

## **Chapter 5**

### **The Controversy of Voluntary Carbon Offsetting**

#### **Compliance by Proxy**

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#### **Introduction**

In the introduction to their edited volume *Standards and Their Stories* (2009), the STS scholars Martha Lampland and Susan Leigh Star recount an anecdote where an American has moved to the Netherlands and tries to sort out her taxes by making an appointment with a US tax preparer. In order to schedule the appointment, the officer that she speaks to requests a phone number, something which the client does not have at the time. As a work-around, she asks if it is okay to give him a random number and ends up stating the sequence of numbers from 1 to 7. The computer — and the officer — readily accepts these and everyone is happy.

Lampland and Star use the anecdote as an example of the way standards have become ubiquitous in social life. What I find particularly interesting — and relevant for the case I am about to present — is the apparent randomness involved in determining what is to be reported in order to proceed with the request to set up an appointment. The content and meaning of what the numbers should represent is irrelevant. Only the form — seven digits — matters, which makes compliance all the easier.

Contemporary western societies in particular have established myriad standards, sets of rules quantifying, classifying and formalizing practices which align diverse factors and expectations and embed them, for example, in sociotechnical infrastructures — from the functioning of clocks and maps to detailed sizes of bolts and screws. But some things are more

difficult to standardize than others. There is a difference between how a bolt can be compliant, because it is manufactured to fit a specific hole, and how a social actor can be compliant with a social standard meant to govern practice. In some sectors, there is a corresponding distinction between ‘compliance’ and ‘conformance’ (e.g. Applied Engineering 2021). Given the broader definition of compliance espoused in this volume arguing that compliance is about the ways that social actors accommodate themselves to the complicated expectations of collective life, the editors then urge anthropology to engage with the “acts or activities that conform, submit or adapt to rules or to the demands of others” (Rollason and Hirsch 2021: 1). Micro-sociological or ethnographic observation of social interaction may easily identify rules and compliance (or non-compliance) with rules in everyday life such as the example mentioned by Lampland and Star, but far from all attempts to live up to standards are as easily circumvented as the bureaucratic seven-digit format. Nor do all standards (such as seven digits) capture the intention that put them into being (such as a phone number). Compliance becomes all the more complex when we are talking about rules or norms that relate to abstract sociotechnical constructions and institutions such as markets, states, organizations or, for the case I want to scrutinize, *carbon offsetting* as a practice related to market-driven attempts at mitigation of global climate change. These institutions are all examples where different rules and standards intersect and may in the end contradict each other. For example, while companies or individuals engaging in carbon offsetting attempt to comply with a moral or legal norm of not being responsible for greenhouse gas emissions, they could simultaneously be attempting to comply with disparate but mutually entangled norms such as corporate social responsibility, sustainable development goals or simply the maximisation of their shareholders’ assets. When compliance furthermore refers to actions or behaviour that have consequences not directly observable by the complying actor, then

determining what counts as compliance becomes increasingly difficult. It is then often governed and assessed indirectly, for example by standards that work as *proxies* — forms of agency that act (in this case ‘comply’) in the place of something else; substitutes for that which they are supposed to represent. In as much as seven digits *may* represent a phone number, they will not always do so, and many actors (including technical actors, such as the computer) will not know the difference.

One specific challenge for proxies, then, is that they depend upon an often elaborate labour of justification in order to be accepted as ensuring compliance to a specific rule (see Boltanski and Thevenot 2006). In this chapter I will discuss this labour of justification, which for the case of offsetting itself is resonant with neoliberal market capitalization and entrepreneurial interpretation of environmental action (Ehrenstein and Muniesa 2013: 163). I will also touch upon the resistance, which emerges when actors in the Global North (here exemplified by Danish private and public sector organisations) try to take responsibility for their own carbon emissions through carbon offsetting. Such an actor’s decision to engage in offsetting may result from attempts at complying with both international climate agreements as well as public moral and political norms. As sociologist Anders Blok has pointed out in an analysis inspired by Boltanski’s and Thevenot’s work on justification (2012), offsetting in this way involves numerous ‘orders of worth’, or what anthropologists would perhaps term ‘value systems’. The two obvious value systems here are climate agreements on the one hand and on the other hand public norms of being a climate sustainable business. Both become mobilised in attempts at being legally and/or morally compliant with making greenhouse gas emission reductions or becoming ‘carbon neutral’, but other values become relevant when asking how this neutrality is achieved.

