legal Issues with the European Carbon Border Adjustment Mechanism* (CATO Briefing Paper No. 125, Aug. 9, 2021).

¹⁰⁵ General Agreement on Tariffs and Trade, Oct. 30, 1947, 55 UNTS 194, as incorporated in General Agreement on Tariffs and Trade 1994, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1867 UNTS 187 (hereinafter GATT).

¹⁰⁶ OECD, INTERNATIONAL VAT/GST GUIDELINES 15–17 (2017).

¹⁰⁷ *Id.*

¹⁰⁸ Report of the General Agreement on Tariffs and Trade Working Party on Border Tax Adjustments, L/3464, BISD 18S/97, 1, para. 4 (Dec. 2, 1970).

¹⁰⁹ GATT, *supra* note 105, Art. III:2 provides that “[t]he products of the territory of any contracting party imported into the territory of any other contracting party shall not be subject, directly or indirectly, to internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products. Moreover, no contracting party shall otherwise apply internal taxes or other internal charges to imported or domestic products in a manner contrary to the principles set forth in paragraph 1”.

a tax.¹¹⁰ Article III:4 requires that the imported product be accorded treatment no less favorable than the like domestic product, meaning national treatment.

Indeed, national treatment under Article III, along with most-favored nation (MFN) treatment under Article I, is at the core of international trade law, embodying the principles of non-discrimination. The national treatment obligation prevents discrimination between domestic products and the same or similar products imported from other countries, whereas the MFN obligation prohibits discrimination between like products from different exporting countries.¹¹¹ For the purpose of a multilateral agreement on differentiated minimum carbon prices, the more relevant non-discrimination principle is the MFN obligation. BCAs that are aligned with the agreement appear to conflict with the MFN obligation because they apply differential treatment to imports on the basis of country of origin. Putting aside the uncertainty in respect of the determination of the likeness of products for ascertaining the existence of discriminatory treatment, the MFN obligation would preclude favorable treatment for developing countries. Although some forms of discrimination favoring developing countries are permitted under the Enabling Clause of WTO,¹¹² the permission is limited to only those clearly aimed in assisting the development of developing countries, which is not a feature commonly seen in BCAs.¹¹³ It is in this respect that the MFN obligation can be an issue in light of the principle of CBDR and it may contradict the objectives of a multilateral agreement with differentiated carbon price floors on the basis of country of origin.

Nevertheless, even if a BCA that provides preferential treatment, such as lower carbon price floors, to developing countries is determined to be GATT-incompatible, the BCA may still be legal if it falls within GATT Article XX on general exceptions. Article XX(b) and Article XX(g) can be invoked to justify BCAs that would violate either, or both, of the national treatment and MFN obligations.¹¹⁴ Article XX(b) allows an exception for measures “necessary to protect human, animal or plant life or health”, and Article XX(g) upholds measures “relating to the conservation of exhaustible natural resources” when they are “made effective in conjunction with restrictions on domestic production or consumption”.¹¹⁵ Under both exceptions, the relevant measures must further satisfy the requirements of the Chapeau of Article XX, which requires the measures not be “applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade”. Effectively, the Chapeau is intended to ensure that the measures in question are applied to

¹¹⁰ For a detailed analysis of border tax adjustments in Art. II:2(a), *see* Mehling, et al., *supra* note 37, at 457–59; WTO & UNEP, *supra* note 91, at 103–06.

¹¹¹ For an extensive discussion of the national treatment and MFN obligations, *see* Mehling, et al., *supra* note 37, at 459–64; WTO & UNEP, *supra* note 91, at 106–07.

¹¹² The Enabling Clause was adopted in 1979 and subsequently incorporated into the GATT 1994. For detailed review of the Enabling Clause, *see* Appellate Body Report, European Communities – Conditions for the Granting of Tariff Preferences to Developing Countries, WT/DS246/AB/R, para. 90.3 (Apr. 7, 2004).

¹¹³ Cosbey, et al., *supra* note 93, at 8.

¹¹⁴ Mehling, et al., *supra* note 37, at 464–70; WTO & UNEP, *supra* note 91, at 107–10; Ladly, *supra* note 58, at 75–78.

