

ORIGINAL ARTICLE OPEN ACCESS

A “Conveyor Belt” From International Standards to Domestic Regulation? Evidence From the International Political Economy of Net Zero Governance

Thomas Hale¹  | Emma Lecavalier¹ | Claas Mertens¹ | Bhavya Gupta¹ | Thom Wetzer²

¹Blavatnik School of Government, Radcliffe Observatory Quarter, University of Oxford, Oxford, UK | ²Faculty of Law, University of Oxford, Oxford, UK

Correspondence: Thomas Hale (thomas.hale@bsg.ox.ac.uk)

Received: 15 August 2025 | **Revised:** 2 June 2026 | **Accepted:** 5 June 2026

Keywords: carbon credits | climate | disclosure | net zero | regulation | standards

ABSTRACT

When and how do international standards influence domestic policies? The literature identifies a range of ways international standards may relate to domestic regulations—including by exporting, substituting, supplanting, or bolstering national rules—creating theoretical ambiguity. This article focuses, in particular, on whether, when, and how standards can help generate regulatory outcomes that are more rigorous than would otherwise be expected, given a jurisdiction’s political economy. We define policy rigor to include both how substantively significant a policy is for regulated entities and also how stringently it is enforced. Positing a *coherent* international standards landscape in a given policy area as a key enabling condition, we highlight four mechanisms through which standards can increase policy rigor. *Learning* occurs when domestic actors, facing uncertainty, rely on international standards to understand how to achieve their goals. *Normative benchmarking* sees domestic actors using these standards as legitimate guides. *Agenda-setting* elevates the prominence of certain policy outcomes, aligning domestic coalitions around these standards. *Harmonization* happens when firms advocate for international standards to minimize multinational compliance costs and ensure a level playing field. To probe the plausibility of these mechanisms, our empirical analysis contrasts rules around climate-related disclosure and rules on carbon credits in five major economies with vastly different political economies around climate policy: Brazil, China, the EU, the United Kingdom, and the United States. Across these jurisdictions, domestic disclosure policies are increasingly rigorous, aided by a converging landscape of standards. Conversely, the fragmented carbon credits standards landscape limits these mechanisms, and greater variance in the rigor of domestic regulations is observed. The findings contribute to theoretical debates on the relationship between transnational governance and national rules, highlighting specific pathways through which international standards may serve as a “conveyor belt,” bringing rigorous rules into domestic policy.

1 | Introduction

In 2000, a small non-governmental organization (NGO) called the Carbon Disclosure Project (now CDP) began encouraging companies to publicly report on their greenhouse gas emissions and environmental policies. What began as a voluntary initiative grew over time and in 2025, over 23,000 entities disclosed environmental data through CDP and more than 600 financial

institutions with over US\$127 trillion in assets requested environmental data through the organization (CDP 2026).

This groundswell of voluntary action caught the attention of financial regulators, and, in 2015, the G20 and Financial Stability Board established the Taskforce on Climate-Related Financial Disclosures (TCFD) to generate guidelines for high-quality corporate climate-related disclosures. These recommendations

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2026 The Author(s). *Regulation & Governance* published by John Wiley & Sons Australia, Ltd.

were later subsumed under the International Sustainability Standards Board (ISSB) voluntary disclosure standards (TCFD 2024b).

Over this same period, climate-related disclosure has increasingly become a legal obligation. Since France first began mandating climate-related disclosure in 2016, regulation has emerged in countries as diverse as Australia, Canada, China, the European Union, Hong Kong, India, Mexico, New Zealand, South Korea, Switzerland, the United Kingdom, and the United States. And while these rules vary, each shaped by their domestic political economy, the alignment of 32 stock exchanges worldwide with the TCFD recommendations and the imprint of voluntary international standards on domestic disclosure regulations is notable. As of 2025, 36 jurisdictions representing over 60% of global GDP have adopted, are adopting, or are otherwise using the ISSB standards (IFRS 2025).

This flow from voluntary action, to orchestrated initiatives, to transnational standards, to domestic regulation has been described as a “conveyor belt” (Hale 2022). However, existing theories document a range of possible interactions between these types of governance (Abbott et al. 2017; Green 2017; Malhotra et al. 2019). The literature on the relationship between the last link in this chain, between voluntary standards and domestic regulation, is particularly rich. Scholars document how transnational rules may serve to export, substitute for, supplant, or bolster national rules, among other interactions. The result is theoretical ambiguity about the conditions under which voluntary standards can influence the rigor of national regulation.

This article therefore seeks to build our theoretical understanding of the potential influence of international standards on domestic regulation. We theorize how and under what conditions international standards can influence domestic regulatory outcomes, enhancing their rigor beyond what domestic political economy would otherwise expect. We examine two policy domains, climate-related disclosure and carbon crediting, and compare regulatory outcomes across five jurisdictions: Brazil, China, the European Union, the United Kingdom, and the United States. While this research design does not allow for dispositive causal claims, comparing domestic rules across different policy domains and political economies enables us to probe the plausibility of several mechanisms through which standards may enhance the rigor of regulatory outcomes.

The paper proceeds as follows. The following section outlines the hypothesized “conveyor belt” and presents our theoretical expectations. We then probe the plausibility of these expectations through comparing the two policy domains across the five jurisdictions. Our findings indicate a clear divergence in the influence of international standards between climate-related disclosure and carbon crediting rules. In the disclosure domain, where standards are coherent, we observe significant alignment with ambitious standards, driven by mechanisms of *learning*, *normative-benchmarking*, *agenda-setting*, and *harmonization*. This alignment has led to increasingly rigorous national regulations in the jurisdictions studied, despite their different political economies. Conversely, the international standards landscape remains fragmented in the carbon

credits domain, and regulatory outcomes vary widely in the ways we would expect, given divergent domestic political economies.

Our analysis establishes key mechanisms through which international standards can foster rigorous national regulations—the key final step in the “conveyor belt” model—and highlights the importance of coherent international standards. While focused on regulatory domains within climate change governance, the mechanisms identified can be expected to apply generally. Climate governance has long been recognized as a useful laboratory for broader theoretical debates on governance interactions due to both the density of transnational, intergovernmental, and domestic governance in this issue area, the prominent role played by non-state and sub-national actors, and the numerous overlaps between climate governance and other issue domains (Abbott et al. 2016; Bulkeley et al. 2014; Keohane and Victor 2011; Ostrom 2009). In this sense, the climate regime is a key domain from which to build theories about interactions between public and private authority and the role of public regulators within complex global governance regimes (Abbott 2012; Jordan et al. 2018).

Alongside this theoretical contribution, the findings address a key policy debate over how and when voluntary standards can be instruments for enhancing the rigor of environmental regulation. To the extent ambitious standards raise the rigor of domestic rules, they make a positive contribution to climate governance, but weak or fragmented rules may be counterproductive. Clarifying the role of standards in this ecosystem is therefore critical for understanding, in practice, how complex governance systems manifest at the domestic level.

2 | The Literature Identifies Many Ways in Which International Standards Link to Domestic Regulation: When Can They Strengthen It?

Standard-setting is a widespread governance activity that occurs domestically and internationally, involving a wide array of actors. Here, we focus on standards that aim to guide firm behavior in a given domain. Standards can be created by governments, NGOs, or firms, and apply either within a given jurisdiction or globally. Some standards are purely voluntary, while compliance with others is required under law.

Existing theories envision a wide range of potential relationships between voluntary standards and national regulations, but there is no consensus about why, and under what conditions, influence flows one way or another. On the one hand, scholars have shown how states and international organizations can orchestrate voluntary standards to advance their domestic rules vis-à-vis both transnational actors and other states (Abbott et al. 2017). The European Union, for example, orchestrated voluntary sustainability standards around biofuels to enhance its ability to implement and verify compliance with its Renewable Energy Directive (Partiti 2019).

In other instances, scholars have shown how NGOs, firms, and other non-state actors use voluntary rules to shape both market and state actors’ behavior (Green 2014; Kinniburgh

et al. 2023). The standards developed by the Forest Stewardship Council, for example, draw on international public law, requiring compliance with treaties and conventions such as the Convention on Biological Diversity (CBD) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). When adopted by firms in jurisdictions that are not signatories to these conventions—the United States, for example, is not a signatory to the CBD—these standards can act as a means through which international law is indirectly and implicitly enforced in the absence of national political commitments (Marx 2017; Partiti 2019). Indeed, as Bartley (2011, 455) argues, private standards can be used to “bypass political roadblocks.”

More critically, scholars have questioned whether voluntary standards compete with or undermine public regulation. Seidman (2012, 1035) analysis of Rugmark (now GoodWeave), a social-labelling scheme to combat child labor in rug making, notes activists’ complaints that “by offering a ‘voluntary’ alternative to state enforcement of India’s child labour laws, Rugmark and similar voluntary monitoring schemes may inadvertently undermine efforts to strengthen the country’s labour laws more broadly.” This example highlights the risk that voluntary standards deflect attention from, rather than enhance, national regulation. A survey experiment by Malhotra et al. (2019) corroborates these findings. Kinniburgh et al. (2023) also identify a “confounding interaction” in the case of pesticide governance, wherein private agricultural standard-setting bodies impede efforts to enhance the rigor of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

Often, however, interactions push in multiple directions over time. For example, Green shows how firms and NGOs developed greenhouse gas accounting rules that influenced the design of intergovernmental rules on emissions trading in the 1997 Kyoto Protocol and, subsequently, national policies (Green 2017). Karavias (2018) notes another form of interplay between international law and private standards, highlighting how the Marine Stewardship Council Fisheries Standard and Guidance (MSC FSG) acted as a model for the Food and Agriculture Organization’s Ecolabelling Guidelines. While existing studies document the richness of the multiple possible interactions between different forms of governance, the result is theoretical ambiguity about the conditions under which influence flows one way or another.

In climate governance, the prospect of “catalytic” effects brings new attention to this theoretic uncertainty (Bernstein and Hoffmann 2018; Busby and Urpelainen 2020; Hale 2020). Contra the dominant theoretical viewpoints of climate as a “tragedy of the commons,” the catalytic approach posits that in many areas of climate policy, action by some actors enables further action by others, potentially generating an “ambition loop” (Dickerson et al. 2018; Eskander et al. 2024). As part of this dynamic, pro-climate actors may develop voluntary governance approaches that, because they are developed by and for front-runners, have a relatively high level of ambition. To the extent these approaches then spread into international standards and eventually national regulation, the “conveyor belt” effect may

enhance the relative ambition and/or stringency of rules than would otherwise be the case (Hale 2022).

We seek to examine this dynamic by focusing on the crucial final step in this causal chain: the link between international standards and domestic regulation. Drawing on the wider literature, we posit the conditions under and mechanisms through which international standards can influence domestic regulation. Within this framework, we ask: can more ambitious international standards shift domestic regulation to be more ambitious and/or stringent—or what we refer to as rigorous—than we may otherwise expect? With this focus, we intentionally leave to one side other elements of the causal chain, such as how standards emerge in the first place. However, in line with the dynamic “conveyor belt” model (Hale 2022), we understand both international standards and national regulation to be embedded, along with other governance elements, in an ongoing process of mutual influence. Within this complex governance system (Keohane and Victor 2011; Abbott 2012) our contribution is to isolate a particularly critical subset of causal mechanisms (the effects of international standards on national regulations), to which we now turn.

