



# The function of international business frameworks for governing companies' climate change-related actions toward the 2050 goals

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## Abstract

At the 22nd Conference of the Parties in 2016, the roles of non-state actors in global climate change were emphasized with a particular focus on international frameworks for corporate activities. Frameworks are intended to serve as international governance to help regulate corporate actions. However, companies' climate-related activities are voluntary and produce several issues. The current research addresses the following questions: How do international business frameworks work for governing and enforcing the practical implementation of corporate activities? In the future, what functions are expected to work for business sectors ensuring the 2050 goals? This study examines the function of international business frameworks from different perspectives according to socio-environmental challenges, enforcement measures, organizers, and embedded problems. First, the development process of the motivation of corporate activities is examined, from Corporate Social Responsibility to the long-term vision. Second, we conduct a thorough review of the public and private regimes and identify three key components of private regimes to achieve effective, legitimate, and compliant functions: participation, accountability, and norms. These three components are not ensured by one regime, but by different types of international frameworks: industry associations, international organizations, and third parties. This study illustrates how these three types of frameworks work with the key components for enforcement. Furthermore, with increasing expectations for corporate actions, companies are creating their own visions and principles to attain the 2050 global goal. This paper demonstrates that the function of international frameworks is expected to strengthen in terms of supporting and governing a company's actions.

**Keywords** Climate change · International business frameworks · Corporate actions · Enforcement · 2050 Goal

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## 1 Introduction

In 1992, the United Nations Convention on Climate Change (UNFCCC) introduced a climate change framework. In 1997, member countries agreed to the Kyoto Protocol; in 2015, they agreed to re-enforce the framework through the Paris Agreement at the 21st Conference of Parties (COP21). In 2016, COP22 addressed the role of companies as major non-state actors in recognition of the fact that the effectiveness of climate change measures is closely linked to private sector involvement.

Along with private sector involvement, the role of international frameworks has become increasingly important. Green (2014) revealed that the number of civil regulations, including transnational environmental private codes, rules, and standards, has increased from 7 in the 1980s to 38 in the 1990s, and then to 69 in the 2000s. Recently, global civil regulations have particularly become popular. For example, the current number of Global Reporting Initiative (GRI) members is 13,375, and 9997 companies have participated in the Global Compact (GC); furthermore, the CDP collects environmental data from 6937 companies based on specific guidelines. As such, civil sector regulations have played important roles.

Conversely, private regimes face several issues. A regime is defined as the set of arrangements, such as principles, norms, rules, decision-making procedures, and measures (Keohane and Nye 1977; Krasner 1983). Traditionally, in a nation-based regime, namely a public regime, the success of a framework hinges on its legitimacy and on member states' compliance (Victor 2007; Bodansky 2010; Bodansky and Dringer 2010; Chan et al. 2018). Recently, private regimes have become an important tool touching the multiple sectors in which states, NGOs, and companies are interplaying (Pattberg 2007). Various types of private regimes are designed to enable and encourage companies' implementation of and participation in climate-related activities, but there are no regimes governing overarching climate corporate actions. In addition, issues regarding each industry have their own codes and standards according to their business activities. Thus, the relationship between private regime and business activities has become complex.

An international framework is expected to govern a broad range of activities and includes several institutional mechanisms, practical principles, a scientific basis, and an enforcement system to minimize global problems (Biermann et al. 2009; Harroul-Kolieb and Hoegh-Guldberg 2019; Tladi 2019). The international framework is the concept of governance aimed at one environmental goal. There are various regimes or instruments dealing with specific issues, which create somewhat fragmented international frameworks (Raubenheimer et al. 2018). For example, under UNFCCC, dozens of agenda items were discussed in more than thirty contact groups and several new institutional mechanisms were formed that go beyond the convention (Biermann et al. 2009). Business frameworks, therefore, are those aiming to govern corporate activities.

Companies' participation in business frameworks is a key component, but participation is completely voluntary; additionally, other components must be embedded differently than those of public regimes to ensure legitimacy and compliance (Darnall and Carmin 2005; Delmas and Keller 2005). International business frameworks are currently in place to promote corporate participation, and their common foundation is the function of the private regime (Druckrey 1998; Green 2014). However, as important companies often drop out of private regimes, the effectiveness of the private regime comes into question. Currently, how to ensure the practical participation of all related companies is a crucial issue, and how the enforcement method is encompassed in the international frameworks concerns the effective implementation of corporate activities.