¹¹⁵ GATT, *supra* note 105, Art. XX(b) and (g).

protect legitimate interests,¹¹⁶ and, in the case of BCAs linked with climate policies, legitimate interests in the environment. The same prohibition on arbitrary or unjustifiable discrimination or a disguised trade restriction is also explicitly included in UNFCCC Article 3.5 and Principle 12 of the Rio Declaration 1992. Thus, preferential treatment for developing countries may be justified under the Chapeau in international trade law considering the conditions in those countries are not comparable to those in developed countries. Such treatment would also meet the principle of CBDR in international climate change law. However, BCAs that are imposed largely for competitiveness reasons are likely to be found as disguised trade restrictions and therefore as violations.¹¹⁷

The above discussion of the WTO rules suggests that, to be consistent with the WTO rules, BCAs must be designed with the clear objective of environmental protection but not with competitiveness and leverage objectives as otherwise they would violate the requirements of the GATT exceptions provisions and constitute arbitrary or unjustifiable discrimination or trade restrictions. This is in addition to conflict with CBDR and having limited effects on competitiveness.¹¹⁸ There are provisions in the GATT that allow a lighter adjustment requirement on imports from developing countries. This is significant to developing countries and, to a certain degree, caters to international equity in view of historical emissions and capabilities of developing countries to address climate change. While the WTO's central principle is trade liberalization, its objectives in the Preamble of the Marrakesh Agreement Establishing WTO ("the WTO Agreement"),¹¹⁹ specifically the objectives of improving living standards and ensuring the trade and economic development of developing countries,¹²⁰ suggest that a strong case can be made in relation to the lighter requirement or even exemption from BCAs on imports from developing countries, particularly those at the lower development level. Such an argument would justify BCAs that apply lower carbon price floors, as the IMF proposal suggests, to imports from developing countries.

The consideration of BCAs by developed countries is inevitably linked to the principle of CBDR. This principle can be traced to Principle 23 of the 1972 Declaration of the United Nations Conference on the Human Environment ("Stockholm Declaration"),¹²¹ which provides the need for differentiation between developed and developing countries. The first explicit expression of the principle is in Principle 7 of the 1992 Rio Declaration on Environment and Development.¹²² The principle is explicitly referenced and operationalized

¹¹⁶ WTO & UNEP, *supra* note 91, at 109.

¹¹⁷ Ladly, *supra* note 58, at 78.

¹¹⁸ Cosby, et al., *supra* note 93, at 10–11.

¹¹⁹ WTO Agreement: Marrakesh Agreement Establishing the World Trade Organization, Apr. 15, 1994, 1867 UNTS 154.

¹²⁰ *Id.*, Preamble, paras. 1 and 2.

¹²¹ Declaration of the United Nations Conference on the Human Environment, June 16, 1972, UN Doc. A/Conf.48/14/Rev. 1.

¹²² United Nations General Assembly, Rio Declaration on Environment and Development, Aug. 12, 1992, UN Doc. A/CONF.151/26 (Vol. 1).

in both the UNFCCC and the Kyoto Protocol,¹²³ and it is also articulated in the Paris Agreement, albeit with an addition of “in light of national circumstances”.¹²⁴ While the UNFCCC and the Kyoto Protocol clearly concern the need to apply differential or asymmetrical treatment to developing countries while recognizing that all countries have the common responsibility to protect the environment, the addition in the Paris Agreement introduces nuanced differentiation that may be viewed as diluting the original intent of the differentiation by placing more emphasis on current capacity than historical and ongoing responsibility.¹²⁵

The precise content of the principle, in particular the basis of the requirement of differentiation, remains ambiguous.¹²⁶ Nevertheless, the principle does suggest it is necessary to consider the different historical responsibilities for climate change by developing countries and the development level of countries to address such issue.¹²⁷ Some form of preferential treatment for developing countries, particularly least developed countries, are needed.¹²⁸ This is the case with respect to a multilateral agreement on global minimum carbon prices discussed in Part III. B. Applying lower price floors, or even exemptions, for developing countries would undoubtedly be consistent with the principle of CBDR. BCAs that use differential treatment to calculate the adjustment level or exempt the requirement for developing countries to adopt comparable climate policies will meet the principle of CBDR.¹²⁹ On the other hand, a developed jurisdiction imposing a BCA will not necessarily need to apply the same level of preferential treatment, such as an exemption, to all developing countries and differentiated preferential treatment may be applied to developing countries in light of their development level. Such differentiation would be consistent with WTO jurisprudence.¹³⁰

As a whole, conflicting requirements appear to exist between international trade law and international environmental law in respect of the design of unilateral BCAs. To the extent that BCAs comply with the principles of non-discrimination, particularly the MFN

¹²³ UNFCCC, *supra* note 9, Art. 3(1); Kyoto Protocol, *supra* note 9, Arts. 3 and 10. Kyoto Protocol Art. 3 only obliges developed countries to achieve emissions targets and obligations required on all parties in Art. 10 are expressly conditioned upon CBDR.

¹²⁴ Paris Agreement, *supra* note 4, Preamble and Art. 2(2). *See also* Lavanya Rajamani, *Ambition and Differentiation in the 2015 Paris Agreement: Interpretative Possibilities and Underlying Politics*, 65 INT’L & COMP. L.Q. 493 (2016).