3 | Theorizing the Conveyor Belt: Actors, Mechanisms, and Conditions

Building on previous work (Abbott and Snidal 2009), we envision a simple and general political economy model of domestic politics with four types of actors (Figure 1). National rules are set by both political leaders and regulatory authorities. The former, primarily executives and legislatures, support rigorous climate policies if the coalitions that help them win and hold power favor such measures. Regulatory authorities, in turn, are the agents of political decision-makers, with varying degrees of autonomy and discretion. As bureaucrats, they can also be guided by norms, professional codes, or beliefs that derive from their functional, often technocratic, roles (Huber and Shipan 2002), or they can be subject to regulatory capture (Dal Bó 2006). Critically, regulatory authorities are often linked to each other via transgovernmental networks that can serve as incubators and diffusors of common ideas and approaches (Bach and Newman 2010; Gaus 2019; Slaughter 2004; Vantaggiato 2019).

Both political leaders and regulatory authorities are influenced primarily by domestic interests. Among these, firms are often the most influential, seeking to ensure domestic policies support their material interests. Firms often, but not always, push against rigorous climate policy, albeit with significant variation that reflects their heterogeneous positions in domestic and global markets (Kennard 2020). Finally, NGOs advocate for their social goals, including many who support more rigorous climate policies, drawing on technical expertise or normative argumentation to influence policy.

Figure 1 sketches how the different actors and their interactions may mediate the relationship between standards and domestic rules (Renckens et al. 2022). We expect domestic political economy concerns to dominate these preferences and therefore to be the primary determinant of the rigor of

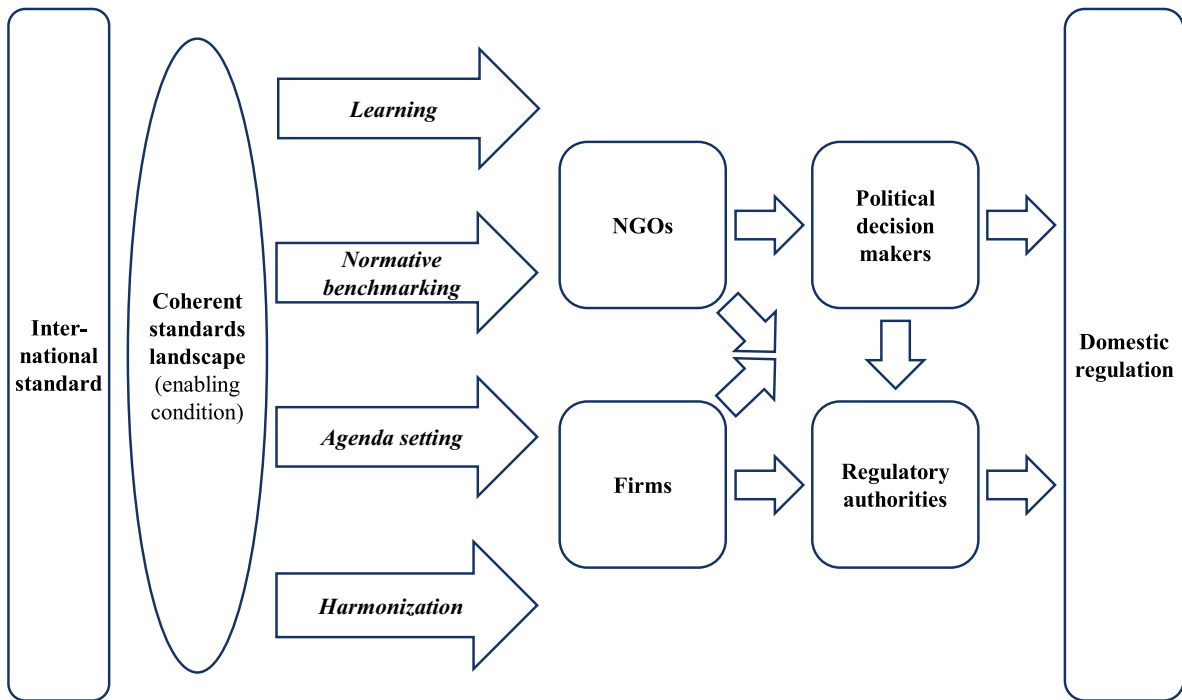


FIGURE 1 | A simple political economy model of the mechanisms through which standards influence the key domestic actors who shape regulation.

national rules. However, international standards may influence NGOs, firms, political leaders, and regulatory authorities and therefore also shape national rules. Below, we outline four mechanisms through which this influence may occur, highlighting how they implicate the four types of actors, how they combine and interact, and the conditions under which they are more or less likely to apply.

3.1 | Learning

Learning operates through a logic of information. Firms, NGOs, or regulatory authorities face uncertainty about what regulatory outcome best meets their overall policy objectives, or how to structure rules to achieve a desired outcome. Political decision-makers also face this challenge. However, since they must cover many policy areas, they typically rely on bureaucrats and stakeholders like firms and NGOs to guide their thinking on policy design. International standards help fill this information gap, outlining specific rules that can be adopted to achieve a certain end (Orcos et al. 2018). This informational mechanism is particularly potent when uncertainty is high, which is likely in two situations. First, uncertainty may result from the technically complex nature of an issue (Grigorescu 2020). In these situations, the role of international standards as a learning mechanism may be particularly important in states with less bureaucratic capacity or fewer technically proficient NGOs or industry groups. Second, uncertainty may be high for new or emerging issues characterized by multiple plausible approaches in which actors' preferences and the means of achieving them are still unclear. We can therefore expect international standards to more significantly influence national rules for newer and more technical issues, and when domestic actors lack knowledge

or capacity regarding the regulatory domain in question. By the same token, when actors have a very clear sense of how to achieve their goals, learning may be less powerful. For example, when firms resisting climate policy and the political leaders responsive to them oppose action on climate change, learning how to achieve that goal more effectively is unlikely to shift policy.

3.2 | Normative Benchmarking

To the extent NGOs, firms, political decision-makers, or regulatory authorities are motivated by a logic of appropriateness, they may refer to international standards as legitimate guides to inform domestic action (Bernstein and van der Ven 2017). Different logics of appropriateness may apply to different actors. For example, political leaders with green agendas may seek a standard that emphasizes scientific robustness. Regulatory authorities may find a standard to be appropriate if it reflects the technocratic lenses and priorities emphasized by their profession. NGOs may prefer standards that result from open, participatory processes (Alexander et al. 2005; Mundle et al. 2017). Moreover, the international character of standards, such as those from the International Organization for Standardization, may be attractive to actors for whom global consensus per se connotes legitimacy, such as transnational businesses or global NGOs. Conversely, such characteristics may make a standard less normatively attractive for other actors, such as political decision-makers with nationalist ideologies or NGOs with strong commitments to local communities. Furthermore, political decision-makers may be responsive to interest groups that are themselves motivated by a logic of appropriateness, and therefore find aligning to standards with certain normative characteristics can have positive reputational benefits

(Knaack 2017). Because normative benchmarking takes diverse forms, this mechanism can manifest in a wide range of different institutional contexts and different configurations of power and interests.

3.3 | Agenda-Setting

Standards can also serve an important agenda-setting function by raising the salience of particular issues and effectively “proposing” them to domestic actors. This mechanism follows an institutional logic. Once an international standard is created, it serves as a “hook” that domestic actors may respond to. In this way, international standards can set agendas for NGOs, firms, and regulatory authorities much like international conferences or organizations set agendas for states. Simply by inviting actors to a meeting on a given topic, standards force those actors to develop a position on that topic. For example, when ISO moves to create a standard its procedures dictate that it seek input from all the national standards bodies that comprise its membership (which typically comprise a mix of firms, NGOs, and regulators). Domestic actors could of course ignore or reject the international standard if they are not interested in or opposed to the topic, but those NGOs, firms, or regulatory officials that seek action on a certain issue can leverage the standard to inject the issue into the domestic policy debate. Beyond this, standard-setters also sometimes lobby domestic actors themselves (Princen 2007; Renckens et al. 2022). By raising salience in this way, standards can shift the domestic political equilibrium (Culpepper 2010). Actors pursuing an objective like climate mitigation have many different policy tools they could invest time and resources in pursuing. In this way, standards may help domestic actors interested in a certain policy outcome align around a common course of action, precipitating a domestic coalition on the policies relevant to that standard (Elliott et al. 2023). Following this institutional logic, this mechanism is likely strongest when a country is engaged in the institution propagating a standard.

3.4 | Harmonization

Harmonization works through a logic of interests, particularly those held by firms. To the extent firms operate in or trade with multiple jurisdictions, adherence to international standards may be desirable as a way to minimize the transaction costs of complying with multiple different regulations (Kinderman 2020; Potoski and Prakash 2004). Even when a firm could achieve a slightly better outcome for itself by pushing national regulation toward its material interests, the costs of both lobbying for favorable domestic rules, and of managing multiple different regulatory requirements, may make harmonization—even around a standard that imposes some material cost on a firm—worthwhile. This incentive to “level the playing field” will be particularly strong if firms face a competitive disadvantage due to regulations and/or litigation in another jurisdiction (Bradford 2019; Vogel 1997). In such circumstances firms will pressure political decision-makers to adopt national regulations at least as rigorous as those they face elsewhere, increasing the value of international standards as a common benchmark. This

mechanism's strength depends on the extent to which a country's economy is enmeshed in international supply chains, especially when those supply chains link to jurisdictions with rigorous regulations.

These four mechanisms are additive and interact with each other in different ways across different contexts and at different stages of maturity. In countries where actors have yet to consider a certain issue, agenda-setting and harmonization may come first. An international standard could nudge an initial array of firms, NGOs, and/or regulatory officials to become policy entrepreneurs for a corresponding regulatory change. Alternatively, transnational firms may wish to import rules they follow elsewhere into the country to align their global compliance duties. These first-movers may then seek to mobilize both the learning and normative benchmarking mechanisms to persuade other actors to make a policy change in line with the international standard, for example by pointing to its technical sophistication or the legitimating process through which it was created. Conversely, if a domestic firm, NGO, regulator, or political decision-maker is already seized of a certain issue, learning and normative benchmarking may be primary. The actor may turn to an international standard to help them understand how best to achieve their desired policy outcome, or what goal would be appropriate on a given issue. Over time, we expect these mechanisms to layer onto and reinforce each other.

In addition to these four mechanisms, *coherence* in international standards is a key enabling condition for their influence on domestic regulation. To the extent there is a single standard, or the substantive provisions of different standards align, the system can be considered coherent. The existence of multiple competing standards has, according to findings in the literature, mixed results for the overall rigor of the standards—with both race to the bottom dynamics (Cashore et al. 2005) and positive ratcheting (Fransen and Conzelmann 2015) observed. With regard to the effect of fragmentation on the domestic regulation, however, Lang and Messenger (2024, 28) observe that “competition from private standards undermines and impedes the development of public regulation, and competition between private standards puts a ceiling on levels of ambition or even leads to downward pressure where the quality of the standard is reduced.” Fragmentation can thus indirectly suppress the ambition of public regulation by diluting the quality of standards or increasing private support for weaker voluntary standards.