The private sector is becoming increasingly engaged as a rule maker by creating common norms and standards in global climate governance through the development of private regimes and public–private partnerships (Haufler 1999; Brown et al. 2009; Mueckenberger and Jastram 2010; Biermann et al. 2012; Pattberg et al. 2012; Mert and Chan 2012; Andrade and Puppim de Oliveira 2015). A private–public partnership is a hybrid governance form through which the political authority of non-state actors has been extended, and is expected to contribute to agenda setting, policy formulation, and implementation in international frameworks (Bull and McNeill 2007; Rinicke and Deng 2000).

With the development of various types of international institutions and governance regarding corporate activities, criticism for private regimes has increased. Thus, the following questions are raised: How do international frameworks work for governing and enforcing the practical implementation of corporate activities? In the future, what functions are expected to work for business sectors ensuring the 2050 goal?

To address these research questions, the development of international frameworks in line with changes in corporate and socio-environmental challenges was first examined. Although some topics, such as CSR, partnerships, and goals, were examined in previous studies (Brown et al. 2009; Vigneau et al. 2015; Boiral et al. 2019), this paper sequentially illustrates the development of socio-environmental challenges. Secondly, the importance of private regimes, their policies on climate change, and the key components necessary to achieve effective and legitimate policies were investigated. Until now, since many private regimes have been voluntary, little attention has been paid to actual enforcement; as such, only several theoretical analyses and a few case studies are known regarding enforcement topics (Chayes and Chayes 1995; Haufler 1999; Flohr et al. 2010; Mueckenberger and Jastram 2010; Green 2014). This study demonstrates how international frameworks work with these components, since such key components have not been thoroughly revealed due to their wide variety of functions, enforcement method and their positioning in international regimes. The current research categorizes international frameworks according to various organizers and demonstrates which type of frameworks work with the components for enforcement. As various organizers fulfill their functions by different types of enforcement method, the network among related actors and organizations is a key element. The fostering network is currently taken forward as the orchestration of international frameworks (Abbott and Hale 2014; Klingebiel and Paulo 2015). This study also reveals the problems that international frameworks are now facing and discusses how these problems are embedded in such frameworks.

In summary, this study explores international frameworks from various perspectives, focusing on their roles, socio-environmental challenges, enforcement, and organizers. For example, what is the motivation of corporate actions? How do we enforce corporate actions? How does each player serve as a ruler? With these considerations, we derive the future requirements for frameworks and clearly indicate how these frameworks can support business strategies and actions that will bring us closer to the 2050 climate goal.

The remainder of this paper is structured as follows. In Sect. 2, we review the development of international frameworks responding to socio-environmental challenges. Section 3 demonstrates the components of business frameworks from the viewpoint of a private regime and identifies different characteristics of international frameworks in terms of private regimes. In the Discussion and Conclusion, we summarize the implications and limitations of frameworks, as well as future perspectives on international business frameworks.

## 2 Socio-environmental challenges and international framework development

### 2.1 CSR

For many years, companies have faced environmental challenges. In the past, companies focused on reducing the emission of pollutants and waste from factories to minimize damage to the environment. They installed pollution control devices, appointed officers, and established internal systems for managing environmental performance. More recently, businesses have joined forces to recognize their shared responsibility for managing all kinds of environmental risks (Van der Heijden 2012). For example, companies in the chemical industry came together—after several major environmental incidents—at the International Council of Chemical Associations (ICCA) establishing the Responsible Care (RC) charter. This charter was originally developed in 1985 in Canada as a practical and dedicated tool for the industry to manage risks associated with chemical production and products (Druckrey 1998). The first step by a company against social risk is commitment, and RC is a commitment framework within an industry association that provides a leading norm to induce commitment across the industry. In this case, the norm encourages chemical manufacturers globally to commit to safe chemical management and performance (ICCA 2019). RC indeed led to improvements in global health, safety, and corporate sustainability as well as to a comprehensive ethic in standards and reporting. It resulted in a 34% reduction in greenhouse gas (GHG) emissions since 2006 (ICCA 2018), even though it did not include a quantitative target.

Global Compact (GC), another commitment-type framework, was introduced by the United Nations (UN) in 2000; it is the most well-known global framework for self-regulation (Kell and Levin 2003). However, it was not designed as a regulatory instrument or a code of conduct. Furthermore, it does not monitor or measure companies' performance or norm compliance. Rather, it has been described as a platform for institutional learning (Flohre et al. 2010). Through its ten principles, GC promotes corporate commitment to environmentally friendly practices, the protection of human rights, and other sustainability practices.