If the main rule or norm that an actor engaged in offsetting tries to follow is that they have to become carbon neutral (whether for legal or moral reasons), then the majority of actors (governments, industries, organizations and consumers) in the Global North face the challenge that they cannot or will not reduce their emissions to the extent that they comply with the established scientific goals associated with this rule. That is, they cannot stay within ‘planetary boundaries’ (cf. Steffen et al. 2015), nor are they even close to complying with the goals of the 2015 Paris Agreement (Orange 2021; Kristiansen and Bæksgaard 2022). For this reason, offsetting is seen and presented as an alternative way of being climate compliant. It works through proxies despite the criticism from numerous scholars arguing that it is impossible to comply through proxies, either in theory or in practice (e.g. Lohmann 2011). Compliance via offsetting is instead regarded by critical scholars as a compliance of form rather than content, where the ambiguities of constructing an actor as carbon neutral or being ‘net zero’ through offsetting are essentially ignored. Carbon offsetting has consequently been seen as a matter of ‘performativity’ and ‘display’ (Callon 2009; MacKenzie 2009; Ehrenstein and Muniesa 2013) or from an even more critical point of view it has been accused of working as an aesthetic, an ‘economy of appearances’ (see Tsing 2005) or a ‘spectacle’, which in order to produce the offset may hide or perpetuate dispossession, evictions, human rights abuses or outright violence against local populations (Cavanagh and Benjaminsen 2014).

In this chapter I will go over some of the labour of justification behind offsetting, and I will illustrate the challenges and disputes involved in determining what comes to count as a proxy, and how it is produced. The basic assumption behind offsetting is that an emission in one location can be balanced by removing or reducing an equivalent emission in some other location.

The labour of justification then requires that this equivalence can be proven to exist ‘in reality’ and not just as a number in a digital account. In other words, how can it be demonstrated that ‘the seven digits’ really refer to ‘a phone number’, when you cannot call the phone to verify its existence?

The structure of the chapter is as follows: I will first elaborate on the notion of offsetting and especially voluntary offsets and their challenges. The empirical material which I will present is primarily derived from secondary ethnographic sources, industry reports and news articles. It allows me to discuss the difficulties of ensuring ‘real’ emission reductions in voluntary market designs and their products. I focus especially on how evidence of emission reductions and thus compliance has come to coalesce as ‘standards’ and ‘certifications’, which are enacted through numbers, and sold as services to businesses seeking to become carbon neutral. This format of emissions reduction is more concerned with justification than accurate correspondence between emissions and their reductions in the physical world on the one hand, and their representation in the form of a carbon offset within the market on the other.

### **What Are Carbon Markets and What is Offsetting?**

Roughly speaking carbon markets come in two kinds. One is referred to as regulated or compliance markets working through a ‘cap and trade’ model, the other as unregulated or voluntary markets.<sup>1</sup> *The compliance markets* such as the European Union’s Emission Trading System (ETS) from 2005 obliges industrial actors to keep their emissions below a government-specified cap. In these markets, a number of free carbon allowances have hitherto been assigned

based upon the cap allocated to each industry. That is, industries have been allowed to pollute up to a certain point. If the industrial actors emit less than the cap permits, then they can sell their extra allowances, whereas they are required to purchase extra emission allowances to cover the gap if they emit more. They can either buy allowances from actors that remain below their cap or buy carbon credits outside the compliance market from projects certified through one of the market mechanisms established by the 1997 Kyoto Protocol (e.g. Corbera et al. 2009). In other words, if for example a factory is not willing to scale down their production and thus their pollution, they can comply by paying another polluter to scale down instead (if this polluter pollutes less than it is allowed to and will sell its leftover allowances), or they can comply indirectly by paying someone to remove an equivalent amount of greenhouse gas from the atmosphere. Compliance in compliance markets is thus evidently rule-bound and enforced through international laws and courts, and non-compliance is sanctioned with fines.