¹²⁵ Julia Dehm, *Reflections on Paris: Thoughts Towards a Critical Approach to Climate Law*, REVUE QUÉBÉCOISE DE DROIT INTERNATIONAL 61, 81 (2018).

¹²⁶ Mehling, et al., *supra* note 37, at 472; Ladly, *supra* note 58, at 70–71.

¹²⁷ Mehling, et al., *supra* note 37, at 472.

¹²⁸ There is no WTO definition of “developing countries”. The WTO adopts the meaning of least developed countries by reference to the list by the United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing Countries. United Nations, *Profiles of LDCs*, at <https://www.un.org/ohrlls/content/profiles-ldcs> (visited Nov. 22, 2021).

¹²⁹ The two methods of providing preferential treatment for developing countries are also suggested in Mehling, et al., *supra* note 37, at 472.

¹³⁰ A decision by the WTO Appellate Body stated that developed countries could give benefits to some developing countries but were not required to provide the same benefits to all developing countries. Appellate Body Report, European Communities – Conditions for the Granting of Tariff Preferences to Developing Countries, WT/DS246/AB/R (Apr. 7, 2004). However, the measure in question must still not be discriminatory even between developing countries. *See* Suyash Paliwal, *Strengthening the Link in Linkage: Defining “Development Needs” in WTO Law*, 27 AM. U. INT’L L. REV. 37, 44 (2012).

obligation, differential treatment for developing countries would be disallowed. This contradicts with CBDR and goes against the intent of a multilateral framework on minimum global carbon prices, which applies lower price floors to developing countries. While this tension could be overcome by the Enabling Clause and exceptions provisions, the tension illustrates some underlying conceptual problems with the two systems of international law: international trade law concerns trade liberalization and thus efficiency whereas international environmental law focuses on the environment and the share of each country to the global reduction effort and thus equity.¹³¹ Nevertheless, it is possible to design a BCA that affords developing countries differential treatment to be compatible with WTO law through liberal interpretations of the general exceptions in Article XX.¹³² The outcome, on the other hand, is not certain, particularly with regard to the MFN obligation, and the fundamental conflict between the principles of non-discrimination under international trade law and the principle of CBDR under international environmental law remains.¹³³

C. BCAs under a Multilateral Agreement on Global Minimum Carbon Prices

A global minimum carbon price framework such as the one suggested by the IMF can be an optimal solution to addressing climate change urgently and effectively. Similar ideas have been proposed by academics before,¹³⁴ and in the face of more dire climate change prospects, a multilateral agreement on global minimum carbon prices incorporating more practical designs features would gain momentum in the discourse of making global mitigation efforts to mitigate emissions.

Where a multilateral agreement on minimum carbon prices is in place, the justification for unilateral BCAs would be significantly diminished as multilateral approaches are strongly preferred over unilateral actions as the WTO maintains.¹³⁵ BCAs should only be used as a last resort in the circumstances in which non-compliance occurs with respect to the obligations specified in the agreement.

The general exceptions in Article XX, particularly the Chapeau, could guide the design of BCAs to align with the multilateral agreement with differentiated minimum carbon prices and, at the same time, to satisfy WTO rules and CBDR. As the Chapeau of Article XX prohibits arbitrary or unjustifiable discrimination between countries where the same conditions prevail, this would suggest that an importing jurisdiction with a BCA must apply a comprehensive or holistic assessment of all carbon reduction policies in the exporting jurisdiction, rather than merely focusing on whether a carbon tax or an ETS exists.¹³⁶ Doing so accurately, however, could be difficult for the importing jurisdiction. Nevertheless, this

¹³¹ Some studies have discussed the tension extensively. *See, e.g.*, Ladly, *supra* note 58, at 79–81.

¹³² Mehling, et al., *supra* note 37, at 473; Ladly, *supra* note 58, at 79–80.

¹³³ Mehling, et al., *supra* note 37, at 473; Ladly, *supra* note 58, at 79–80.

¹³⁴ For example, the economist William Nordhaus suggested “Climate Club” in which a coalition of willing countries would implement a common carbon price while imposing a general tariff on nonparticipants. William Nordhaus, *Climate Clubs: Overcoming Free-riding in International Climate Policy*, 105 AM. ECON. REV. 1339 (2015); *see also* Parry, Black & Roaf, *supra* note 8, at 2.

¹³⁵ Appellate Body Report, United States–Import Prohibition of Certain Shrimp and Shrimp Products, WT/DS58/AB/R, para. 166 (Nov. 6, 1998); *see also* WTO & UNEP, *supra* note 91, at 110; Ladly, *supra* note 58, at 78.