Another significant development took place in the 1990s with the emergence of corporate social responsibility (CSR), which is the concept of companies' considering how to maximize their obligations to society, as well as their market positions, while conducting business activities (Post et al. 2002; Kitzmueller and Shimshack 2012). A typical and vital element of CSR involves companies' dissemination of information about their business activities to the public. Now, as part of CSR, companies regularly publish corporate environmental reports. This was a significant step, considering that until the late 1990s, it was not required for companies to disclose information about greenhouse gas (GHG) emissions. When companies did disclose, the information was often inaccurate (Dragomir 2012). In response, international frameworks—such as the 1997 Global Reporting Initiative (GRI)—proposed guidelines for the dissemination of environmental information, aimed at promoting transparency and accountability.

Originally, GRI did not represent a code of conduct but was intended to standardize CSR as a business practice (Brown et al. 2009; Vigneau et al. 2015). In 2016, GRI was transformed from guidelines to standards, in line with EU Directive 2013/34/EU which requires disclosure of non-financial and diversity information in large undertakings and by certain groups. This was part of the wider European Union initiative on CSR (GRI 2019).

Although GRI develops CSR, there have been some criticism of its reliability; as such, assurance processes by third parties are needed to improve credibility for companies implementing CSR activities (Boiral et al. 2019).

In summary, CSR has encouraged companies to self-regulate by changing or creating their own norms with the assurance of a third party, instead of merely responding to external government regulations. This has led to private frameworks beginning to replace government regulations in the provision of norms or standards.

## 2.2 Partnership

Since the World Summit on Sustainable Development in 2002, transnational partnerships have multiplied to become voluntary multi-stakeholder initiatives that contribute to the execution of intergovernmental commitments (Mert and Chan 2012). When governments cannot agree, non-state actors step in to create a multi-stakeholder regime, which may include various institutions, industry associations, NGOs, and international organizations. To achieve the highest level of efficacy, collective action across a broad spectrum of organizations can provide a solution for deadlock in intergovernmental negotiations (Biermann et al. 2012). These kinds of collaborations have promoted the establishment of norms and improved the implementation of international agreements and global governance (Biermann et al. 2012). Thus, a partnership can produce the collective binding rules that co-govern collective goods (Beisheim and Liese 2014).

The Asia Pacific Partnership on Clean Development and Climate (APP) is a multi-sector partnership and initiative among seven countries in the Asia–Pacific region. It encourages co-operation between the public and private sectors and across countries to reduce GHG emissions by publishing guidebooks and practical case books. In addition, the APP established eight task forces to assess technology options using benchmarking and performance indicators. It also enables governments, businesses, and researchers to participate in task forces as equal partners (Fujiwara 2007). APP is regarded as a key feature of the UN climate regime (Biermann et al. 2009)

Another multi-sector alliance is the International Social and Environmental Accreditation and Labelling Alliance (ISEAL). ISEAL was established by eight international organizations, including Fairtrade Labelling Organization International and the Forest Stewardship Council, among others. Its mission is to reinforce sustainability standards for the benefit of all people and the environment. It has pioneered systems, standards, and certification schemes for markets, with a public review process for the standard-setting code taking place every 4 years. ISEAL is well organized, and it monitors performance and ensures the creditability of standards by engaging third parties. In effect, ISEAL sets the standard for norms in the industry (Derx and Glasbergen 2014). ISEAL plans to leverage the voices of key supporters to further enhance its creditability and sustainability standards and to cultivate a broader base of government and business buy-in (ISEAL Alliance and Accountability 2011).

Based on the above, it can be said that the multi-sector regime establishes norms through partnerships involving all relevant actors.

## 2.3 Ensuring the 2050 goal

In 2015, the Paris Agreement adopted at COP21 of UNFCCC and the Sustainable Development Goals (SDGs) adopted at the United Nation Conference on Environment and

Development (UNCED) came into effect, further clarifying the roles and responsibilities of corporations in implementing climate action and sustainable development. At COP22 in 2016, the roles of non-state actors—particularly companies—were examined, with a particular focus on international frameworks for corporate activities. To further promote corporate environmental action, Science-Based Target (SBT), a joint initiative among third parties, international organizations, and Renewable Energy 100%, was established in 2015 and in 2014, respectively. SBT illustrates a clear path forward for companies by setting targets for GHG reduction in line with the two-degree scenario outlined by the Intergovernmental Panel on Climate Change. It sets economic and sector-based targets, and it monitors and evaluates companies' performance using specific criteria. By 2020, at least 200 high-impact companies—which represent at least two gigatons of emissions—will have their emission-reduction targets in place (SBT 2019).