To summarize our theoretical expectations, we posit international standards are likely to influence the rigor of national rules under the following conditions:

1. International standards are *coherent* (enabling condition for all mechanisms).
2. Domestic actors have not yet considered a certain issue, or face uncertainty about what domestic regulatory approach best serves their interests, particularly due to the technocratic nature of the regulatory domain or when the regulatory domain is not yet mature, or when domestic actors lack capacity (*learning* and *agenda-setting* mechanisms).
3. Domestic actors are motivated by a logic of appropriateness and international standards benefit from, especially,

technocratic or procedural legitimacy (*benchmarking mechanism*).

4. Firms that operate across borders face costs from regulatory fragmentation, including the costs of compliance with different regulations as well as competitive disadvantages for firms that have already been forced into more rigorous action seeking to level the playing field for their competitors (*harmonization mechanism*).

Conversely, we expect international standards to have little effect on the rigor of national regulation when these conditions do not apply.

An obvious condition for the theoretical mechanisms outlined above leading to ambitious and rigorous national regulation is that international standards are themselves ambitious and rigorous. As discussed above, we observe a wide range of international standards and have theoretical reasons to expect such variation. The outlined mechanisms and conditions may also turn weak standards into weak regulations. However, we focus our analysis on the potential effects of relatively rigorous standards upon national regulatory outcomes, as these are central to the hypothesized “catalytic” effect we aim to explore in this paper.

4 | Research Design

To probe the plausibility of the argument, we compare regulatory outcomes in two different policy domains, climate disclosure and carbon crediting, across Brazil, China, the European Union, the United Kingdom, and the United States. We consider whether the most ambitious features of international standards are present in domestic rules, and the degree to which these ambitious qualities are mandatory or voluntary—that is, stringent. This combination of ambition and stringency—what we refer to as rigor—is our dependent variable. By comparing policy rigor across the two domains and five countries, and looking into the processes around policy outcomes, we can examine the mechanisms posited above.

4.1 | Country and Domain Selection

We selected these domains and jurisdictions to ensure that both the explanatory and outcomes variables vary in a way that creates analytic leverage. As detailed below, international standards around climate disclosure are coherent, whereas those for carbon crediting are fragmented. We therefore expect the mechanisms that “convey” the key features of international standards into rigorous domestic regulations to operate more effectively in the former.

Similarly, the five jurisdictions, which are all significant emitters of greenhouse gases, vary in the extent to which their domestic political economy supports rigorous domestic climate policies. The Climate Change Performance Index, an aggregate evaluation of climate policy performance, ranks the United Kingdom as a high performing country (#6), the European Union and Brazil as medium performers (#17 and #28, respectively), and China and the United States as very low performers (#55 and

#57, respectively). If standards have no effect on regulatory outcomes, the null hypothesis is that domestic climate rules should mirror this variation.

4.1.1 | Climate-Related Disclosure Rules

Climate-related disclosure refers to rules requiring companies, financial institutions, governments, and other organizations to report their (a) greenhouse gas emissions, (b) climate change risks, and (c) efforts toward achieving net zero greenhouse gas emissions. The overarching goal of disclosure is to create transparency, enabling investors, policymakers, and the public to assess and compare the disclosing actors’ vulnerability to and/or efforts toward mitigating climate change. Armour et al. (2022) argue disclosure guards against the “mispricing and a misallocation of capital, which harms investors and hampers the net-zero transition.” Though seemingly procedural, disclosure can have significant implementation costs and substantive implications for companies’ business models.

Over the past decade, international standards for disclosure have become increasingly coherent and consolidated. The Task Force on Climate-Related Financial Disclosures (TCFD) was established by the Financial Stability Board in 2015 upon the request of the G20 finance ministers and central bank governors (TCFD 2024a). Its recommendations, issued in 2017, seek to guide companies on disclosing climate-related financial risks and opportunities, with the overall aim of supporting sustainable investment.

Since 2024, the TCFD has become a part of the International Financial Reporting Standards (IFRS) framework through the establishment of the ISSB by the IFRS Foundation. The ISSB issued its inaugural Sustainability Disclosure Standards, which include IFRS S1 for General Requirements for Disclosure of Sustainability-related Financial Information and IFRS S2 for Climate-related Disclosures. These standards aim to consolidate and enhance global sustainability disclosure practices, building upon the recommendations provided by the TCFD, among other initiatives. Importantly, actors complying with the new ISSB standards will also comply with the TCFD recommendations, meaning they need not apply both (IFRS 2023b). The transition signifies a concerted effort to create a global baseline for sustainability disclosures in capital markets, promoting consistency and comparability of information across jurisdictions.¹

Climate-related disclosure rules target a wide variety of actors, from financial institutions to government agencies to publicly listed companies and small and medium enterprises. To limit the scope of analysis and enhance comparability across jurisdictions, we focus our analysis on rules targeting corporate actors (and therefore excluding prudential rules).

4.1.2 | Carbon Crediting Rules

Carbon crediting rules govern the generation, use, and exchange of carbon credits both on the compliance and voluntary carbon market. Within compliance markets, carbon credits are used as

“offset credits” to offset compliance costs associated with either a carbon tax or cap-and-trade scheme.² For instance, the South African carbon tax framework allows companies to offset up to 5% or 10% of their taxable emissions by purchasing “approved”³ offset credits. Carbon credits traded on the voluntary carbon market (VCM) are used by private sector firms to “offset” their emissions in the absence of any government regulation or mandate. Irrespective of their use in compliance or the voluntary market, carbon credits aim to reduce emissions in an economically efficient way by leveraging market mechanisms and reducing emissions where it is cheapest.

A key distinction between the climate-related disclosure and carbon credits domains is the heterogeneity of standards in the latter. There are more than 10 major carbon crediting schemes, and each develops its own technical criteria for defining what constitutes a credit. Competition among them to sell more credits leads to a race to low-ambition standards. This in turn has sparked controversy and raised concerns about greenwashing. The recent guidance issued by the U.S. Commodity Futures Trading Commission (CFTC) in 2024 regarding the listing of voluntary carbon credit derivative contracts explicitly mentions the low quality of VCCs as a reason for regulatory intervention.⁴

In response, several higher-level initiatives have emerged with the aim of enhancing the credibility of carbon credits and ensuring they contribute toward reducing GHG emissions (Allen et al. 2020; Dawes et al. 2023; Favasuli and Sebastian 2021; Porsborg-Smith et al. 2023). This includes guidelines issued by the International Carbon Reduction and Offsetting Alliance (ICROA), Integrity Council for the Voluntary Carbon Market (ICVCM), the Voluntary Carbon Markets Integrity Initiative (VCMI), the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), the Oxford Offsetting Principles, and the International Organization for Standardization which includes, as a part of its Net Zero Guidelines, guidance regarding “Counterbalancing Residual Emissions” (Axelsson et al. 2024; Lang and Messenger 2024; VCMI 2025). In parallel, governments have, in some instances, come up with their own methodologies and standards for certifying the creation of carbon credits to eschew reliance on any one private crediting standard or registry. The result is fragmentation.

4.2 | Measuring Regulatory Rigor: Operationalizing the Dependent Variable

We define policy rigor in two parts (summarized in Figure 2). First, we ask whether domestic rules are ambitious. That is, do they contain provisions that require significant actions to mitigate greenhouse gases? For example, a policy obligating deep, quick emissions reductions would be considered more ambitious than one that requires light or long-term cuts. Understood in this way, ambition needs to be operationalized in a tailored way for a given policy domain. For both disclosure and crediting we draw on the Oxford Climate Policy Monitor to identify the specific measures that indicate more ambitious policy design in those domains (Lecavalier et al. 2025). The monitor draws on existing literature and expert consultations to identify more and less ambitious provisions in the policy domains it covers.

In disclosure, requirements on companies to assess and report both physical and transition risks—that is, both the risk to the firm from climate impacts like storms or sea-level rise and the risks associated with decarbonizing the economy—are central. Second, regulation requiring the disclosure of targets and/or plans to address these risks is a more recent shift in rulemaking in this arena, in which disclosure rules are used not only as transparency tools (i.e., rules to enhance the provision of information) but rather as tools for inducing action among regulated entities (Lecavalier et al. 2025). Finally, the ‘scope’ of emissions to be disclosed is a key area of policy contention. While the disclosure of Scope 1 and Scope 2 emissions (i.e., emissions from companies own operations and power use) is established practice in environmental disclosure, the IFRS S2 standard has pushed for more comprehensive emissions reporting through Scope 3 disclosures (emissions throughout a company’s supply chain). These key criteria can all be seen in leading international standards like TCFD and IFRS, enabling us to analyze the extent to which regulation may be aligning to the most ambitious parts of international standards.

The rigor of carbon credit regulations can be mapped against three key criteria spanning the generation, use, and exchange of credits, particularly for offsetting firm-level emissions in the voluntary carbon market. First, the requirement that credits must fulfill the criteria of additionality, permanence, and social and biodiversity safeguards underlying the credit-generating activity is vital to ensure the quality and integrity of credits. Even though there is substantial debate about the way these credit attributes are ascertained across varying project types and methodologies, there is overarching consensus around these criteria itself. Social and biodiversity safeguards are particularly significant in the guidance issued by standard-setters for credits generated using nature and land-based approaches such as afforestation activities. Second, the requirement that the issuance, trading, and retirement of credits must be tracked in a central registry is equally vital to ensure that credits are not double-counted and are associated with actual emissions reduction or removal. Lastly, the responsible use of credits, particularly in the voluntary carbon market, is a consequence of numerous allegations of greenwashing by corporate entities where they would purchase credits in lieu of efforts to mitigate their emissions, leading to moral hazard (Carbon Gap Initiative 2023). Whereas the first two criteria are geared more toward the supply of credits or the integrity of the units themselves, the last criteria around responsible use is targeted toward the demand-side or users of these credits in the voluntary markets, particularly to guard against greenwashing and mitigation deterrence by these entities. Again, the range of international standards on carbon crediting tend to cover these three ambition indicators, facilitating comparison.

With ambition operationalized as the presence or absence of these three key features in each domain, we next look at the stringency with which domestic regulations apply them. Domestic rules run the gamut from soft recommendations to binding rules potentially enforced by fines or even criminal prosecution (e.g., for fraud). Here we simply ask whether a certain provision is voluntary or mandatory, meaning a firm faces legal consequences should it not comply.

