COP26 and a Framework for Future Global Agreements on Carbon Market Integrity

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Abstract

The international political economy is developing carbon markets based on decisions made in Glasgow in 2021 at COP26. The development of such markets is problematic. An examination of the history of the agreements made at the climate change conferences indicates issues that remain pertinent today. These include the ability of markets to provide the necessary reductions in fossil fuel emissions at a scale large enough to combat climate change; the integrity of current systems for the accounting of carbon; possible negative impacts on natural capital generally and biodiversity in particular arising from such mechanisms; the inherent risks associated with trying to simultaneously deliver other (co-)benefits; and clarity over the extent to which the rights will be safeguarded. While there is an urgency in ensuring that mechanisms will deliver the emissions reductions required, the risks of carbon market failure remain due to the insufficiency of Nationally Determined Contributions (NDCs) and the lack of transparency of carbon markets. Integrity systems based on sound principles for governing the integrity of carbon offsets and other mechanisms to reduce emissions are required. Unless standards are adopted, the likelihood of combatting climate change effectively, in the context of the danger of greenwashing and the ongoing pandemic, remains uncertain.

Keywords: carbon integrity systems, COP26, nature-based solutions, offsets, Paris Agreement, principles criteria and indicators, standards

Climate change represents one of the largest externalities confronting the global economy (Nordhaus 2019). If it is understood as such, how are these costs in their various manifestations dealt with in economic production, who will pay for them, under what accounting system will they be calculated—and what happens if such systems are unable to determine them or deliver effective outcomes? Debates over climate change and how to finance the costs of dealing with its impacts (adaptation) and preventing them (mitigation) have been a feature of the intergovernmental negotiations under the UN Framework Convention on Climate Change (UNFCCC) and the associated annual Conference of the Parties (COP) for decades (Hijam 2021: 10; Cadman 2019). Recent COPs have, after protracted and often conflict-ridden discus-

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sions, largely addressed how carbon is to be traded and under what mechanisms, but there remain problems concerning implications and consequences of the so-called Paris Rulebook, deliberated between COPs 21 (Paris, 2015) and 26 (Glasgow, 2021) (Nieto 2022; Cadman et al. 2018; Radunsky 2017).

This article guides the reader through the complexities and challenges confronting market mechanisms for emissions reduction, including gaps in international policies and processes, to help them see the forest through the trees. It explores market-based approaches to combatting climate change within the global system for emissions trading, including carbon offsets, and discusses issues concerning the integrity of these mechanisms. It begins by outlining the current state of play regarding the relevant elements of the Paris Agreement (PA), notably Article 6, and continues with an elaboration of current carbon markets and issues surrounding their adoption. In order to provide a rational answer to the complex outcomes of contemporary political and economic interests and actions, and to avoid market failure, a set of principles for governing such markets to ensure social and environmental integrity are presented. Without consistent, universal governance standards for regulating the global trade in emissions reductions, such mechanisms will continue to be beset by integrity challenges, reducing their ability to effectively combat climate change. Basing such standards on broader metrics of social quality, which take societal, environmental, and economic conditions into account, will help reveal that current market mechanisms, *ceteris paribus*, are not sufficient to address the crisis confronting humanity and the myriad other species affected by anthropogenic global warming.

Computational models have predicted that limiting total anthropogenic warming to under 2°C requires the entire carbon budget from all human sources since 1870 to stay below *ca*. 2,900 gigatons (Gt); this budget is even further reduced if warming is kept to 1.5°C (about 2,180 Gt), and by 2011, 1,900 Gt had been emitted already. The total budget was reduced yet further to an approximate range of 2,200 and 2,320 Gt at the end of 2017. These figures give humanity very little room to maneuver until tolerable thresholds are exceeded (Radunsky and Cadman 2020; Masson-Delmotte et al. 2018; IPCC 2015). There are few carbon "credits" to go around, given that developed nations, the creators of the problem in the first place, have effectively already had more than their fair share.

A Brief Snapshot of the Paris Agreement and Offsets

The articulation of the PA's efforts to bring the global community to a consensus decision about achieving net-zero emissions is found in over twenty articles, generally referred to as the Paris Rulebook (Rajamani and Bodansky 2019), one of the final pieces of which—market and nonmarket mechanisms for emissions reductions—was largely concluded in a series of decisions around Article 6, negotiated during COP26 in Glasgow (UNFCCC n.d. a). Article 6 covers the means for implementing an

international carbon market and other (nonmarket) mechanisms for emissions reductions (Edmonds et al. 2021). Article 6.2 addresses what are referred to as internationally transferred mitigation outcomes (or ITMOs) between Parties to the Convention (that is, nation-states) and provides a framework for country-to-country carbon trading (UNFCCC 2015: 7). ITMOs are intended to be one of the approaches to assist countries in meeting their Nationally Determined Contributions (NDCs) to reduce emissions, "in the context of sustainable development and efforts to eradicate poverty," the two overarching aspirations guiding the PA (ibid.: 3). The PA also acknowledges a range of governance challenges in ensuring effective accounting procedures:

> Parties shall, where engaging on a voluntary basis in cooperative approaches that involve the use of internationally transferred mitigation outcomes towards nationally determined contributions, promote sustainable development and ensure environmental integrity and transparency, including in governance, and shall apply robust accounting to ensure, inter alia, the avoidance of double-counting, consistent with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement. (ibid.: 7)

During COP26 some of the most contentious elements of Article 6, notably around human rights (Cadman et al. 2018) were finalized, with the intention of incentivizing and facilitating the uptake of activities to mitigate greenhouse gas emissions by both the public and private sectors and of creating credits suitable for trade as part of the host countries' emissions reductions, thereby helping meet those countries' NDCs (Rajamani and Bodansky 2019; UNFCCC n.d. a).

Interestingly, Article 6 does not refer specifically to carbon markets, while still trying to encourage intranational trading (6.2) and the creation of a mechanism for sustainable development (or SDM, 6.4) capable of replacing the Clean Development Mechanism (CDM) of the Kyoto Protocol (KP, agreed to in 1997, implemented in 2005, extended to 2020), adopting instead the more catch-all term "cooperative approaches," and only refers to "non-market mechanisms" (covered in Article 6.8). The outcomes of COP26, collectively referred to as the "Glasgow Climate Pact," provide the normative framework for ensuring that carbon markets deliver genuine emissions reductions that can be measured (i.e., are verifiable) and lead to additional reductions beyond previous commitments (Di Leva and Vaughn 2021). The text covering the SDM leaves the mechanism unnamed, and while it does include language that refers to human rights and safeguards, regrettably, it is in the context that the mechanism "should" (rather than shall):

> respect, promote and consider … human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity. (UNFCCC n.d. b)

One significant concession, although not directly addressing human rights but reflecting historical controversies over past projects (such as large dams and people displacement), and important in terms of the accountability of counting, is that only a limited number of credits generated under the CDM cannot be recycled in NDCs (to avoid so-called double-counting). The lessons from this, one of the first-generation flexible mechanisms of the KP, have been learned, at least partially. From the perspective of this article, the rules around ensuring the environmental integrity of trading have also been fine-tuned, although it has been argued that there are perhaps so many rules to ensure that trading contributes to genuine reductions in GHSs that they may be hard to implement (Di Leva and Vaughn 2021). However, it must be stressed here that this concept of integrity is far from comprehensive and does little to guarantee that projects will have ecological or social integrity. Hence the principles presented below.

Prior to Glasgow many regional, national, and even subnational jurisdictions had developed and implemented their own systems for carbon trading for compliance under the KP. A large voluntary market has also grown over the years, and the future for the schemes under that system was unclear during much of the Article 6 negotiations, leading to a slump both in the value of compliance and these voluntary credits. Collectively, both markets have influenced the global political economy, and the cost of goods and services generated in one carbon market has also impacted trade within national and regional regulatory systems (Neuhoff and Ritz 2019). There are now costs for polluters, as well as inherent risks for a wide range of sectors seeking to participate in, or implement, carbon markets. As indicated above, Article 6 still faces several integrity challenges. The fundamental components of carbon markets and global trends, and the difficulties in creating systems that make a genuine contribution to sustainable development and are explored below.

The Carbon Market Explained

There are a range of common elements in global markets for carbon; these relate to systems for crediting carbon; the establishment of baselines for trading; placing caps on carbon; how additional carbon or carbon reductions may be bought by, or sold to, higher emitters to allow them to "offset" their emissions; financial incentives to manage carbon; and allowances to permit the production of it. Carbon credits are tradable units of carbon that fall into two types, certificates or permits, and are operationalized through specific project-based activities. Certificates generally provide a statement attesting to the removal or avoidance of GHGs (greenhouse gasses) from the atmosphere, usually by the ton. Credits, both compliance and voluntary, have been historically interlinked, as compliance credits that for whatever reason do not end up counting toward formal reductions under processes such as the KP often end up in the voluntary market (Lovell 2010). A permit, on the other hand, allows the holder the

right to emit a certain amount of GHG into the atmosphere. There are two types of carbon markets. The compliance-based market is usually established by a government or a government-endorsed agent to regulate trade in carbon under the KP, and exemplified by the CDM, and is largely based on a model whereby emissions are capped and traders buy and sell these credits to meet the limit (cap) placed on emissions within a given jurisdiction. The cap, while still allowing a fixed limit of emissions, is central. A high-emitting factory, for example, may exceed the cap to which it is subjected, but it is then required to offset that excess by purchasing credits. Although voluntary markets sit outside formal compliance systems and are not formally linked to compliance markets, they may sometimes be supported by governments or other jurisdictions to reduce emissions regardless of formal international commitments. The Gold Standard (2021a) and Verified Carbon Standard (Verra n.d.) are two such examples.