New initiatives to ensure the attainment of the 2050 goal are also arising from the financial sector. Recently, the Task Force on Climate-Related Financial Disclosure (TCFD), initiated by the Financial Stability Board (FSB), has moved to the forefront in this area. In 2015, the G20 summit asked the FSB to convene public and private sector participants and review climate-related issues (TCFD 2018). In response, the FSB established the TCFD to consider how to provide better information for the finance sector in a comparative and accountable way. The TCFD published its final report in 2017, requesting that companies evaluate their respective risks and opportunities based on relevant indicators and targets (TCFD 2017a). To this end, the TCFD report included guidelines for companies to reveal expected benefits and costs from climate change and recommendations for scenario analyses to evaluate risks and opportunities. A typical analysis involves two-degree scenarios, with several scenarios being developed by the International Energy Agency (IEA), an expert energy organization (TCFD 2017b). These scenario analyses are still in the development stage, but when they are implemented, they will ensure the accountability and validity of the information disclosed by corporations. The IEA scenarios include a new policy scenario, a “450 scenario” as described in the *World Energy Outlook*, and a “2DS” as described in the *Energy Technology Perspectives*. Possible scenarios are being outlined for each industry, encouraging companies to acknowledge future risks and opportunities as they approach 2050 (TCFD 2017b).

In the next section, we illustrate the key components and discuss how the different types of frameworks address these components.

### 3 Key components and types of international frameworks

#### 3.1 Key components of regimes governing activities

Among the different types of international frameworks, public regimes—the conventional treaties among different governments—include legal obligations and enforcement measures to ensure compliance and legitimacy. Conversely, private regimes are usually non-legally binding agreements among companies and NGOs that strengthen the overall legitimacy and governance of an international framework with different components.

As stated earlier, public regimes are conventional treaties. According to Chan et al. (2018), four factors determine the effectiveness of a legal public framework: participation, compliance, legitimacy, and flexibility. In a public regime, sanctions are an effective

measure to ensure compliance. However, if sanctions are not viable, norms and transparency enhance compliance (Chayes and Chayes 1995).

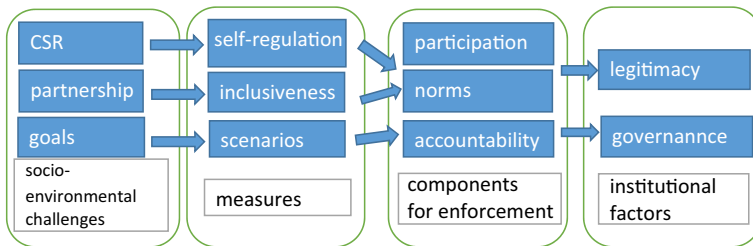
Regarding private regimes, the Independent Evaluation Group—an independent unit of the World Bank—published a sourcebook for evaluating global and regional partnership programs. The sourcebook emphasized criteria for effective participation and accountable procedures. Participation and accountability mechanisms continue to be two of the fundamental and normative standards for addressing private governance (IEG 2007; Flohr et al. 2010).

Flohr et al. (2010) stated that participation and accountability are the basis of legitimacy in private sectors. Green (2014) stated that a private regime has four benefits for participating companies: reducing transaction costs, enhancing the credibility of commitments, acquiring a better position than competitors, and helping to improve company reputation. A survey of 394 companies that were part of the GC indicated that the normative and mimetic mechanisms of institutionalization (peer pressure) influenced corporate decision making (Perez-Batres et al. 2011). When a company is not mindful of its reputation, it may lose out to its competitors. In fact, a company might join the GRI simply for the purpose of reputation management (Brown et al. 2009).

Haufler (1999) stated that corporate norms provide the foundation for private regimes. A private regime can form in the presence of broad norm congruence across an industry. As the regime becomes more institutionalized, it reinforces the accepted norms. In a private regime, the International Organization for Standardization (ISO) controls the norm-setting procedure through open and inclusive communication with stakeholders, thereby legitimizing a standard (Mueckenberger and Jastram 2010). Therefore, in a private regime, legitimacy is realized through the process of norm setting, communication, and congruence among members. The acceptance of norms depends on market forces and public scrutiny (Kalfagianni and Pattberg 2013).

Regimes that have been legitimized as private regimes can then be incorporated into public regimes. In light of this discussion, participation, accountability, and norms are recognized as some of the key components of private regimes.

International frameworks, responding to the change in socio-environmental challenges such as CSR, partnership, and goals, provide self-regulation, inclusiveness, and scenarios as their measures in the private sector to ensure legitimacy and governance. This is accomplished by means of participation, norms, and accountability to govern the activities while working toward the climate change goal of companies' action and vision. Figure 1 demonstrates the relationships between each of the socio-environmental challenges, measures, components for enforcement, and institutional factors.