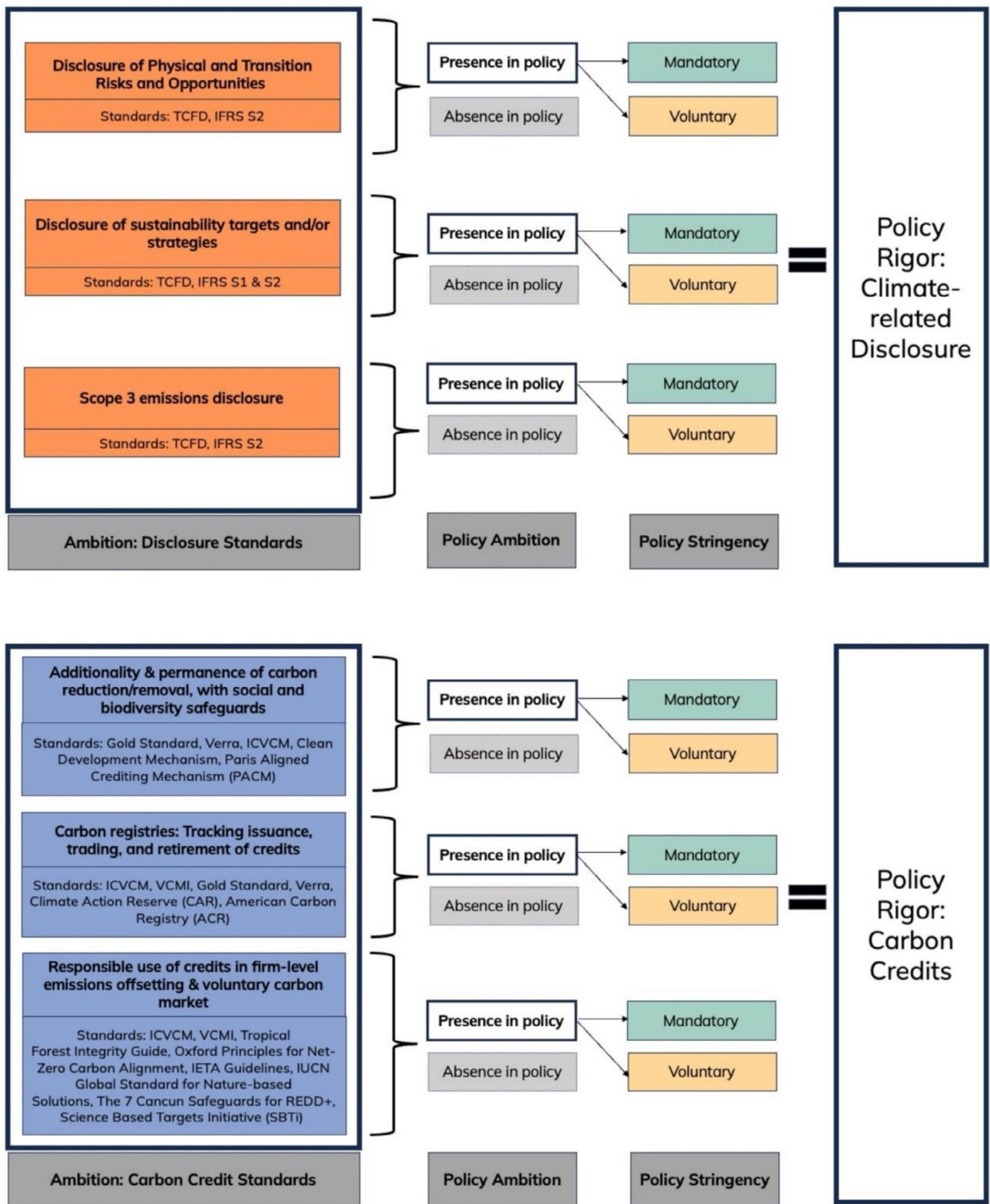


FIGURE 2 | Operationalizing the dependent variable: Rigor.

By considering both the ambition and stringency of climate policies, we can compare the rigor of climate policy across countries within a given domain. We caution that rigor, as we have defined it, may not provide an overall assessment of policy quality, which would require a deeper analysis of outcomes

and effectiveness. Instead, this operationalization allows us to trace the degree to which domestic rules align to ambitious features of international standards. We then undertake supplemental process tracing and desktop research to probe the *mechanisms* behind alignment, drawing on government

documents, reports, and news articles to contextualize the process of policy design and debate. The combination of this wider, systematic policy analysis and deeper, case-specific analyses of drivers of policy design provides a multidimensional perspective on the relationship between international standards and domestic rulemaking.

4.2.1 | Limitations: Comparability and Omitted Factors

Our empirical objective is to probe the plausibility of the conveyor belt model by seeking evidence consistent with our posited mechanisms. Two key limitations prevent stronger causal claims.

First, the two domains are distinct in important ways. Climate-related disclosure imposes, in theory, procedural obligations whereas carbon credit rules impose substantive duties on firms. However, we argue that their comparison is fruitful for the purposes of theory development. While climate-related disclosure rules might appear procedural in nature, reporting can impose substantial costs on firms. The U.S. Securities and Exchange Commission estimated companies would face costs of between \$49,000 and \$640,000 for complying with its previously proposed disclosure rule in the first year, with estimated annual compliance costs in subsequent years dropping to \$420,000–\$530,000 (Securities Exchange Commission 2022). Beyond direct compliance costs, however, disclosure can trigger secondary costs. For publicly listed companies and financial institutions, the identification of material climate-related risks can trigger fiduciary duties to mitigate those risks. As a transparency tool meant to counter greenwashing, disclosure may also require companies to forgo “cheap” reputational gains through unsubstantiated climate claims. Finally, the disclosure of climate-related data is also perceived as a stepping stone to further climate regulation. Due to these direct but also indirect substantive costs, opposition to and backlash against disclosure rules has been ongoing in major economies, including most recently the United States and the European Union (Financial Times 2025; Reuters 2025).

Second, both the degree of regulatory coherence in the two domains (and thus the effectiveness of the posited mechanisms) and the regulatory outcomes in those domains may be affected by some third, omitted factors. While outside the scope of the present analysis, the degree of coherence or fragmentation in the international standards landscape is also the result of a political process. Prompted by increasing technocratic discussions on climate risk in the financial sector, the TCFD consolidated a fragmented landscape of disclosure frameworks (World Resources Institute 2024), resulting in what are now the leading standards in the space (IFRS S1 and S2). We cannot exclude the possibility that the same dynamics that drove orchestration efforts in disclosure also drove domestic regulatory adoption in these jurisdictions. However, looking forward, we now see similar orchestration efforts emerging in carbon crediting following agreement at COP29 on operationalizing international carbon trading (United Nations Framework Convention on Climate Change 2024). If these efforts succeed in consolidating international standards, our argument would expect this change to shape regulatory outcomes as well.

Despite these limits, we believe the research design allows for sufficient analytic leverage to probe the plausibility of the hypothesized mechanisms.

5 | Comparing Regulatory Outcomes for Climate-Related Disclosure and Voluntary Carbon Markets in Brazil, China, the European Union, the United Kingdom, and the United States

Table 1 summarizes our analysis of the regulatory landscape in the disclosure and carbon credits domains in the five jurisdictions (see Appendix A for further details). For each jurisdiction, we list whether a mandatory or voluntary rule is in place related to each of the three domain-level indicators of ambition. Notably, national rules in carbon crediting and disclosure do not track the CCPI categories, and there is more consistency in the latter domain. The next two sub-sections focus on our theorized mechanisms in each domain, providing selected illustrations from the five jurisdictions.

5.1 | Results: Climate-Related Disclosure

Table 1 presents striking conformity in disclosure regulation across four of the five surveyed jurisdictions. Despite variation in political economies and climate policymaking reputations across Brazil, China, the European Union, and the United Kingdom, all four jurisdictions have mandatory rules in place aligned to all three indicators. The United States emerges as an outlier, with no disclosure regulation in place. Even here, though, there has been significant effort toward convergence, with the Biden Administration proposing mandatory rules in 2024. The proposal was challenged in court and then effectively withdrawn by the Trump Administration.

The high degree of alignment to the ISSB and TCFD standards reflects the broad coalition of actors that supports them (Elliott et al. 2023). As of July 2023, over 4700 organizations globally endorsed the TCFD recommendations, underscoring their broad acceptance and the role they play in shaping financial disclosure standards related to climate change (Bloomberg 2023). Likewise, in 2023, ahead of the UN Climate Conference in Dubai (COP28), nearly 400 organizations across 64 jurisdictions signed a Declaration of Support for the ISSB standards, calling for “the establishment of market infrastructure to enable consistent, comparable climate-related disclosures at a global level” (IFRS 2023a). Overall, jurisdictions representing nearly 55% of global GDP, more than 40% of global market capitalization, and more than half of global greenhouse gas emissions have taken significant steps toward adopting the IFRS S1 and S2 standards (IFRS 2024b). This broad backing underscores the degree to which the international disclosures landscape is coherent and also highlights how the global regulatory agenda has been clearly set through prior international orchestration efforts.

Even with convergence around the ISSB standards, however, the mechanisms through which international standards are shaping domestic rulemaking vary across the five jurisdictions, with agenda setting and normative benchmarking shaping disclosure rules in Brazil, the EU, and the UK, and harmonization shaping Chinese rulemaking in this area.

TABLE 1 | Summary of case analysis for the disclosure and carbon credit domains.

Jurisdiction	Climate-related disclosure	Carbon credits
Brazil	<p>Disclosure of physical & transition risks, opportunities</p> <p>Disclosure of sustainability targets and/or strategies</p> <p>Scope 3 emissions disclosure</p> <p>Standards referenced TCFD; IFRS S1 & S2</p> <p>Conveyor belt mechanisms Learning ✓ Benchmarking ✓ Agenda setting ✓ Harmonization ✓</p>	<p>Additionality & permanence of carbon reduction/removal</p> <p>Carbon registries: tracking issuance, trading, & retirement of credits</p> <p>Responsible use of credits in voluntary market</p> <p>Standards referenced CDM; PACM; VCS; Gold Standard; ACR; CAR</p> <p>Conveyor belt mechanisms Learning ✓ Benchmarking ✓ Agenda setting ✓ Harmonization ✓</p>
2025 CCPI Rating	Medium	
China	<p>Disclosure of Physical and Transition Risks and Opportunities</p> <p>Disclosure of sustainability targets and/or strategies</p> <p>Scope 3 emissions disclosure</p> <p>Standards referenced —</p> <p>Conveyor belt mechanisms Learning ✓ Benchmarking ✓ Agenda setting ✓ Harmonization ✓</p>	<p>Additionality & permanence of carbon reduction/removal</p> <p>Carbon registries: tracking issuance, trading, & retirement of credits</p> <p>Responsible use of credits in voluntary market</p> <p>Standards referenced —</p> <p>Conveyor belt mechanisms Learning ✓ Benchmarking ✓ Agenda setting ✓ Harmonization ✓</p>
2025 CCPI Rating	Very Low	
European Union	<p>Disclosure of Physical and Transition Risks and Opportunities</p> <p>Disclosure of sustainability targets and/or strategies</p> <p>Scope 3 emissions disclosure</p> <p>Standards referenced TCFD</p> <p>Conveyor belt mechanisms Learning ✓ Benchmarking ✓ Agenda setting ✓ Harmonization ✓</p>	<p>Additionality & permanence of carbon reduction/removal</p> <p>Carbon registries: tracking issuance, trading, & retirement of credits</p> <p>Responsible use of credits in voluntary market</p> <p>Standards referenced —</p> <p>Conveyor belt mechanisms Learning ✓ Benchmarking ✓ Agenda setting ✓ Harmonization ✓</p>
2025 CCPI Rating	Medium	

(Continues)

TABLE 1 | (Continued)

Jurisdiction	Climate-related disclosure	Carbon credits
United Kingdom	<p>Disclosure of Physical and Transition Risks and Opportunities</p> <p>Disclosure of sustainability targets and/or strategies</p> <p>Scope 3 emissions disclosure</p> <p>Standards referenced: TCFD; IFRS S1 & S2</p> <p>Conveyor belt mechanisms</p> <p>Learning ✓</p> <p>Benchmarking ✓</p> <p>Agenda setting</p> <p>Harmonization</p>	<p>Additionality & permanence of carbon reduction/removal</p> <p>Carbon registries: tracking issuance, trading, & retirement of credits</p> <p>Responsible use of credits in voluntary market</p> <p>Standards referenced: VCMI; ICROA, ICVCM</p> <p>Conveyor belt mechanisms</p> <p>Learning ✓</p> <p>Benchmarking ✓</p> <p>Agenda setting</p> <p>Harmonization</p>
2025 CCPI Rating	High	
United States of America	<p>Disclosure of Physical and Transition Risks and Opportunities</p> <p>Disclosure of sustainability targets and/or strategies</p> <p>Scope 3 emissions disclosure</p> <p>Standards referenced: —</p> <p>Conveyor belt mechanisms</p> <p>Learning</p> <p>Benchmarking</p> <p>Agenda setting</p> <p>Harmonization</p>	<p>Additionality & permanence of carbon reduction/removal</p> <p>Carbon registries: tracking issuance, trading, & retirement of credits</p> <p>Responsible use of credits in voluntary market</p> <p>Standards referenced: CORSIA; G7's Principles for High-Integrity Carbon Markets; ICVCM; PACM; Tropical Forest Credit Integrity Guide; VCMI; SBTi; Verra; ACR; CAR; IOSCO</p> <p>Conveyor belt mechanisms</p> <p>Learning</p> <p>Benchmarking</p> <p>Agenda setting ✓</p> <p>Harmonization ✓</p>
2025 CCPI Rating	Very Low	

Note: Green = Mandatory; Yellow = Voluntary; Gray = No Rule.