¹³⁶ Mehling, et al., *supra* note 37, at 469; Ladly, *supra* note 58, at 77.

approach will be consistent with the design of the multilateral agreement on minimum carbon prices as proposed by the IMF, which allows flexible accommodation of carbon reduction policies to encourage actual action. Also, the prohibition implies that different conditions should be considered in the country imposing a BCA, suggesting that favorable treatment, such as a lower level of carbon price adjustment, based on the development level of the exporting country may be justifiable. Further, the prohibition on arbitrary or unjustifiable discrimination suggests that the country imposing a BCA should engage in serious negotiations with affected countries and take steps to reach a bilateral or multilateral solution before resorting to unilateral responses.¹³⁷ Although not a prerequisite, the WTO jurisprudence has made it clear that, insofar as possible, a multilateral approach is strongly preferred.¹³⁸ Thus, where a multilateral agreement on global minimum carbon prices is in place, the country imposing the BCA should engage in negotiations with non-complying countries who are also parties to the agreement before taking unilateral actions.

The value of BCAs lies in their practical role in facilitating the development and implementation of a multilateral agreement on global minimum carbon prices, and that value should not be overstated. Ideally, it will merely serve as a deterrent and will not be invoked by parties to the agreement. When it is necessary to apply, the BCA invoked by the relevant jurisdiction needs to be consistent with the parameters of the agreement that take into account the development level and capacity of countries to mitigate emissions. In a strict sense, BCAs are not sanctions, but their application can have an effect on compliance with obligations in an international agreement.¹³⁹

In the long term, the most desirable solution to the collective challenges of climate change is collective climate action. A global minimum carbon price framework that helps tax carbon credibly across jurisdictions will be such collective action. BCAs can only be used to complement the global framework, and never be a desirable nor stable solution in the long run.¹⁴⁰

V. CONCLUSION

Climate change poses a common threat to all on the planet. A global mitigation effort is needed. Carbon pricing, a market-based instrument, can be part of the global effort to address climate change issues in a cost-effective way. By putting a price on carbon through a carbon tax or an ETS, carbon pricing can incentivize decarbonization activities and require those emitting carbon dioxide to pay for the social (and environmental) costs caused by emissions. For carbon pricing to work, the prices need to be strong enough to reflect the social costs of

¹³⁷ Appellate Body Report, United States–Import Prohibition of Certain Shrimp and Shrimp Products, WT/DS58/AB/R, para. 166 (Nov. 6, 1998); *see also* WTO & UNEP, *supra* note 91, at 110; Laddy, *supra* note 58, at 78.

¹³⁸ WTO & UNEP, *supra* note 91, at 110, citing Appellate Body Report, United States–Import Prohibition of Certain Shrimp and Shrimp Products (Recourse to Art. 21.5 by Malaysia), WT/DS58/AB/RW, para. 134 (Oct. 22, 2001).

¹³⁹ Similar points are made in other studies: *see* Mehling, et al., *supra* note 37, at 441.

¹⁴⁰ *See* Mehling, et al., *supra* note 37, at 481. The authors conclude that collective climate action will always remain preferable to unilateral actions, even with BCAs, but to the extent that BCAs can help push forward ambitious climate action, their use with associated residual risks and trade-offs may warrant a try.

emissions. Despite the increasing adoption of carbon pricing in countries and regions, carbon pricing is limited to around 30 percent of countries and the applicable carbon prices in many countries are far below the required price level that is needed to limit global warming. Most developing countries have not yet adopted carbon pricing measures for various reasons including the potential impacts on economic growth.

The article considers options that can be used to encourage more countries to adopt carbon pricing and to impose a credible carbon price that is necessary for achieving the emissions reduction goals. It argues that a multilateral agreement on global minimum carbon prices, based on an IMF proposal, would be an optimal solution for the purpose of establishing an effective carbon pricing framework internationally. Such agreement would be feasible if it is limited to the world's large emitters at the initial stage and differentiated minimum prices are applied to countries according to their development level. It is also necessary to provide fiscal transfers to developing countries, particularly those that are at the level of low-income or lower-middle income, to help them implement a minimum carbon price.

Unilateral BCAs could be used as a supplement to the extent that they help achieve actual enforcement of the multilateral agreement. There are opportunities to design BCAs that align with the multilateral agreement and with WTO rules and the principle of CBDR simultaneously, and environmental protection will be the only objective for such BCAs to succeed. It is time, and probably the last time,¹⁴¹ to consider and act on a multilateral agreement on global minimum carbon prices for the common good.

¹⁴¹ See Bhattacharya & Stern, *supra* note 13.