**Fig. 1** The relationship among socio-environmental challenges, measures, components, and factors in international frameworks

### 3.2 The organizers of three types of international business frameworks

Next, we examine the role of these three components in international business frameworks. Generally, there are three actors: the government, private companies, and NGOs (Pattberg 2007). These actors serve as organizers of the three kinds of frameworks presented below: industry association-led, international organization-led, and third party-led. The framework that enables collaboration among companies and NGOs has an important governance style (Pattberg 2007) and is categorized as third party-led. Some instances of international business frameworks are summarized in Table 1.

### 3.3 Industry association-led frameworks

The first advantage of the industry association framework is the ease of communication among members, as member companies share problems and values, thus facilitating the establishment of common norms through member consensus. Participation in this framework comes easily for most companies within the same industry (Druckrey 1998). The second advantage of the industry association framework is that it provides incentives and penalties depending on the status of participation. For example, RC provides accepted frameworks within the chemical industry. Industry members view the association as making valuable contributions in areas such as efficiency improvement, reducing costs of ensuring environmental and safety initiatives, and improving relationships with stakeholders (Druckrey 1998). The third advantage of the industry association framework is that it creates standards and norms based on a sound business sense (Haufler 1999; Kalfagianni 2013). The most prominent form of private governance in recent years has been a private standard setting (Blowfield 2005).

Guidelines, standards, and norms are usually created by another framework—such as ISO—in conjunction with the industry association. In these cases, when a private regime such as ISO creates norms or standards, they then become public domain; when the standards shift into the public domain, it is considered to be a privatization of regulation (Pattberg 2007; Flohr et al. 2010).

In the case of the steel industry, the industrial association in ISO initiated, at first, the standardization of the CO<sub>2</sub> calculation method. Steel is produced and traded worldwide; therefore, an industry-based approach is more effective than a country-based approach. The World Steel Association, in conjunction with Japanese steel makers, plays an important role in benchmarking best practices and helping its members improve their climate-related activities. The CO<sub>2</sub> emissions benchmarking system allows companies to report on their factories and provide overall emissions data for steel production. The methodology used has been positioned as an international standard, that is, ISO 14404:2013—a calculation method of carbon dioxide emission intensity from iron and steel production. The standard, which is notably wide in scope as an involvement by means of ISO, is not exclusive to association members (WSA 2019b). This helps steel companies not only calculate CO<sub>2</sub> emissions, but also improve their facilities to lower CO<sub>2</sub> emissions by comparing levels throughout the production process. This is a successful case in which private associations not only established their standard to be ISO, but also provided the common basis by which to evaluate the efficiency of the steel industry on a worldwide basis.

Furthermore, standards are sometimes established by leading companies. For example, retailers established the Global GAP standard, and Daikin Industry Ltd. established



**Table 1** Examples of international business frameworks. *Source:* Website of each framework (accessed on March 8, 2019)

Name	Type	Summary	Ideas	Members
RC	IA	RC started in Canada in 1985; it was recommended in Agenda 21	RC is a voluntary initiative for chemical industry companies to improve all aspects of environment, health, and safety	580 companies
GRI	TP	GRI is an NPO, based in Amsterdam, the Netherlands, established in 1997	GRI makes the Sustainability Reporting Standards, which are available to anyone	13,375 companies
GC	IO	Established by the UN in NY in 2000	A voluntary initiative based on CEO commitments to implement universal sustainability principles and to take steps to support UN goals	Total: 13,523, companies: 9997
CDP	TP	CDP is an NPO associated with investors; it requires data from companies listed in the FTSE index; it was established in 2000	Investors, businesses, and policy makers use the data and insights to make better decisions, manage risk, and capitalize on opportunities	Disclosing companies: 6937
TCFD	IO	TCFD was established by the FSC in 2016; it creates guidelines for companies' climate-related financial risk and scenarios	TCFD recommends how companies and financial sectors should respond to risks associated with climate change and what constitutes effective financial disclosures across industries	
SBT	TP	SBT is a joint initiative by WW, CDP, WRI, and GC; it was established in 2015	SBT verifies target set by companies to reduce GHG emission by science-based methods	Approved companies: 206
ISEAL	TP	ISEAL sets a code of environmental standards, established by eight organizations such as FLO and FSC; it was established in 2002	Members need to meet ISEAL's Codes of Good Practice, which are rigorous and accessible certification systems	

IA industry association, IO international organization, TP third party

an energy efficiency standard in inverter air conditioning and HFC32 refrigerant. In such cases, companies go from rule taker to rule maker (Andrade and Puppini de Oliveira 2015).