In October 2023, Brazil became the first country to mandate ISSB-aligned disclosures. Its Securities and Exchange Commission (CVM) passed Resolution No. 193, mandating ISSB-aligned disclosure for publicly-listed companies, investment funds, and securitization companies beginning 01 January 2026. Follow up regulation in November 2024 translated the ISSB standards into Portuguese.

Both harmonization and normative benchmarking appear to be driving the Brazilian government officials' early adoption of the standards. The government response to recent consultations on the Portuguese translation of the ISSB standards (known locally as CBPS 1 and 2) emphasizes harmonization as a key government objective: responding to requests to localize or adapt the ISSB standards, the government pushed back, arguing any amendments to the text of the ISSB standards would contravene Resolution No. 193's explicit mandate to adopt an "internationally comparable sustainability reporting framework" (CBPS 2024).

In addition to harmonization, Brazil's seems to see normative value in an explicitly international standard; it timed the release of its CBPS standards ahead of the UN climate conference in Azerbaijan (COP29) just as Brazil was set to begin its COP presidency in advance of COP30 in Belém. On October 29, 2024, CVM Resolutions 217 and 218 released the new CBPS standards while CVM Resolution 219 accelerated the timeline for voluntary implementation, encouraging companies to begin their ISSB-aligned disclosures earlier than initially planned under Resolution No. 193 (Mattos 2024).

In China, disclosure rules emerged in 2022, with the release of ESG reporting guidance by the Chinese Enterprise Reform and Development Society, a government thinktank. Reports at that time noted: "the guidance draws on international developments in ESG priorities, but leans heavily towards priorities established by the Chinese government, such as the drive for common prosperity and social stability" (Chan 2022). In this framing, China's early ESG guidelines learned from and adapted international standards to meet domestic priorities.

Since 2022, and as disclosure regulations emerged internationally (Lecavalier et al. 2025), harmonization has become a prominent driver of Chinese disclosure rules. In April 2024, three major stock exchanges, the Beijing, Shanghai, and Shenzhen, coordinated the release of disclosure guidelines. A few months later, in December 2024, the government released the national disclosure standard, *Basic Guidelines for Corporate Sustainability Disclosure*. Neither the Chinese disclosure standard nor the stock exchanges' guidelines endorse the ISSB or TCFD explicitly. However, reports suggest they are closely aligned to the ISSB standards (Green Central Banking 2024)—building on them but adapting them to "China's context and showcasing Chinese characteristics" (IFRS 2024b). This approach, favoring implicit alignment to international standards over explicit referencing, points to harmonization, rather than normative benchmarking, as a primary mechanism through which international standards influence Chinese domestic rules. However, in 2025 the Ministry of Finance proposed additional disclosure requirements for corporate actors that would align with IFRS S2 (PRI Association 2025), underscoring how the relationship between domestic rulemaking and international standards can be characterized by different mechanisms over time.⁵

When adopted, the European Union's Corporate Sustainability Disclosure Standard (CSRD) was notable in going beyond the ambition of the ISSB standards, requiring so-called "double materiality standards" by which companies disclose not only the risks climate change poses to their operations but also the risks that their operations pose to society and the planet. The European Sustainability Reporting Standards informing the CSRD was also unique in that they have bespoke guidance for small and medium enterprises (SMEs)—a category of corporate actors which are often not targeted by disclosure rules. In this sense, the EU CSRD applied mandatory disclosure rules to a wider scope of actors than then other jurisdictions surveyed—with an estimated 50,000 companies required to comply with the rule (in comparison to what would have been 3000 companies covered by the U.S.'s now-canceled SEC disclosure rule).

Some of these differences are due to the fact that the ESRS standards were developed prior to the 2023 release of the ISSB standards—in fact, the ISSB standards refer to the ESRS standards. In the case of the CSRD, the mechanism of agenda setting worked in two directions, with the European Union seeking to shape international standards and other national disclosure regulations through its own rulemaking. Speaking about the passage of the CSRD, the EU Minister for Economic Affairs, Finance, and Recovery Bruno Le Maire declared, "Today, Europe is setting the rigorous non-financial reference standards of tomorrow..." (Council of the European Union 2022). In light of the so-called "Brussels Effect," in which European regulation has agenda setting effects beyond the region (Bradford 2019), the European Union was also using its position to demonstrate its leadership on sustainability and set agendas for countries elsewhere to adopt disclosure rules that would align them to the major market's requirements. This reach was further extended under the more recent Corporate Sustainability Due Diligence Directive, which was passed in 2024 and requires disclosures about the human rights and environmental impacts of business activities across the supply chains of large companies (Enriques and Gatti 2022).

Even with its stated ambition to set global agendas through the ESRS standard, the European Union has faced pushback over its deviation from the ISSB standard. In 2022, asset owners and the European Securities Market Authority called for closer alignment between the ESRS standards and the ISSB international standard (Verney 2022), and the European Union and IFRS Foundation have since coordinated to ensure interoperability between the reporting standards (IFRS 2024a). This underscores the quiet power the ISSB standards exert, as corporate actors lobby for cross-border harmonization around the international standard.

The story of disclosure in the UK shows evidence of normative benchmarking. In 2021, the United Kingdom became the first G20 country to mandate TCFD-aligned disclosure for its largest companies and financial institutions, and notably did so ahead of its hosting of the UN Climate Conference (COP26) in Glasgow. Announcing the move, the UK's Energy and Climate Change Minister Greg Hands noted, "we are showing global leadership by making our financial system the greenest in the world," highlighting the high regard for the TCFD recommendations (Hands 2021). Most recently, in December 2024, the UK

Sustainability Disclosure Technical Advisory Committee issued its final report to the government, recommending the UK endorse both ISSB standards. In giving the recommendation, Sally Duckworth, Chair of the advisory committee, commented that the endorsement would “reinforce (the UK’s) leadership in sustainability reporting” (FRC 2024)—echoing the prior comments from Minister Hands in 2021 and underscoring the role of normative benchmarking in driving government interest in further reforming disclosure rules to align with ISSB standards.

Finally, the United States stands out as the only jurisdiction among the five analyzed to not have a disclosure rule in place. Notably, the U.S. Securities and Exchange Commission (SEC) had adopted climate-related disclosure regulations in March 2024 (SEC 2024). At the time, the SEC was clear that it did not explicitly align with international standards like ISSB—for instance, Scope 3 emissions were not covered by the rule. However, reports also suggested closer alignment with and recognition of such standards was being discussed by the SEC (Crenshaw 2024).

The fate of the SEC disclosure rule was sealed under the new Trump administration: in March 2025, it announced it would no longer legally defend climate-related financial disclosure rules issued in 2024 (SEC 2025). This decision came in the wake of a flurry of Executive Order by repealing climate rules passed under the Biden Administration. In this respect, while the emergence of the SEC disclosure rule may have been driven by normative benchmarking under the Biden Administration, this signaling had the opposite effect under the Trump Administration, effectively painting a target on the ruling.

It is notable that in the wake of U.S. regulatory rollback, governments elsewhere have softened their own disclosure rules. The EU Omnibus process delayed the implementation timelines for SMEs (European Commission 2023). In Canada, implementation timelines for the Canadian disclosure standard have also been delayed (Segal 2025). However, it is notable that the regulatory design, in both cases, has not been altered on any of the criteria around rigor; rather, it is the implementation timelines and scope of coverage for the rules which have been questioned. This consistency speaks to the power but also limits of international standards. They can strongly influence the content of a rule even in a context of political pushback. But how widely and stringently the rule applies remains in the hands of domestic politics.

5.2 | Carbon Crediting Rules

Attempts to regulate carbon credits, particularly their use in the voluntary carbon market, exist in all five jurisdictions. However, across the board, the rigor of regulation trails those in the disclosure domain, as seen from Table 1. In Brazil, China, and the European Union, mandatory rules exist for some indicators but not others. In the United Kingdom and the United States, the rules are only voluntary guidelines, although the former operates an emissions trading scheme (ETS) that does not allow for the use of “offset credits,” arguably raising ambition in the compliance market (Cullenward and Victor 2020), whereas the latter has no national compliance market. Domestic rules refer to the

wide range of international standards that exist, but standards have not made domestic rules more rigorous. Overall, regulatory outcomes largely reflect the specific political economy around carbon credits in each jurisdiction.

In 2024 Brazil set up a carbon market (Law 15,042/2024) and laid out accounting standards for companies to report their use of offsets either domestically in the compliance markets or internationally under Article 6 of the Paris Agreement (CVM Resolution No. 223). While regulators are still in the process of drafting detailed rules about the quality of credits and their accreditation criteria, the provisional rules explicitly defer to internationally accepted standards (including those generated under the CDM and PACM) to verify credits offered in the voluntary market.⁶

To some extent this illustrates benchmarking and harmonization, since it provides a signal of standardization to international investors considering participating in this market. However, the wide range of standards accepted by Brazil allows for credits of highly varying quality to count as offsets. This outcome suits Brazil’s domestic political economy (generators of credits for others to buy; many powerful Brazilian interest groups want wide leeway to create carbon credit products), by leveraging the fragmented international standards landscape.

In contrast, rules in China and the European Union largely eschew international standards. China’s GHG Voluntary Emissions Reduction Program provides criteria for the generation of China Certified Emissions Reduction (CCER) units which can be traded both on the voluntary market and on the national ETS by targeted entities to offset up to 5% of their verified emissions.⁷ While the generation and certification of CCERs do not explicitly reference any private international standards or methodologies, its provisions are similar to standards like Verra and Gold Standard (Clifford Chance 2024), suggesting passive learning and harmonization.