Despite the ongoing disagreements over Article 6 between 2015 and 2021, it is worth noting that there were over sixty initiatives for carbon pricing around the world, more than forty of which were countrywide in extent, and over thirty subnational initiatives (World Bank n.d.). As a result of COP26 global carbon markets now have the capacity to scale up in the wake of Glasgow, as while not all the intricacies of operationalization have been finalized, there is a general intergovernmental agreement on their contribution to reducing emissions. International emissions trading (IET), along with the CDM and the much-overlooked, poorly adopted Joint Implementation (JI) approach of country-to-country collaboration to reduce emissions, is another of the "flexible mechanisms" of the now-expired KP (Cadman et al. 2015: 21). IET under Article 6 of the Paris Agreement focused throughout the negotiations on how the activities should be monitored and regulated, with some nations pushing for flexibility, some greater stringency, and some no trading at all. Debate was equally divided around whether there should be a central authority (as with the CDM) or a decentralized model. Despite such disagreements, mitigation activities based around carbon trading have been simultaneously under development while also being subject to negotiations under Article 6 and covering regulations, pricing instruments, and markets. Central to the discussions has been the creation of a cooperative arrangement for carbon markets. Figure 1 provides an overview of the cooperative approaches contained within Article 6.

COP26 Article 6 negotiations focused on ITMOs, the nature of the (public and private) trading platform under the auspices of the UNFCC, and nonmarket cooperation, that is, aid to address climate change mitigation and adaptation, finance, technology transfer, and capacity-building. With regions such as the EU intending to shield local industries from both goods and services derived from localities that have not built the cost of carbon into their pricing structures, pressure on countries without carbon markets is intensifying. Taxing based on GHGs emitted during production is intended to prevent carbon-emitting industries from moving elsewhere and subsequently importing those products back into the EU (International Institute for

Sustainable Development 2021). In other words, carbon taxes are now becoming a reality, something that has been resisted by some countries for a long time, and one of the primary reasons for creating the original flexible mechanism of the KP. This reflects the shift in global carbon policy exemplified by the efforts large corporations are now making to match their emissions reductions in line with the PA, indicating a desire to both modernize production ecologically and ensure a seat at the negotiating table over future policy developments (Environment Defense Fund 2021; Glynn et al. 2017). Businesses have been exploring carbon neutrality within their supply chains for some time, and the creation of standards for net-zero emissions by means of the multi-stakeholder Science Based Targets Initiative demonstrates increasing efforts by businesses in this regard (Science Based Targets Initiative 2021). Adopting net-zero emissions gives them time to decarbonize activities and implement technologies for doing so, particularly in sectors that cannot avoid emissions at present, the aviation sector being a prime example (Becattini et al. 2021; Huq et al. 2021; Vardon et al. 2022).

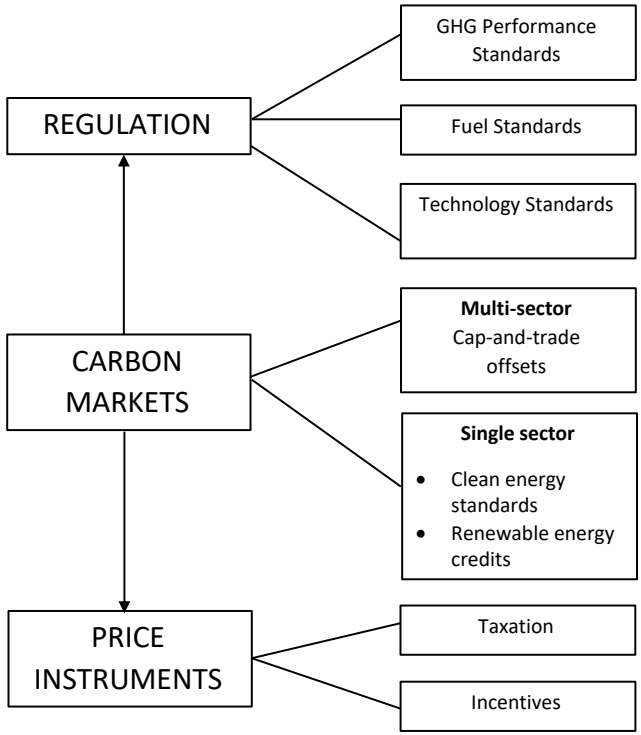

Figure 1. Elements of the cooperative mechanism of Article 6.

Problems Associated with the Adoption of a Global Carbon Market

Carbon markets are not without their problems, especially in terms of cooperation at the international level—notably in the context of the agreements around Article 6—and these problems relate to the inherent nonlinearity of carbon systems; how to account for them and avoid gaming; environmental and social justice; lack of ambition; linkages to sustainable development; and the need for common standards. These are explored below.