However, the industry-led framework has one notable problem: a lack of accountability due to the nature of a voluntary system (Delmas and Keller 2005). Even though the implementation of standards in a private company can be effective, endorsement by international organizations or third parties is needed to establish norms, reviews, and monitoring mechanisms (Darnall and Carmin 2005; Green 2014). In addition, industry-led systems often have a rather short-term perspective; therefore, they are struggling to establish a 2050 vision. Further, the market sharing communication among members carries the potential risk of creating a cartel for an anti-competitive market (Porter 1999). Historically, the cartel was regarded as a private regime that aimed to pursue private profits. However, recently, private regimes aim to provide public orderly systems in addition to the private company's profits, since companies incorporate climate-related actions into their core business activities (Porter and Reinhardt 2007).

### 3.4 International organization-led frameworks

An international organization-led initiative has the advantage of being a legitimizing force for norms. GC is the largest of these initiatives. The reason for the popularity of adopting GC was that it addressed the demands for corporate accountability (Green 2014). However, GC has faced a variety of criticisms, including its voluntary nature. This is challenging in that it is difficult to ensure that the more problematic companies, which are perhaps those who need to participate the most but generally are the most averse, engage in GC (Ruggie 2002). Some studies have demonstrated that very few companies report appropriately, and most documents are more like promotion materials than official reports (Andrade and Puppini de Oliveira 2015). GC does not have any formal system for monitoring reports, which has raised many questions concerning accountability (Mueckenberger and Jastram 2010). In 2003, four international NGOs expressed skepticism about the true intentions of companies that implemented GC (Flohr et al. 2010). Secretary General Kofi Annan requested that the GC committee consider integrity measures. Thereafter, a mechanism for the submission of annual reports for all members was established, and by 2008, 294 problematic companies had already ceased participation. Many critics, such as Sethi and Schepers (2013), explained these failings by saying that GC had ultimately failed to strengthen companies' CSR functions, leading to a loss of the public's trust.

Generally, large international organizations have bureaucratic structures and are not equipped to monitor CSR performance on the level of individual corporations. The UN, for example, may be an effective system in some ways, but it does not have the resources to ensure that individual organizations or companies in individual nation states fulfill their CSR potentials. In other words, while it may have broad oversight, the UN cannot become fully involved in the decision-making processes of any particular industry (Andrade and Puppini de Oliveira 2015).

Despite these criticisms, international organizations often do offer valuable insight into CSR issues. For example, The Organization for Economic Co-operation and Development (OECD) addresses numerous environmental issues. Its steel committee emphasized the need to reduce excess production. This has been a significant challenge in the steel industry, and it was appropriate to encourage the industry to restructure (OECD 2018). In conjunction with the G20 Summit, the OECD's sound policy recommendations have helped reduce levels of CO<sub>2</sub>, since the steel industry is one of the biggest contributors of GHGs

and production levels in the steel industry are directly connected to the global level of CO<sub>2</sub> emissions.

TCFD is another type of international regime, but it has never attempted to set standards, norms, or guidelines. However, it has suggested step-by-step ways for companies to accomplish their long-term visions (TCFD 2018). These suggestions validate company norms, and at the same time, help companies create unique strategies. TCFD also paved the way for companies to adopt self-regulated disclosure practices in all industry sectors (TCFD 2018). In these ways, international organizations establish global norms and promote the global participation of companies.

Another case of interaction between international frameworks and companies is the case of Vienna Convention and the Montreal Protocol, which is one of the regimes closely related to climate mitigation. The Kigali Amendment to the Montreal Protocol (effective from January 2019) aims to reduce the effects of HFC refrigerant (i.e., hydro-fluorocarbons), a GHG. Legitimacy is ensured by the Montreal Protocol; however, developing countries' implementation of converting to HFC refrigerant with a low global warming potential is an outstanding issue. Daikin Industry Ltd. is a well-known Japanese air-conditioner manufacturer that intends to expand its climate-friendly air-conditioner system into the global market in collaboration with other stakeholders. Daikin Industry Ltd. owns advanced technology—a refrigerant used for air conditioners with a low global warming potential. To offer and diffuse this technology in the market, Daikin Industry Ltd. is in discussions with member governments, assisting other industries, helping with the establishment of safety and performance criteria, and helping to slow down the effects of global warming. The company widely promotes air conditioners with this technology, and strives to prevent refrigerant leakage in collaboration with industries in developing countries. These efforts are in line with the implementation of the Kigali Amendment's goal regarding global warming effects, along with making de facto standards a business strategy (Hori 2019). This case shows how private companies create a global standard along with international agreements, which provides legitimacy.