Similarly, the EU’s Carbon Removals and Carbon Farming Regulation does not reference any internationally recognized voluntary standards for the certification of carbon removal credits, but the development of methodologies is still under way, particularly since these credits are generated solely from carbon removal activities including direct rock weathering, Direct Air Capture (DAC), and Bioenergy Carbon Capture and Storage (BECCS). However, the ambition of the CRCF is circumspect according to commentators, particularly on the lack of clarity in the regulation to prevent double-counting or double-claiming of emissions reductions (Stoefs 2024). Without clarity on double-claiming, emissions removed or reduced by a carbon credit-generating activity may be counted once by the project developer or country in which the activity takes place, and then again claimed by the buyer on its balance sheet.

In the United States, VCM regulation also largely reflects the needs of powerful economic actors, suggesting harmonization and agenda-setting mechanisms at work—but falling short of rigorous policy outcomes. Activity in this realm has increased recently in the United States, with the Treasury Department launching its Joint Policy Statement and Principles for ensuring the demand, supply, and market integrity of the voluntary

carbon market, together with guidance from the Commodity Futures Trading Commission (CFTC) largely in response to industry demands for providing more clarity on what “good” looks like in the VCM (Rathi and Kishan 2024). Both these policies are voluntary in nature, allowing market actors significant leeway. However, they also extensively reference and build upon the ideas promoted by private standard-setters including the ICVCM and VCMI.

Particularly in the CFTC’s guidance, the criteria to judge the quality of a carbon credit is almost entirely deferred to private standards: “The Commission believes that, as a general matter, industry-recognized standards for high-integrity VCCs, and whether a particular crediting program has been approved or certified as adhering to an industry-recognized standard setting program, can serve as tools for a DCM (*Designated Contract Market*), in connection with its consideration of the crediting program’s measures with respect to social and environmental safeguards and net zero alignment.” As in Brazil, while standards clearly have an influence on U.S. policy in this realm, they have not led to more rigorous national policies.

The United Kingdom has made steady progress over the years in developing both its compliance and voluntary markets. Originally a part of the EU’s Emissions Trading Scheme, since 2021 it operates its own ETS which does not permit targeted entities to use carbon credits generated beyond covered sectors to offset their compliance costs. Leveraging its attractiveness as a global financial center, it has also taken steps to encourage the trading of carbon credits as financial instruments while giving an opportunity to corporations to claim emissions reduction on their balance sheets. The London Stock Exchange’s Voluntary Carbon Market (VCM) Designation allows listed entities to generate carbon credits against any project or activity that reduces or removes emissions and distribute these to investors as a specie in lieu of (or in addition to) financial dividends.

On the voluntary market side, the United Kingdom has also led the creation of two carbon crediting standards, the UK Woodland Code and Peatland Code, which provide detailed methodologies and accreditation criteria for project developers seeking to generate credits by creating new woodlands or restoring peatlands. Whereas these standards cover a portion of the voluntary market, other types of reduction or removal credits are not governed by these standards. However, in November 2024 it released its principles for integrity in the voluntary carbon and nature markets which are currently open for consultation and seek to lay out voluntary guidelines for ensuring demand- and supply-side integrity in the VCM. These guidelines draw heavily from and reference the VCMI’s Claims Code of Practice on the demand side, and the ICVCM on the supply side. The reference to private standards here is particularly indicative of the channels of learning and benchmarking as the government seeks to “build trust in carbon and nature markets” and “cement the UK as the global hub for green finance and carbon markets,” according to the UK Climate Minister Kerry McCarthy (Jessen 2025).

Across carbon crediting rules in all five jurisdictions, we observe two key trends. First, regulatory activity in this domain is increasing, particularly given recent interest for regulation from large transnational corporations which are predominant buyers

of these carbon credits amid widespread greenwashing allegations and lack of regulatory uncertainty about where credits can be used. Second, international standards are influencing national regulations to the extent they comport with the interests of powerful actors, such as in Brazil and the United States. The fragmented standards landscape for certifying, registering, and issuing credits allows policymakers to pick and choose the standards that serve them best. Here, combined with fragmentation in the standards landscape, the harmonization mechanism can support a ‘race to the bottom’ dynamic in which policies defer to any and all standards—no matter their rigor—in order to create the largest possible market for credits. This dynamic reflects the predominance of large transnational entities in this space not only as recipients of this regulation but also agenda-setters who influence the substantive content of the regulation.

6 | Conclusion

This article explored how and under what conditions international standards can shift domestic policy outcomes beyond what domestic political economy alone would expect. Identifying the coherence of the international standards landscape as an enabling variable, we highlighted four mechanisms through which international standards might transmit rigor from standards to regulations: learning, normative benchmarking, agenda-setting, and harmonization. Our indicative analysis of disclosure regulation in the United States, European Union, United Kingdom, China, and Brazil suggests that convergence on ISSB as *the* global standard guiding regulation has powerfully shaped domestic regulation. In contrast, domestic rules on carbon crediting are of low rigor, with significant variation across countries, reflecting the heterogenous landscape of international standards. Overall, the results demonstrate the plausibility of the “conveyor belt” model linking international standards to domestic rules.

The results help resolve a key theoretical ambiguity around complex governance systems. The literature shows many possible dynamics of influence between international standards and national regulations, but lacks systematic accounts of why one or another dynamic may emerge. Our findings elucidate how and under what conditions rigorous international standards can help strengthen national policies. They show that a “conveyor belt” effect is indeed possible under certain conditions.

Nonetheless, important questions remain for further work on these themes. First, this kind of theory building work would benefit from deeper empirical exploration via research designs that can better substantiate and isolate different causal mechanisms. Both large-N studies and more detailed causal process tracing would be valuable to further elaborate, unpick, and adjudicate between the mechanisms posited here. Second, in the same vein, it would be valuable to extend the analysis to further jurisdictions and domains, including those outside of climate policy, as the mechanisms we identify are plausibly applicable to other issue areas—such as health regulation, labor standards, AI ethics and safety, aviation safety, and curbing plastic pollution—where international standards interact with domestic regulatory processes in comparable ways. Third, as noted in our discussion of research design above, it is important

to consider theoretically how the relationship between international standards and domestic regulation may be influenced both by dynamics earlier in the “conveyor belt” model. Are there factors related to the emergence of private governance and orchestration that also shape international standards and regulatory outcomes? Fourth, what are the limits of the “conveyor belt” effect? For example, in disclosure, standards seem to “anchor” policy design even in the United States, where various states have adopted rules in line with ISSB. And although Canada and the European Union have delayed implementation of disclosure rules and shrunk the number of actors they apply to, they have not diverged the content of the rules away from the international standard.

Finally, the results carry implications for the practice of climate policy. Perhaps most importantly, the finding that rigorous, coherent standards can influence regulations suggests that climate policy advocates would be well served to invest time and energy working to shape and promulgate rigorous standards. Standard-setting processes like SBTi or ISO are typically accessible to more technocratic actors. But given their importance to public policy, advocates should work to make their voices heard within them, and standard-setters should ensure their technical focus does not unduly limit participation. The rigor of existing standards should not be assumed, but rather understood as the outcome of ongoing contestation among actors with divergent interests. Just as rigorous and coherent standards can strengthen domestic climate regulation, the four mechanisms we identify may also allow a less rigorous or cohesive standards landscape to produce weaker or more fragmented regulatory outcomes. Last, given the importance of coherence, the role of orchestration is critical. Actors like the UN or states that have the ability to orchestrate the landscape of standards toward rigor and coherence, and away from fragmentation, have a key role to play.

Acknowledgments

The authors wish to thank the participants of the Blavatnik School of Government research seminar, the Oxford Sustainable Law Programme research seminar, and the Doer School of Sustainability research series for valuable comments on the draft. We also wish to thank the Kleinman Center for Energy Policy at the University of Pennsylvania for supporting early development of the idea.

Funding

This work was supported by Oxford Martin School, University of Oxford.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are openly available in Oxford Climate Policy Monitor at <https://climatepolicymonitor.ox.ac.uk/>.

Endnotes

¹ Due to the integration of the TCFD standards into the ISSB reporting standards, we refer to ISSB from here onwards to refer not only to the current IFRS S1 & S2 standards but also to their TCFD predecessor.

² Note that carbon credits are different from emissions allowances generated under an Emissions Trading Scheme (ETS). Whereas a carbon credit represents a unit of emissions reduction or removal, emissions allowances represent a ‘right to emit’ under an ETS. When an established ETS scheme sets an overall cap on emissions, it allows covered entities to ‘trade’ emissions allowances such that a firm with emissions above the cap can purchase allowances from another firm within the ETS that is emitting below the cap. In contrast, carbon credits are generated from projects occurring beyond the scope of the ETS and can be used (in some ETS schemes) by covered entities to “offset” part of their emissions (for example: the South Korean and Chinese ETSs permits the use of offset credits).

³ In the South African regulation, “approved” credits refer to those issued by the Clean Development Mechanism, the Verified Carbon Standard and the Gold Standard.

⁴ Source: <https://www.federalregister.gov/documents/2024/10/15/2024-23105/commission-guidance-regarding-the-listing-of-voluntary-carbon-credit-derivative-contracts>.

⁵ Notably, the discourse around climate-related disclosures is somewhat distinct in the Hong Kong Special Administrative Region. In March 2024, Hong Kong’s Financial Services and Treasury Board released a vision statement on ISSB-aligned disclosures, noting: “We consider it essential to showcase to international investors and markets Hong Kong’s commitment to reinforcing its leading position on the international sustainable finance map” (Hong Kong 2024). Soon after, the Hong Kong Stock Exchange announced mandatory ISSB-aligned disclosures as a listing rule. In the case of Hong Kong specifically, normative benchmarking is a stronger driver for the uptake of the ISSB standards.

⁶ Source: <https://carbon-pulse.com/369676/>.

⁷ Source: <https://icapcarbonaction.com/en/ets/china-national-ets>.

References

- Abbott, K. 2012. “The Transnational Regime Complex for Climate Change.” *Environment and Planning, C, Government & Policy* 30, no. 4: 571–590. <https://doi.org/10.1068/c11127>.
- Abbott, K., J. F. Green, and R. O. Keohane. 2016. “Organizational Ecology and Institutional Change in Global Governance.” *International Organization* 70, no. 2: 247–277. <http://www.jstor.org/stable/24758325>.
- Abbott, K., D. Levi-Faur, and D. Snidal. 2017. “Theorizing Regulatory Intermediaries: The RIT Model.” *Annals of the American Academy of Political and Social Science* 670: 14–35. <http://www.jstor.org/stable/26362032>.
- Abbott, K., and D. Snidal. 2009. “The Governance Triangle: Regulatory Standards Institutions and the Shadow of the State.”
- Alexander, K., R. Dhumale, and J. Eatwell. 2005. *Global Governance of Financial Systems: The International Regulation of Systemic Risk*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195166989.001.0001>.
- Allen, M., K. Axelsson, B. Caldecott, et al. 2020. “The Oxford Principles for Net Zero Aligned Carbon Offsetting.” Oxford Smith School. <https://www.smithschool.ox.ac.uk/sites/default/files/2022-01/Oxford-Offsetting-Principles-2020.pdf>.
- Armour, J., L. Enriques, and T. Wetzer. 2022. “Mandatory Corporate Climate Disclosures: Now, but How?” *Columbia Business Law Review* 2021, no. 3: 1084–1146. <https://doi.org/10.52214/cblr.v2021i3.9106>.
- Axelsson, K., A. Wagner, I. Johnstone, et al. 2024. “Oxford Principles for Net Zero Aligned Carbon Offsetting.” <https://www.smithschool.ox.ac.uk/sites/default/files/2024-02/Oxford-Principles-for-Net-Zero-Aligned-Carbon-Offsetting-revised-2024.pdf>.
- Bach, D., and A. L. Newman. 2010. “Transgovernmental Networks and Domestic Policy Convergence: Evidence From Insider Trading