Nonlinearity

Governing an effective response to anthropogenic climate change within Earth systems that function over periods of geological time is challenging (Cadman et al. 2021), particularly when it comes to accounting for carbon, and carbon credits, across this natural versus human time differential.

There are differences between natural and nonnatural carbon, and where the carbon that is released into the atmosphere comes from is important. Stored carbon released in the form of fossil fuels affects the atmosphere differently from carbon contained within the Earth's biosphere. There are also human-created varieties of carbon such as chlorofluorocarbons, hydrochlorofluorocarbons, and bromofluorocarbons that are co-generated with "normal" carbon combustion, which amplify its effects and have greater impacts than the combustion of vegetative matter, such as forests, for example. Despite the efforts to estimate these additional sources, accounting problems remain (Bebbington and Larrinaga-Gonzalez 2008; Bebbington et al. 2020; Gonzalez Moguel et al. 2021), and to remain within the necessary carbon budget to keep to the 1.5°C warming target, which seems increasingly unlikely (Radunsky and Cadman 2020: 4–5), up to 60 percent of methane gas and 90 percent of coal needs to stay in the ground (Welsby et al. 2021). If they are to be an effective response to mitigating climate change, offsets must deal with this pressing accounting reality.

Carbon markets also need to address the difficulties of time and sequestration. Trading occurs at the point of monetary exchange for credits, yet the life of carbon carries on beyond the moment of exchange and there are uncertainties over the longevity and quality of sinks, especially forests, which are prone to disease, fire, and the impacts of climate change itself (Pugh et al. 2019; Qubaja et al. 2020). Carbon can also reside in the atmosphere for as long as a millennium before it is drawn down and sequestrated (Shaffer 2010).

Gaming the System

There are considerable pressures on carbon markets to deliver high volumes of tradable credits at low cost. Additionality, that is, avoiding projects that would otherwise have occurred and therefore not actually contributing to real emissions reductions, has

been a historical problem, notably under the CDM (Maraseni 2013). If such areas are not threatened by planned removal, then the carbon conserved cannot be viewed as additional, as it makes no contribution to emissions reductions, and counting the baseline (that is, the stored carbon at the commencement of activities) is extremely difficult. The term "project" is often applied very loosely and may require no activity such as biodiversity conservation (Campbell et al. 2018).

Counting carbon twice (double-counting) is another issue confronting carbon markets, and while addressed in Article 6, is still not fully resolved, as there remains a potential for countries both selling and buying carbon to count the same emissions reductions. Under Article 6.2 ITMOs should lead to adjustments across countries to ensure that the vendor changes its emissions reduction upward, and the purchaser downward, but this requires an international system of accounting and accounting standards that are not yet in place (Schneider et al. 2019; Schneider and La Hoz Theuer 2019).

Greenwashing, or making false environmental claims about a given product, is a known problem for environmental and social policy instruments and associated market mechanisms (Athanasiou 1996; Alves 2009; Guo et al. 2018), and a new term, "carbonwashing," has been adopted for its particular manifestations in the climate arena (In and Schumacher 2021). Nature-based solutions, such as restoring wetlands to combat pollution, have been promoted as an important alternative to more technological approaches to environmental problem-solving, including climate change, and their strengths and weaknesses have been explored in some detail (Thorslund et al. 2017; Cohen-Shacham et al. 2016; Seddon et al. 2020).

Nature-based carbon offsets and the dangers of greenwashing have come under particular scrutiny and criticism (Seddon et al. 2021; NBSI 2021). Despite such expressions of concern, markets are under development for Nature-Based Global Emissions Offset (N-GEOs) through projects in the agriculture, forestry, and other land use (AFOLU) sectors, including a futures market (CME Group 2021). Indeed, the whole idea of land-based offsets is fraught due to an accounting loophole originating during the operation of the KP and related to another aspect of the climate negotiations—land-use, land-use change, and forestry (LULUCF)—whereby removal of forests, so long as they are replaced by other vegetation (e.g., a field of corn) equates like with like, when in reality, the sequestration potential is vastly different (Searchinger et al. 2009). This has led to the rise of an entire industry based on burning forests for power (bioenergy), which although a contradiction in terms, and far from carbon-neutral, has been supported by the EU (Booth 2018) and is still considered a negative emissions technology (NET) when combined with carbon capture and storage, a form of geoengineering (Radunsky and Cadman 2019). Furthermore, forest-based carbon is natural, as discussed above, and does not directly contribute to the underlying cause of climate change—nonnatural fossil fuel emissions.

In addition, there are other, far easier nature-based solutions, if only there was the will to carry them out. If humans switched to a plant-based diet, allowing for the land

currently given over to livestock to be restored to natural ecosystems, the carbon that could be sequestered would match the equivalent of more than a decade and a half's worth of fossil fuel emissions. Such a drawdown might make the difference between preventing more than 1.5°C of warming and failure (Hayek et al. 2021).