### 3.5 Third party-led frameworks

Third-party institutions are independent of companies and industries. This means they have the advantage of being neutral in setting guidelines and monitoring, and thus, they have a unique capacity to enforce corporate accountability. For example, GRI promotes organizational transparency and accountability so that corporations can achieve legitimacy. It accomplishes this by providing standardized CSR reporting guidelines (Flohr et al. 2010; Vigneau et al. 2015). CDP is a famous third-party organization that guides companies in disseminating information about climate change, and it represents and carries out the decisions of institutional investors. CDP is currently the world's largest repository of corporate GHG emission data (Reid and Toffel 2009), encompassing about 7000 companies worldwide. It initially intended to provide voluntary standards to promote disclosure, but these are now recognized as legitimate standards by some governments (Andrade and Puppini de Oliveira 2015). Furthermore, a company's decision not to join CDP is frequently interpreted by other companies as a sign of weakness in the company's governance and risk management frameworks (Sullivan and Gouldson 2012).

On the contrary, Sullivan and Gouldson (2012) noted that institutional investors may not be perusing companies' CDP data but are merely verifying that data have been submitted. Moreover, the information disseminated by companies is often not the information that the

financial sector needs. The purpose of CDP is to provide information, mainly for investors, whereas the purpose of CSR reports is to provide information to various stakeholders. Depoers et al. (2016) pointed out that the information in CSR reports differs from that in CDP data in both purpose and content. In 2000, at the next stage, CDP requested that companies have their GHG data verified by a third party to ensure data accountability.

Additionally, some have criticized the uncertainties in CDP's rating system, in particular, the rating is based on the company's performance, but the criterion is not published, and the process is unclear. The CDP rating is judged by accreditation partners (CDP 2019); however, it seems difficult to compare different types of companies. To ensure fairness, it is important that the same conditions are present, such as a comparison within the same industry sector. In 2018, CDP introduced sector-based guidelines to ensure comparative information disclosure in each industry sector (CDP 2018). These criticisms reveal the difficulty of accredited third-party assessment organization, which requires an appropriate partnership to ensure that the necessary knowledge of each business field is present.

In the case of GRI, its flexibility is useful in the initial stages, but its approach is often too general for companies wishing to engage in norm setting and development (Flohr et al. 2010). SBT, on the other hand, views science as a standard business practice (SBT 2019). Therefore, SBT could assist companies in aligning climate change goals and Paris goals with their overall accountability.

Third parties provide guidance on accountability and norms to ensure legitimacy. However, it must be added that the issue of accountability for GHG emissions remains unclear, since the methods for calculating GHG emissions are still a subject of debate. The World Business Council for Sustainable Development and the WRI established the GHG Protocol to review the calculation guidelines for GHG emissions (Green 2014; GHG Protocol 2019). These entities collaborated with the UNFCCC to acquire public status, thus encouraging companies to join to improve the accountability of the data.

## 4 Discussion and conclusion

### 4.1 The effects and limits of the three types of frameworks

The rapid growth of CSR has led to the proliferation of international CSR and environmental responsibility frameworks that promote corporate accountability and establish new social norms. International frameworks, responding to the change in socio-environmental challenges, such as CSR, partnerships, and goals, provide self-regulation, inclusiveness, and scenarios as their measures in the private sector. This is done to ensure the legitimacy and governance by means of participation, norms, and accountability to govern activities. Today, many global companies are encouraged to participate in these frameworks by disclosing relevant information and conducting business in accordance with the frameworks' guidelines.

This study shows that three types of international frameworks, led by different organizers, exist and that each plays a unique role and enforcement method in establishing norms and encouraging corporate participation and accountability. For example, industry associations provide an incentive (and penalty) for participation (and non-participation) that can be an effective enforcement method. ISO is the de facto business standard that can be the equivalent efficacy of enforcement.

Conversely, international organization-led frameworks, particularly GC, face several problems, including a lack of participation from important companies as well as monitoring and reporting concerns. Horan (2019) indicated that there are five problems associated with participation in voluntary partnership frameworks: compensation for losers, partnering capacity, short-term horizons, inadequate coordination mechanisms, and misaligned incentives. GC encounters the first issue in that no mechanism is provided for incentivizing to participate, as well as the fifth issue, which causes low reporting. The short-term perspective is often observed in industry-led frameworks, and the failure of appropriate partnership building causes problems in third party-led frameworks.