- Regulation.” *International Organization* 64, no. 3: 505–528. <https://doi.org/10.1017/S0020818310000135>.
- Bartley, T. 2011. *Certification as a Mode of Social Regulation*. Edward Elgar Publishing.
- Bernstein, S., and M. Hoffmann. 2018. “The Politics of Decarbonization and the Catalytic Impact of Subnational Climate Experiments.” *Policy Sciences* 51, no. 2: 189–211. <https://doi.org/10.1007/s11077-018-9314-8>.
- Bernstein, S., and H. van der Ven. 2017. “Best Practices in Global Governance.” *Review of International Studies* 43, no. 3: 534–556. <https://doi.org/10.1017/S0260210516000425>.
- Bloomberg. 2023. “Task Force on Climate-Related Financial Disclosures.” <https://www.bloomberg.org/environment/driving-sustainable-finance/task-force-on-climate-related-financial-disclosures/>.
- Bradford, A. 2019. *The Brussels Effect: How the European Union Rules the World*. Oxford University Press.
- Bulkeley, H., L. B. Andonova, M. M. Betsill, et al. 2014. *Transnational Climate Change Governance*. Cambridge University Press.
- Busby, J. W., and J. Urpelainen. 2020. “Following the Leaders? How to Restore Progress in Global Climate Governance.” *Global Environmental Politics* 20, no. 4: 99–121. https://doi.org/10.1162/glep_a_00562.
- Carbon Gap Initiative. 2023. “Carbon Gap Policy Brief.” https://carbongap.org/wp-content/uploads/2023/09/carbongap-policybrief-sep23_v2.pdf.
- Cashore, B., G. C. van Kooten, I. Vertinsky, G. Auld, and J. Affolderbach. 2005. “Private or Self-Regulation? A Comparative Study of Forest Certification Choices in Canada, the United States and Germany.” *Forest Policy and Economics* 7, no. 1: 53–69. [https://doi.org/10.1016/S1389-9341\(03\)00011-X](https://doi.org/10.1016/S1389-9341(03)00011-X).
- CBPS. 2024. “Relatório de Audiência Pública – CBPS 2.” https://s3.amazonaws.com/static.cpc.aatb.com.br/Audiencias/178_Relatorio_Audiencia_Publica_CBPS_2.pdf.
- CDP. 2026. “CDP A List 2025: Global Momentum for Environmental Transparency Remains Strong as Markets Demand Actionable Data.” <https://www.cdp.net/en/press-releases/cdp-a-list-2025>.
- Chan, H. 2022. “China Moves to Standardize Fragmented ESG Reporting Landscape.” <https://www.thomsonreuters.com/en-us/posts/news-and-media/china-esg-reporting/>.
- Clifford Chance. 2024. “Carbon Trading in China: Relaunch of the Certified Emission Reduction Scheme.” <https://www.cliffordchance.com/content/dam/cliffordchance/briefings/2024/04/Carbon%20Trading%20in%20China%20Relaunch%20of%20the%20Certified%20Emission%20Reduction%20Scheme.pdf>.
- Council of the European Union. 2022. “Council Adopts Position on the Corporate Sustainability Reporting Directive (CSRD).” <https://www.consilium.europa.eu/en/press/press-releases/2022/02/24/council-adopts-position-on-the-corporate-sustainability-reporting-directive-csrd/>.
- Crenshaw, C. 2024. “A Risk by Any Other Name: Statement on the Enhancement and Standardization of Climate-Related Disclosures.”
- Cullenward, D., and D. G. Victor. 2020. *Making Climate Policy Work*. John Wiley & Sons.
- Culpepper, P. D. 2010. *Quiet Politics and Business Power: Corporate Control in Europe and Japan*. Cambridge University Press.
- Dal Bó, E. 2006. “Regulatory Capture: A Review.” *Oxford Review of Economic Policy* 22, no. 2: 203–225. <https://doi.org/10.1093/oxrep/grj013>.
- Dawes, A., C. McGeady, and J. Majkut. 2023. “Voluntary Carbon Markets: A Review of Global Initiatives and Evolving Models.” <https://www.csis.org/analysis/voluntary-carbon-markets-review-global-initiatives-and-evolving-models>.
- Dickerson, A., D. Drew, N. Joseph, et al. 2018. “The Ambition Loop.” UN Global Compact. <https://unglobalcompact.org/library/5648>.
- Elliott, C., A. Janzwood, S. Bernstein, and M. Hoffmann. 2023. “Rethinking Complementarity: The Co-Evolution of Public and Private Governance in Corporate Climate Disclosure.” *Regulation & Governance* 18, no. 3: 802–819. <https://doi.org/10.1111/rego.12550>.
- Enriques, L., and M. Gatti. 2022. “The Extraterritorial Impact of the Proposed EU Directive on Corporate Sustainability Due Diligence.” <https://blogs.law.ox.ac.uk/business-law-blog/blog/2022/04/extraterritorial-impact-proposed-eu-directive-corporate>.
- Eskander, S., C. Higham, M. Hamley, J. Setzer, and S. Fankhauser. 2024. “Testing the Ambition Loop: Do Country- and Company-Level Net-Zero Targets Reinforce Each Other? A Global Comparison.” *Journal of Comparative Policy Analysis: Research and Practice* 26, no. 3–4: 266–282. <https://doi.org/10.1080/13876988.2024.2317949>.
- European Commission. 2023. “Omnibus I Package: Commission Simplifies Rules for Sustainability and EU Investments, Delivering over €6 Billion in Savings.” https://finance.ec.europa.eu/publications/omnibus-i-package-commission-simplifies-rules-sustainability-and-eu-investments-delivering-over-eu6_en.
- Favasuli, S., and V. Sebastian. 2021. “Voluntary Carbon Markets: How They Work, How They’re Priced and Who’s Involved.” <https://www.spglobal.com/commodityinsights/en/market-insights/blogs/energy-transition/061021-voluntary-carbon-markets-pricing-participants-trading-corsia-credits>.
- Financial Times. 2025. “Brussels Under Pressure to Curb Green Agenda in Response to Trump.” <https://www.ft.com/content/da348979-0261-4468-ba93-d6164fb1865b>.
- Fransen, L., and T. Conzelmann. 2015. “Fragmented or Cohesive Transnational Private Regulation of Sustainability Standards? A Comparative Study.” *Regulation & Governance* 9, no. 3: 259–275. <https://doi.org/10.1111/rego.12055>.
- FRC. 2024. “UK Sustainability TAC Issues Final Recommendations.” <https://www.frc.org.uk/news-and-events/news/2024/12/uk-sustainability-tac-issues-final-recommendations/>.
- Gaus, A. 2019. “Transnational Policy Communities and Regulatory Networks as Global Administration.” In *The Oxford Handbook of Global Policy and Transnational Administration*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780198758648.013.22>.
- Green Central Banking. 2024. “China’s Stock Exchanges Unveil Disclosure Rules for Big Companies.” <https://greencentralbanking.com/2024/02/23/china-stock-exchange-disclosure-rules/>.
- Green, J. F. 2014. *Rethinking Private Authority: Agents and Entrepreneurs in Global Environmental Governance*. Princeton University Press.
- Green, J. F. 2017. “Blurred Lines: Public-Private Interactions in Carbon Regulations.” *International Interactions* 43, no. 1: 103–128. <https://doi.org/10.1080/03050629.2016.1210943>.
- Grigorescu, A. 2020. *The Ebb and Flow of Global Governance: Intergovernmentalism Versus Nongovernmentalism in World Politics*. Cambridge University Press.
- Hale, T. 2020. “Catalytic Cooperation.” *Global Environmental Politics* 20, no. 4: 73–98. https://doi.org/10.1162/glep_a_00561.
- Hale, T. 2022. “The Net-Zero Governance Conveyor Belt.” <https://kleinmanenergy.upenn.edu/wp-content/uploads/2022/12/KCEP-Net-Zero-Governance-Conveyor-Belt.pdf>.
- Hands, G. 2021. “UK to Enshrine Mandatory Climate Disclosures for Largest Companies in Law.” <https://www.gov.uk/government/news/uk-to-enshrine-mandatory-climate-disclosures-for-largest-companies-in-law>.
- Hong Kong, S. A. R. G. 2024. “Hong Kong’s Climate Action Plan 2050: 2023 Progress Report.” https://gia.info.gov.hk/general/202403/25/P2024032500391_452899_1_1711358339971.pdf.