Ambition

Efforts to meaningfully combat climate change and increase national commitments and responsibilities for doing so (often referred to as "ambition") have long been a source of tension under the UNFCCC and the PA (Widerberg and Pattberg 2015; Maguire et al. 2016). There were concerns in the lead-up to COP26 that Article 6 would need to ensure mechanisms for improving the integrity of the global carbon market. These were based on fears that countries might not set targets for emissions reduction or the sale of credits that were ambitious enough, and that countries seeking to buy credits might force vendor countries to exclude certain high-emissions sectors from their NDCs (Martínez-Serrano and Cuerdo-Mir 2021). These worries have some basis, as there are examples of financial incentives in the carbon market increasing emissions (Haya et al. 2020). Low prices for carbon and delays in resolving the design of future, post-KP mechanisms have previously driven down investment; toward the end of the life of the CDM, the offset market had become critically imperiled (CDM Policy Dialogue 2012; Maraseni and Cadman 2015). Carbon prices need to be high enough to ensure that there are incentives to drive emissions down and meet agreed targets, and the mere existence of a market will not reduce emissions if the commitments underpinning the policy mechanisms behind it are low. Embedded within Article 14 of the PA is a series of five-yearly global stock takes, the first of which is in 2023, that are designed to evaluate whether NDC commitments are sufficient to keep temperatures within the 2–1.5°C necessary for reducing the risks and impacts of climate change (UNFCCC 2015: 19). If combined with sufficiently high carbon prices, these could be used to convert ambitious NDCs into the emissions reductions necessary—but this would require a baseline price large enough to send the right signal to markets and thereby guarantee the effectiveness of the mechanisms of Article 6 (Hofbauer Pérez and Rhode 2020). At this stage, it is too early to tell whether this outcome will eventuate, especially if the transaction costs associated with project development, monitoring, reporting, and verification (MRV) cannot be compensated for by economies of scale and high carbon prices (Cacho et al. 2013).

Social and Environmental Costs

The failure, or even success, of offset projects can have disproportionate impacts on local communities (Wittman and Caron 2009; Herr et al. 2019), while the very act of decarbonization itself may result in a form of accumulation by dispossession (Bumpus and Liverman 2008; Harvey 2003). Failed local projects can lead to the externalization

of debt by Global North countries onto developed countries in the Global South, an allegation that has been leveled against the CDM (Ervine 2013), creating what has been called an "empire of carbon management and control" (Paterson and Stripple 2007: 163). Even when finance is provided to local communities, repayments may still be too difficult to manage, and the distribution of benefits is unequal (May et al. 2004).

Carbon is not the only environmental externality generated by industrial emissions; pollution created by such activity cannot be resolved purely through market mechanisms, nor can such mechanisms address the effects on local communities at the site of emissions. There are also other pollutants for which there are no market-driven solutions, and even when the idea of environmental justice is brought into discussions, poverty, race, and location can still determine whether businesses or communities pay the price (Lejano et al. 2020; Banzhaf et al. 2019). Carbon projects can result in the dispossession or disconnection of Indigenous and traditional communities from their lands, particularly if there is no recognized land tenure based on private property. Market-based approaches have largely arisen from the dynamic interplay between business, government, civil society, and multilateral financial institutions at a high (i.e., international) level, far removed from the realities of marginalized groups (Cabello and Gilbertson 2012). Given the known impacts of carbon offset projects developed under the CDM, it is disappointing that the PA only expects Parties to respect, promote, and consider human rights, and the language around Indigenous knowledge is equally weak, suggesting that it might be included in "socioeconomic and environmental policies and actions, where appropriate (UNFCCC 2015: 9), but only in the context of adaptation, not mitigation, where carbon markets are most active and where rights have historically been infringed (Olawuyi 2013).

In short, the prospects for a just and equitable distribution of both the benefits and costs of carbon markets still appear remote, and remain heavily weighted in favor of business and developed country economies.

Sustainable Development

One of the most fundamental aspects of the 1992 UN Conference on Environment and Development (UNCED) and Agenda 21 continues to be the promotion of market mechanisms as a means of delivering sustainable development (United Nations 1993). These include market-based initiatives such as carbon trading, explored here, as well as environmental labeling, payments for ecosystems services, and many more, the quality and legitimacy of which vary greatly (Cadman 2011; Cadman et al. 2015). Over the course of the 1990s, hopes for genuine sustainable development began to diminish in the face of rampant free-market neoliberalism, and the 2000 Millennium Summit and its declaration of the Millennium Development Goals (MDGs) 2000–2015, and now the Sustainable Development Goals (SDGs), can be seen as an effort to refresh

aspirations for poverty eradication and human development in the wake of decades of unsustainable development (Anstee 2013).