*The voluntary markets* have been presented by their proponents as a key instrument to ensure climate change mitigation within sectors not covered by the compliance markets, and there is currently a strong push from financial corporations to include voluntary offsets as part of the solution to the Paris Agreement (e.g. Blaufelder et al. 2021; Streck 2021). Offsetting in voluntary markets involves — as the name indicates — a voluntary ‘payment’ to a third-party retailer that promises to deliver or ensure an emission reduction or avoidance conducted by someone else. Here, carbon credits are not assigned based upon a cap but produced through human actions organised in what are referred to in the sector as ‘projects’ (Ehrenstein and Muniesa 2013: 165). That is, they refer to emissions that are removed, reduced or avoided at a specific time and location through discrete, planned activities under circumstances that can be accounted for. A project might involve an NGO reforesting degraded land, for example, or

working with a specific community to replace inefficient and carbon-intensive energy sources like wood or kerosene with a less carbon-intensive alternative such as biogas. I will elaborate on the making of such projects and their requirements as I go along. However, because of the voluntary nature of engagement, what ‘compliance’ means in the voluntary markets is still much more indeterminate and vague than in cap and trade schemes. Most importantly, there is — today — no strict law or ‘rule’ forcing those engaged in voluntary offsetting to be carbon neutral, so what it means is often open for interpretation. An offset may be bought as a compensation for one’s own emissions, or it may be bought on behalf of someone else. It may also simply be given and seen as a donation to the climate rather than a payment.<sup>2</sup> By being a voluntary compliance to a moral norm (whether as corporate social responsibility, brand reputation or personal ethics or feelings of ‘guilt’) rather than a strict rule enforced through sanctions, it thus fits the liberal Miltonian ideal of the actor being compliant *out of free will* (see Rollason and Hirsch 2021).

This does not mean that the voluntary markets are without rules. Since voluntary carbon credits are generated by projects, then information about the actual emissions avoided, removed or reduced by a project require verification or validation according to standards (i.e. rules). These standards are described by market actors as ‘independent’ in the sense they that they are not government regulated and actors are free to choose between them. They are instead created by partnerships between NGOs and corporations. Typically, they and their methodologies can be purchased as services in the same way that independent auditors or accountants can be paid to validate the tax reports of a company. Each of the standards involves its own methodologies and guidelines for how to assess and verify the emission reductions of a specific project.<sup>3</sup> Given that the verifications themselves comprise a market, companies that produce voluntary carbon credits

are free to choose which standard to follow, although the more respected standards will guarantee a higher price for the credits produced.

Compliance markets are more strictly audited than voluntary markets, yet credits may also here be produced through projects, for example through the Clean Development Mechanism (CDM) — a scheme allowing for emissions trading based upon emission reduction projects in the Global South. Credits for compliance markets count towards national targets and the projects that produce them therefore require certification based upon rigorous methodologies that include monitoring, reporting and verification mechanisms (see Lovell and Liverman 2010). Voluntary markets are instead used by individuals, companies, or government entities themselves choosing to offset some or all of their emissions (e.g. transportation or electricity use). Credits meant for compliance markets can be accepted within voluntary offsetting (for corporate social responsibility purposes for example), but not the other way around, even if voluntary markets also involve not only buyers and suppliers of offsets, but frequently also brokers, investment banks, third party verifiers, and digital registries, which facilitate the transactions and claim to guarantee the reduction. In both types of market, offsetting involves purchasing and ‘retiring’ a certificate that claims said reduction has been (or will be) achieved elsewhere.