As mentioned, because of the lack of accountability in industry-led frameworks, third-party frameworks support companies' CSR activities by ensuring accountability; they accomplish this by establishing guidelines, ratings, and verification processes. However, it must be noted that they do not provide companies with a complete solution. One main issue is that norm setting in each specific industry is its own responsibility, as each industry sector has its own norms, as mentioned in the discussion of fair comparison in CDP ratings. For example, the chemical industry emphasizes norms concerning the environment, health, safety, and security (ICCA 2019). The steel industry prioritizes norms concerning the environment, technology, safety, and human and natural resources (WSA 2019a). Toyota, the vehicle brand, for example, focuses on the environment and efficiency, while Daikin, an air-conditioner brand, attaches importance to air pollution issues (CDP 2017). An international framework is therefore expected to support companies in carrying out their individual norm setting.

In addition, although each framework works according to its function, the network mechanism, namely, orchestration, should take a more effective role to ensure governance and legitimacy (Abbott and Hale 2014). In considering orchestration, the issue is who will be the orchestrator, as a leader of orchestrations. Klingebiel and Paulo (2015) state that governments and international organizations will be orchestrators by providing instruments. Abbott and Hale (2014) stress that the orchestrator must possess four characteristics: legitimacy, focality, resources, and organizational culture. The legitimacy is derived from the moral authority and expertise that were embedded in each organizer, industry association, international organization and the third parties.

This study clarifies the common components and roles of international business frameworks. However, several limitations exist. First, this study does not address all existing types of international business frameworks due to data limitations. Second, stringent norms are undoubtedly important, but their functions have not been clearly demonstrated in this paper. Previous studies have examined the relationship between company performance and norms (Azar 2011; Huck et al. 2012), but further studies are needed in the area. Further research that addresses various norms, standardization, regulations, and what is the most effective means to facilitate companies' performance, who should be leaders of international frameworks, are also required.

## 4.2 Moving toward 2050

Our research results suggest that, in moving toward the 2050 goal, companies should reflect on their core business strategies and visions. In addition, the TCFD framework should be taken into consideration during this process. It is an established framework, but it does not provide strict guidelines and enforcement measures, though CDP has already established guidelines for the financial sector. As TCFD encourages companies to establish a vision,

conducting scenario analyses is a core requirement for companies to achieve the 2050 vision. These can be informed by the scenario-setting methods described in international frameworks such as UNFCCC, IEA, and industry associations. The scenarios yield such valuable insights that analyses thereof can be considered the most promising way for companies. This consideration includes the envisioning and achievement of sustainable plans that take account of opportunities and risks for each industrial field, such as opportunities for energy saving products and renewable energy services, and risks of the disruption of a stable ingredient supply for the food industry, the procurement of decarbonized resources for the energy industry, energy saving products, cost increases of insurance and financial commodities, disaster, and irregular weather risk. Therefore, international frameworks should adopt positions to support members when they assess opportunities and risks in the development of scenarios, which can serve as the basis for their strategic planning.

Some industry associations have already touched on these efforts. For example, in the steel industry—the biggest contributor to worldwide GHG emissions—the World Steel Association created sustainable steel indicators, including several indicators for sustainability performance and GHG emissions (WSA 2019a). Nonetheless, global targets have not yet been set and steel companies in member countries define targets based on the association's calculation guidelines. The Japan Iron and Steel Federation has developed an action plan to reduce emissions during production by 9 million t-CO<sub>2</sub> (compared with the business as usual level) by 2030 (JISF 2018). In the chemical industry, ICCA has committed to reducing worldwide GHG emissions, maintaining sustainability progress, and minimizing costs to society. To this end, it has developed multiple energy and technology roadmaps to help businesses realize new gains in combating climate change (ICCA 2018).

All business sectors will need long-term strategies to combat climate change in the years leading up to 2050. Therefore, companies must incorporate climate change considerations along with business targets into long-term strategies to ensure business and ecological sustainability. The role of the frameworks should be to help companies conduct scenarios, gain insights, and set appropriate strategies, as well as determine disclosure information, enforcement measures, coordination with multi-sectors, and long-term visions, to ensure sustainability among a wide range of business activities.

Throughout history, industry associations have spurred collective actions. When accountability is at stake, the role of third parties becomes more prominent. However, we expect that industry associations will continue to play a crucial role because under conditions of uncertainty or risk, companies will respond to climate change in industry-specific ways and base their visions of climate-related actions on rigorous scenario analyses. Industry associations—working together with international organizations and third parties—will be well positioned to guide companies in the development of these critical scenarios.

Nowadays, it is almost unavoidable for companies to reflect on their climate-related actions when considering their business performance in moving toward 2050. While the primary responsibility lies with companies, international frameworks will continue to play a key role in promoting and governing companies' long-term visions and actions.

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