Nevertheless, ongoing efforts to normalize sustainable development continue to be made. For example, the societal impacts of development can now be evaluated via the International Association of Impact Assessment (Vanclay 2003). A methodology for assessing the impact of development actions and policies also exists, through the Transformational Change Methodology of the Initiative for Climate Action Transparency (ICAT), providing metrics and guidance for achieving synergies between sustainable development and climate action (see Initiative for Climate Action Transparency 2020). In the case of the ICAT, the guidance focuses largely on NDCs, rather than on the project level or credits generated via ITMOs.

Other policies also exist to safeguard sustainable development outcomes in the climate policy space that could be applied to the emerging global carbon market, such as the mechanism developed to channel climate finance arising from Parties' commitments under the PA, the Green Climate Fund (GCF), and its Environmental and Social Policy, based on previous policies of the Adaptation Fund. These were developed during the life of the KP, and stipulate the social and environmental requirements for national-level climate-related funding (Adaptation Fund 2013; Green Climate Fund 2019). The GCF requires initiatives to be "designed and implemented in a manner that will promote, protect and fulfil universal respect for, and observance of, human rights for all recognised by the United Nations" (ibid.: 7). It also has investment criteria that cover a range of issues, including demonstrating additional environmental and social co-benefits from projects, with indicators such as biodiversity conservation, access to education, and gender-sensitive development (Green Climate Fund 2019).

Article 6 is weak regarding sustainable development, and little practical guidance is provided as to how this should be operationalized, with reference only (Article 6.2a) to promoting mitigation and fostering sustainable development (UNFCCC 2015: 7). Economic transactions often bypass local communities and have few beneficial effects on local economies (Michaelowa 2011). Even though the SDGs have considerable scope for guiding the implementation of Article 6 (Olsen et al. 2019), they are not a formal part of the rulebook. At present, the risk exists that future carbon markets developed under Article 6 will not embed sustainable development and that the mistakes of the CDM, which never delivered effective sustainable development outcomes (Asian Development Bank 2020), will be repeated.

The Elusive Quest for Standards

A common set of agreed rules (standards), serving as a basis for promoting and demonstrating performance and ultimately certifying activities, has long been acknowledged as an attribute of sustainability, and dates back to Agenda 21 itself (Lammerts van Beuren and Blom 1997). Standards are required for reasons of objectivity and

to ensure that emissions reductions are recognized and accounted for. Consistent standards deliver a regulatory system with predictable mitigation outcomes, which reduces transaction costs. However, distributive justice is also required to ensure that benefits are distributed equitably to avoid the concentration of wealth and guarantee that carbon has the desired outcome of alleviating poverty, which has not historically been the case (see Aldred 2012; Carton et al. 2021; Pearse and Böhm 2014; Watt 2017). The sheer number of public and private mechanisms that have been developed since the flexible mechanisms of the KP as first conceived have been problematic for seeking a consistent approach, as a case study of the UNFCCC negotiations around reducing emissions from deforestation and forest degradation (known as REDD+) has demonstrated, and most notably around the governance arrangements for such mechanisms (Cadman et al. 2017). Despite intergovernmental requirements for full and effective participation of stakeholders (UNFCCC 2011: 24), how this is ensured has not always been clear. Some standards include requirements for settling disputes and resolving conflicts, while others do not; in some, recognition of such basic governance concepts as democratic decision-making are absent altogether (Cadman et al. 2017: 11). As a result, there has been much discussion around what is required to deliver an effective and legitimate mechanism for governing carbon markets (Edmonds et al. 2021; Greiner et al. 2019; Müller and Michaelowa 2019; Obergassel and Asche 2018; Schneider and La Hoz Theuer 2019).

At COP25 (Madrid, 2019) deliberations on Article 6 resulted in the San José Principles for High Ambition and Integrity in International Carbon Markets (Ministry of Environment and Energy of Costa Rica 2019). These were first discussed in the pre-COP meeting in Costa Rica earlier in the year and were brought into the late stages of the Madrid talks to avoid the complete breakdown of negotiations around Article 6, and have appeared in various iterations (Zwick 2019). While laudable, they confine themselves largely to ensuring that national commitments are sufficient to reduce emissions, ensure consistency in accounting, and avoid double-counting of pre-2020 credits, but are silent on such issues as human rights and FPIC. Nevertheless, they demonstrate that the international community is moving in the direction of a global carbon market with integrity, though it has not yet reached the destination.

Ensuring the Integrity of Carbon Markets

Developing effective market-based responses to combatting climate change, such as carbon offsets, as discussed above, faces a range of challenges. Even where standards exist, they can be incorrectly structured, leading to the assessment of limited sets of values, weakening related certification programs, making a comparison across schemes difficult, and impacting their quality and effectiveness (Lammerts van Beuren and Blom 1997: 38–39; Cadman 2011: 16; Cadman et al. 2016: 3–4). Even the very notion of integrity has been clouded by its specific use in the context of Article 6.