- Huber, J. D., and C. R. Shipan. 2002. *Deliberate Discretion?: The Institutional Foundations of Bureaucratic Autonomy*. Cambridge University Press.
- IFRS. 2023a. "COP28 Declaration of Support." <https://www.ifrs.org/ifrs-sustainability-disclosure-standards-around-the-world/cop28-declaration-of-support/>.
- IFRS. 2023b. "IFRS Foundation Publishes Comparison of IFRS S2 with the TCFD Recommendations." <https://www.ifrs.org/news-and-events/news/2023/07/ifrs-foundation-publishes-comparison-of-ifrs-s2-with-the-tcfd-recommendations/>.
- IFRS. 2024a. "Interoperability Guidance: ESRS and ISSB Standards." <https://www.ifrs.org/content/dam/ifrs/supporting-implementation/issb-standards/esrs-issb-standards-interoperability-guidance.pdf>.
- IFRS. 2024b. "Jurisdictions Representing Over Half the Global Economy by GDP Take Steps Towards ISSB Standards." <https://www.ifrs.org/news-and-events/news/2024/05/jurisdictions-representing-over-half-the-global-economy-by-gdp-take-steps-towards-issb-standards/>.
- IFRS. 2025. "IFRS Foundation Publishes Jurisdictional Profiles Providing Transparency and Evidencing Progress Towards Adoption of ISSB Standards." <https://www.ifrs.org/news-and-events/news/2025/06/ifrs-foundation-publishes-jurisdictional-profiles-issb-standards/>.
- Jessen, J. 2025. "Why is the UK Introducing Carbon Credit Standards?" <https://sustainabilitymag.com/articles/why-is-the-uk-introducing-carbon-credit-standards>.
- Jordan, A., D. Huitema, H. van Asselt, and J. Forster. 2018. *Governing Climate Change: Polycentricity in Action?* edited by A. Jordan, D. Huitema, H. van Asselt, and J. Forster. Cambridge University Press.
- Karavias, M. 2018. "Interactions Between International Law and Private Fisheries Certification." *Transnational Environmental Law* 7, no. 1: 165–184. <https://doi.org/10.1017/S2047102517000139>.
- Kennard, A. 2020. "The Enemy of My Enemy: When Firms Support Climate Change Regulation." *International Organization* 74, no. 2: 187–221. <https://doi.org/10.1017/S0020818320000107>.
- Keohane, R. O., and D. G. Victor. 2011. "The Regime Complex for Climate Change." *Perspectives on Politics* 9, no. 1: 7–23. <https://doi.org/10.1017/S1537592710004068>.
- Kinderman, D. 2020. "The Challenges of Upward Regulatory Harmonization: The Case of Sustainability Reporting in the European Union." *Regulation & Governance* 14, no. 4: 674–697. <https://doi.org/10.1111/rego.12240>.
- Kinniburgh, F., H. Selin, N. E. Selin, and M. Schreurs. 2023. "When Private Governance Impedes Multilateralism: The Case of International Pesticide Governance." *Regulation & Governance* 17, no. 2: 425–448. <https://doi.org/10.1111/rego.12463>.
- Knaack, P. 2017. "An Unlikely Champion of Global Finance: Why Is China Exceeding International Banking Standards?" *Journal of Current Chinese Affairs* 46, no. 2: 41–79. <https://doi.org/10.1177/186810261704600203>.
- Lang, A., and G. Messenger. 2024. "The Standards-Regulation Nexus: Mapping the Ecosystem of Standardisation." https://www.bsigroup.com/siteassets/pdf/en/insights-and-media/insights/white-papers/the-standards-regulation-nexus_mapping-the-ecosystem-of-standardisation_fv.pdf.
- Lecavalier, E., B. Gupta, L. Dias, et al. 2025. *2024 Oxford Climate Policy Monitor Annual Review*. Oxford Climate Policy Hub, University of Oxford.
- Malhotra, N., B. Monin, and M. Tomz. 2019. "Does Private Regulation Preempt Public Regulation?" *American Political Science Review* 113, no. 1: 19–37. <https://doi.org/10.1017/S0003055418000679>.
- Marx, A. 2017. "The Public-Private Distinction in Global Governance: How Relevant Is It in the Case of Voluntary Sustainability Standards?" *Chinese Journal of Global Governance* 3, no. 1: 1–26. <https://doi.org/10.1163/23525207-12340022>.
- Mattos, F. 2024. "IFRS-Inspired Standards for Corporate Sustainability Reports Approved in Brazil." <https://www.mattosfilho.com.br/en/unico/corporate-sustainability-brazil/>.
- Mundle, L., M. Beisheim, and L. Berger. 2017. "How Private Meta-Governance Helps Standard-Setting Partnerships Deliver." *Sustainability Accounting, Management and Policy Journal* 8, no. 5: 525–546. <https://doi.org/10.1108/SAMPJ-07-2016-0045>.
- Orcos, R., B. Pérez-Aradros, and K. Blind. 2018. "Why Does the Diffusion of Environmental Management Standards Differ Across Countries? The Role of Formal and Informal Institutions in the Adoption of ISO 14001." *Journal of World Business* 53, no. 6: 850–861. <https://doi.org/10.1016/j.jwb.2018.07.002>.
- Ostrom, E. 2009. "A Polycentric Approach for Coping with Climate Change." <https://ssrn.com/abstract=1494833>.
- Partiti, E. 2019. "Orchestration as a Form of Public Action: The EU Engagement With Voluntary Sustainability Standards." *European Law Journal* 25, no. 1: 94–117. <https://doi.org/10.1111/eulj.12299>.
- Porsborg-Smith, A., J. Nielsen, B. Owolabi, and C. Clayton. 2023. "The Voluntary Carbon Market is Thriving." <https://www.bcg.com/publications/2023/why-the-voluntary-carbon-market-is-thriving>.
- Potoski, M., and A. Prakash. 2004. "Regulatory Convergence in Nongovernmental Regimes? Cross-National Adoption of ISO 14001 Certifications." *Journal of Politics* 66, no. 3: 885–905. <https://doi.org/10.1111/j.1468-2508.2004.00281.x>.
- PRI Association. 2025. "PRI Response: Chinese Ministry of Finance Draft Corporate Sustainability Disclosure Standard No. 1 – Climate." <https://www.unpri.org/download?ac=23439>.
- Princen, S. 2007. "Agenda-Setting in the European Union: A Theoretical Exploration and Agenda for Research." *Journal of European Public Policy* 14, no. 1: 21–38. <https://doi.org/10.1080/13501760601071539>.
- Rathi, A., and S. Kishan. 2024. "The Carbon Offsets Comeback That Wall Street Has Been Waiting For." <https://www.bloomberg.com/news/features/2024-06-10/the-carbon-offsets-comeback-that-wall-street-has-been-waiting-for>.
- Renckens, S., K. Pue, and A. Janzwood. 2022. "Transnational Private Environmental Rule Makers as Interest Organizations: Evidence From the European Union." *Global Environmental Politics* 22, no. 3: 136–170. https://doi.org/10.1162/glep_a_00665.
- Reuters. 2025. "US SEC Votes to Stop Defending Climate Disclosure Rules." <https://www.reuters.com/business/environment/us-sec-votes-stop-defending-climate-disclosure-rules-2025-03-27/>.
- SEC. 2024. "SEC Adopts Rules to Enhance and Standardize Climate-Related Disclosures for Investors." <https://www.sec.gov/news/press-release/2024-31>.
- SEC. 2025. "SEC Adopts Rules to Enhance and Standardize Climate-Related Disclosures for Investors." <https://www.sec.gov/newsroom/press-releases/2025-58>.
- Securities Exchange Commission. 2022. "The Enhancement and Standardization of Climate-Related Disclosures for Investors." <https://www.sec.gov/files/rules/proposed/2022/33-11042.pdf>.
- Segal, M. 2025. "Canadian Regulators Hit Pause on Mandatory Climate Reporting Requirements." <https://www.esgtoday.com/canadian-regulators-hit-pause-on-mandatory-climate-reporting-requirements/>.
- Seidman, G. W. 2012. "Regulation at Work: Globalization, Labor Rights, and Development." *Social Research* 79, no. 4: 1023–1044. <http://www.jstor.org/stable/24385638>.
- Slaughter, A.-M. 2004. *A New World Order*. Princeton University Press.
- Stoefs, W. 2024. "The EU's Double Counting Problem." <https://carbonmarketwatch.org/2024/03/22/the-eus-double-counting-problem/>.
- TCFD. 2024a. <https://www.fsb-tcfd.org/>.

TCFD. 2024b. “Task Force on Climate-Related Financial Disclosures (TCFD).” <https://www.fsb-tcdf.org/>.

United Nations Framework Convention on Climate Change. 2024. “COP29 Agrees International Carbon Market Standards.” <https://unfccc.int/news/cop29-agrees-international-carbon-market-standards>.

Vantaggiato, F. P. 2019. “The Drivers of Regulatory Networking: Policy Learning Between Homophily and Convergence.” *Journal of Public Policy* 39, no. 3: 443–464. <https://doi.org/10.1017/S0143814X18000156>.

VCMI. 2025. “Voluntary Carbon Markets Integrity Initiative.” <https://vcmintegrity.org/>.

Verney, P. 2022. “Asset Owners and ESMA Urge EFRAG to Align Disclosure Drafts with ISSB.” <https://www.responsible-investor.com/asset-owners-and-esma-urge-efrag-to-align-disclosure-drafts-with-issb/>.

Vogel, D. 1997. “Trading Up and Governing Across: Transnational Governance and Environmental Protection.” *Journal of European Public Policy* 4, no. 4: 556–571. <https://doi.org/10.1080/135017697344064>.

World Resources Institute. 2024. “Corporate Climate Disclosure Has Passed a Tipping Point.” <https://www.wri.org/insights/tipping-point-for-corporate-climate-disclosure>.

Appendix A

	Brazil	China	EU	UK	US
Domain 1: Climate-related disclosure					
Disclosure of Physical and Transition Risks and Opportunities	Mandatory	Mandatory	Mandatory	Mandatory	None
Disclosure of Scope Targets & Plans	Mandatory	Mandatory	Mandatory	Mandatory	None
Disclosure of Scope 3 Emissions	Mandatory	Mandatory	Mandatory	Mandatory	None
Referenced international standard(s)	TCFD; IFRS S1; IFRS S2	—	TCFD	TCFD; IFRS S1; IFRS S2	—
Policies	CVM Resolution 80 (Resolução CVM 80) CVM Resolution 193 (Resolução CVM 193) CVM Resolution 217/2024 (Resolução CVM 217/2024) CVM Resolution 218/2024 (Resolução CVM 218/2024) CVM Resolution 219/2024 (Resolução CVM 219/2024)	Administrative Measures for Mandatory Disclosure of Environmental Information (企业环境信息披露管理办法) Beijing Stock Exchange Guidelines for Continuous Supervision of Listed Companies No. 11- Sustainability Reporting (Trial) Corporate Sustainability Disclosure Guidelines- Basic Guidelines (Trial Implementation) Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies— Sustainability Report (For Trial Implementation) HKEX ESG Reporting Framework Shenzhen Stock Exchange Self-Regulatory Guidelines for Listed Companies No. 17- Sustainability Reporting (Trial)	Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards (“ESRS”) CSRD as amended by Directive (EU) 2025/794 of the European Parliament and of the Council of 14 April 2025 amending Directives (EU) 2022/2464 and (EU) 2024/1760 as regards the dates from which Member States are to apply certain corporate sustainability reporting and due diligence requirements (“Stop-the-Clock”) Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on corporate sustainability due diligence and amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859 (“CSDDD”) Directive (EU) 2025/794 of the European Parliament and of the Council of 14 April 2025 amending Directives (EU) 2022/2464 and (EU) 2024/1760 as regards the dates from which Member-States are to apply certain corporate sustainability reporting and due diligence requirements Non-Financial Reporting Directive (Directive 2014/95/EU)	FCA ESG Sourcebook Non-financial and sustainability information statement (“NFSI”) requirements under the Companies Act 2006 and the Limited Liability Partnerships (Accounts and Audit) (Application of Companies Act 2006) Regulations 2008 Streamlined Energy and Carbon Reporting (SECR) UK Listing Rules	— —

	Brazil	China	EU	UK	US
Domain 2: Carbon credits					
Ensure additionality and permanence of carbon reduction or removal, along with social and biodiversity safeguards	Mandatory	Mandatory	Mandatory	Voluntary	Voluntary
Issuance, trading and retirement of credits to be tracked in public or private registries	Mandatory	Mandatory	Mandatory	Voluntary	Voluntary
Credits to be used responsibly, particularly for offsetting firm-level emissions in the voluntary carbon market	—	—	—	Voluntary	Voluntary
Referenced international standard(s)	Clean Development Mechanism (CDM), Paris Agreement Crediting Mechanism (PACM) VCS Gold Standard American Carbon Registry (ACR); Climate Action Reserve (CAR)	—	—	VCMI's Claims Code of Practice Standards body publicly endorsed by ICROA, ICVCM (PACM)	CORSIA; G7's Principles for High-Integrity Carbon Markets; IC-VCMI; Paris Agreement Crediting Mechanism (PACM) Tropical Forest Credit Integrity Guide; VCMI; Science Based Targets Initiative (SBTI); Verra American Carbon Registry (ACR) Climate Action Reserve (CAR) IOSCO
Policies	Carbon Market Law (Law 15,042/2024) CVM Resolution No. 223	China GHG Voluntary Emission Reduction Program (CCER) 2.0 (launched in 2024)	Carbon Removals and Carbon Farming (CRCF) Regulation (EU/2024/3012)	Principles for voluntary carbon and nature market integrity LSE Voluntary Carbon Market Designation	Voluntary Carbon Markets Joint Policy Statement and Principles Commodity Futures Trading Commission Guidance Regarding the Listing of Voluntary Carbon Credit Derivative Contracts