It is, therefore, necessary to situate the discussion regarding the global carbon market and offsets within a broader, systemic understanding of integrity and the values and institutional elements that underpin it. Consequently, a comprehensive framework for ensuring the integrity of the global carbon market is presented here.

In the institutional setting of the UNFCCC, the PA, and Article 6, a global carbon market must first have a public institutional justification (PIJ), that is, a clearly stated and known purpose (what that market is "for" vis-à-vis the institutional setting) against which its actions (i.e., the elements of the cooperative mechanism as depicted in Figure 1) can, if necessary, be called into question and explained (justified). Integrity in this broader setting is informed by three primary factors: consistency (activities are consistent with the PIJ); coherence (members' values and organizational arrangements are in accordance, or congruent, with the PIJ); and context (the broader, surrounding political, social, legal, and normative environment ensure that the institution acts in accordance with the PIJ). Together, these conditions deliver comprehensive integrity. This is a far broader, and more pertinent, understanding than the current narrow focus on the quality of offset accounting, and represents what is better conceived of as an integrity system (Breakey and Cadman 2016).

Any discussion regarding how comprehensive integrity is achieved in a global carbon market inevitably turns to how that system is governed, and the governance values that sustain it. Within the climate change regime, or regime complex (Keohane and Victor 2011; Pattberg et al. 2016), it is necessary to look at governance rather than simply government, since a broad range of state and nonstate actors, whether from the public, private, or civic sectors, have participated and continue to participate in this regime. Here, governance is to be conceived as encompassing the structures and processes used to steer, or coordinate, the interactions between stakeholder interests within, or affected by, a global carbon market. It is also important to distinguish between governing values, that is, the higher-order ethical values informing the steering or coordinating of the global market, and governance values, that is, those organizational arrangements that deliver the outcomes of these structures and processes. As with integrity, the more comprehensive those values, that is, the more they ensure meaningful participation and productive deliberations, the greater the degree of legitimacy. By contrast, focusing on a reduced set of values such as basic oversight (accountability measures, compliance, and reporting), or giving in to pragmatic realism (accepting the power imbalances and resource constraints inherent in the climate policy space) may get the job done, but it might also result in suboptimal outcomes (Breakey et al. 2016: 18–31). With these thoughts in mind, a conceptual framework of principles, criteria, and indicators (PC&I), informed by a selection of key policy documents and frameworks, is provided below. In this approach, fundamental rules and categories for evaluation are associated with parameters for assessment (Lammerts van Beuren and Blom 1997). The authors acknowledge the potential for hierarchical inconsistencies and omissions. They emphasize that the framework is of an indicative and conceptual nature and has not been subjected to the consensus-seeking and ap-

proval required under international standards (ISO/IEC 1996, 2004). Nevertheless, such principles must be applied to guide the possible evolution of carbon markets as Article 6 is implemented more concretely than it is at present, recognizing that problems have already been identified, notably between voluntary and compliance-based approaches (Gold Standard 2021b).

Table 1. Indicative framework of PC&I for carbon markets.

Principle	*Criterion*	Indicator
1. Effective compliance and voluntary markets for carbon and other greenhouse gasses, mechanisms, standards, projects, and other associated activities for emissions reduction	*1.1 Consistency with PA and other relevant agreements*	1.1.1 Emissions are reduced consistent with PA and other relevant agreements
	1.2 Meaningful participation and productive deliberation of all relevant stakeholders and rightsholders in the development, deployment, and verification of markets, mechanisms, standards, and associated activities	1.2.1 Stakeholders and rightsholders participate in deliberations associated with all initiatives and activities
		1.2.2 Stakeholders and rightsholders have a demonstrable impact on related outcomes
2. Safeguarding rights and consent	*2.1 Activities do not infringe rights*	2.1.1 Affected and interested parties have recourse to rights-based legal frameworks and legal avenues
	2.2 Where activities affect Indigenous people, Free Prior and Informed Consent (FPIC) applies	2.2.1 Evidence of FPIC
3. Monitoring, reporting, and verification	*3.1 Activities are reportable, accountable, transparent, and verifiable at the appropriate jurisdictional and organizational level*	3.1.1 Information is publicly available
4. Benefit-sharing	*4.1 Benefit-sharing mechanisms*	4.1.1 Benefit-sharing mechanisms are in place
	4.2 Measurable co-benefits	4.2.2 Activities generating additional co-benefits are in place
	4.3 Activities contribute to adaptation as well as mitigation	4.3.1 Evidence of adaptation benefits
	4.4 Community development	4.4.1 Benefits flow to communities at the point of activity
5. Avoiding double-counting	*5.1 Trading of emissions reductions across countries is used once and is canceled upon initial trade*	5.1.1 Evidence of cancellation

Table 1. Indicative framework of PC&I for carbon markets. (*cont*.)

Principle	*Criterion*	Indicator
6. Ensuring a just transition	*6.1 Activities contribute to a just transition from a high-carbon economy*	6.1.1 Evidence of post-carbon employment consistent with the preamble to PA
7. Credible emissions reductions via offsets	*7.1 Offsets support high ambition in NDCs*	7.1.1 Evidence that offsets do not replace high ambition
	7.2. Organizations reduce emissions before using offsets	7.2.1 Evidence of emissions reductions before the use of offsets
	7.3 Offsets are used if an alternative abatement action is not available	7.3.1 Evidence that no abatement action is available
	7.4 Offsets avoid calculations based on future predicted emissions reductions and associated technologies	7.4.1 Evidence that offsets occur in real time
	7.5 Nature-based solutions used as offsets have a positive conservation and biodiversity benefit	7.5.1 Evidence of conservation and biodiversity benefits
	7.6 Nature-based solutions used as offsets constitute no more than 10 percent of an organization's operational emissions reduction	7.6.1 Provision of emissions reduction reports
8. Emerging emissions-reduction technologies and negative emissions technologies	*8.1 Governance systems are in place before deployment*	8.1.1 Evidence of governance systems

Sources: Science Based Targets Initiative (2021); *Voluntary Carbon Market Integrity Consultation Feedback Report* (2021); Seymour and Langer (2021); Carbon Market Watch (2020); Allen et al. (2020); Oxford Geoengineering Programme (2018); Cadman (2012).
Note: verifiers are not included.

Carbon Markets in the Wake of the COVID-19 Pandemic

COVID-19 has impacted economies across the planet. Previous economic shocks have affected carbon markets and prices, as demonstrated by the 2008 global financial crisis (Koch et al. 2014). Interestingly, carbon prices have increased during the pandemic, particularly in the G20 countries (Organisation for Economic Cooperation and Development 2021). This may be due more to the maturity of the carbon market, even if it is still undergoing teething troubles. Initiatives such as the Glasgow Financial Alliance for Net Zero (GFANZ) (2021) have also contributed to momentum and provided increased confidence. However, it remains possible that the increased levels

of international cooperation engendered by the crisis, along with the societal changes it has brought about, may enhance sustainable development (Rume and Islam 2020). Some commentators have warned of the dangers of "revenge emissions" as economies bounce back, and air travel and driving to work increase (Hannam and O'Malley 2020). But there may be cause for optimism. Public spending on recovery initiatives appears to have been influenced by concerns about climate change and the need for action (O'Callaghan and Murdock 2021).

Conclusion

COP26 was both a success and a failure (Arora and Mishra 2021; Smith et al. 2022). On the one hand, for the first time, coal and its impacts on climate change were acknowledged in the outcome statement, but regrettably, due to a last-minute intervention from India, this was in the context of a "phasing down" rather than the hoped-for phasing out (Vaughn 2021). The agreement reached on Article 6, after protracted and contentious negotiations, will have a long-lasting effect on the emerging global market for carbon, even if there are still obstacles (Rajamani and Bodansky 2019). The most urgent task in securing the integrity of developments post-COP26 remains to ensure that the focus of the new mechanisms continues to be on reducing emissions, especially from fossil fuels. Efforts to secure the credibility and transparency of accounting of NDCs—because Parties (i.e., nation-states) have the most power in the climate policy space—will be critical in avoiding market failure. But so too will regulating voluntary markets. A plethora of principles exist for carbon trading and emissions reductions, but these remain largely aspirational and need to be tied to concrete standards if the carbon market is to function legitimately.

The heuristic implications of this article are twofold. First, to help guide state and nonstate actors achieve the necessary reduction of CO2 emissions in the post-COP26 period, the integrity system and related standard presented here seem rational. Second, and beyond the rational logic of adopting such an approach, the root causes of the current crisis and the processes guiding collective action into the future need to be explored and understood in far more detail than at present. In addition to the "what if" scenario-based reports of the Intergovernmental Panel on Climate Change (IPCC), understanding why humanity has taken the planet to this point is essential. In other words, ontological assumptions and epistemological methods for realizing the framework proposed here are required.

The reflections contained in the double themed issue on the societal impact of COVID-19 immediately prior to this volume explored the intellectual contribution of the social quality approach and its four societal dimensions (sociopolitical/legal, socioeconomic/financial, sociocultural/welfare, and socioenvironmental/ecological). Societal circumstances determine the nature of the impact of COVID-19, and understanding these circumstances requires an exploration of all four dimensions of societal

life (Nijhuis and van der Maesen 2021). The same may be said for the production systems causing CO2 emissions. The hegemony of neoliberal politics and economics (and their causes and consequences) conflicts with the scientific understanding of sustainability ("Editorial" 2012; van der Maesen 2019). The regulation of carbon markets without a deep understanding of sustainability is a contradiction in terms, a product of that hegemony and its attendant outcomes on the climate. The central elements of this article therefore provide pointers as to how the social quality approach might be applied for a better understanding of the post-COP26 period and the global climate emergency.

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