Voluntary offsets appeal as mentioned above to those who find it difficult to be directly compliant with the moral obligations of reducing their own carbon footprints. As a way to compensate for one’s emissions by paying for an equivalent or commensurable reduction or avoidance of emissions elsewhere, carbon offsetting has been marketed as an easy, quick and cost-effective alternative to direct emissions reduction, especially in business circles (e.g. Lovell et al. 2009; Watt 2021). In the words of the activist scholar Larry Lohmann, carbon offsetting



companies have offered “the spurious commodity of ‘carbon neutrality’ to individual consumers” (2008: 363) as well as to corporations in ways that mask the historical and systemic overconsumption of resources in the Global North and construct some of this consumption as ‘unavoidable’ (see also Ervine 2012). Instead, offsetting companies propose that climate change is a moral burden, which individuals and corporations may engage in to act as altruistic agents, because they freely compensate for the so-called unavoidable parts of the emissions they are responsible for (ibid.). Complying with emission reduction obligations indirectly through offsetting is, however, not as easy as it may sound. Offsetting in theory promises an almost endless repertoire of alternative ways of reducing emissions, due to the commensurability of carbon as a value form (Dalsgaard 2013, 2016). It is nonetheless difficult to identify what exactly generates emissions (and how much), how emissions are affected by specific human and non-human actions and influences, and thus how they can measure up against standards. All this has been the object of technoscientific, economic and political dispute for decades (e.g. Lohmann 2005; Bumpus and Liverman 2008; Lovell and Liverman 2010; Ervine 2012; Dalsgaard 2013; Lovell 2014; Bracking 2015).<sup>4</sup>

### **Standards and Certifications**

On the surface, the standard — or the network of different interrelated standards — seems straightforward. One tonne of carbon dioxide equivalent (1 tCO<sub>2</sub>e) is in theory the same everywhere just as seven digits is seven digits everywhere. Yet despite this standardisation, offsetting is inherently ambiguous. Firstly, the different greenhouse gasses have different impacts and although their ‘global warming potential’ (GWP) has been calculated and

generalized in order to make them commensurable through the CO<sub>2</sub>e (e.g. Bumpus 2011), they are still difficult to compare, because the GWP is calculated based upon the radiative forcing of different gasses and depends upon numerous factors such as “the absorption bands of the gas, its lifetime in the atmosphere, its molecular weight and the time period over which the climate effects are of concern” (Houghton et al. 1990: 45, cited in MacKenzie 2009: 445). As with many forms of scientific generalizations the GWP covers over significant uncertainties (see Shackley and Wynne 1997), and the GWP of some gasses (hydrofluorocarbons, HFCs) have subsequently been adjusted (MacKenzie 2009: 446). Secondly, the decision as to which time period is ‘of concern’ means that GWP is also a political and therefore somewhat arbitrary estimate<sup>5</sup>. Thirdly, research by Norwegian environmental scientists documented, not long after the market mechanisms of the Kyoto Protocol were outlined, that it *does* make a difference when and where greenhouse gases are emitted, because they have higher impact where the atmosphere is thinner (Berntsen et al. 2006). Other researchers have more recently argued that there is an asymmetry in effect between emissions emitted and emissions removed meaning that an emission cannot simply be offset by an equivalent removal (Zickfeld et al. 2021). Lastly, the actions that lead to emissions — whether these are carried out by human or non-human agents — are fundamentally embroiled in a diversity of political, social or economic values and priorities such as the time periods already mentioned (e.g. Dalsgaard 2013). In other words, even if there are digits that really represent ‘a phone number’ here, the number may consist of more or less than seven digits, or it may even connect to something other than a phone.

Disregarding for the sake of argument all these problems with CO<sub>2</sub>e as a standard, for an offset to really ‘count’ and be valuable not just as a symbol in a moral economy but towards actual climate mitigation, it must first of course be established that there is an equivalence

between that which needs to be offset, and that which does the offsetting. Since emissions in themselves are difficult to capture physically and transport to the buyer despite new innovations in ‘carbon capture and storage’ technologies, what one buys is the promise that the labour of not emitting or reducing an emission is being conducted elsewhere. Typically, as mentioned above, this is achieved through a project, which for example installs renewable energy (windmills or solar panels), establishes forest conservation or reforestation, or provides more energy efficient technologies such as ‘clean cookstoves’ that reduce the need for firewood or other fuels. Very few buyers of offsets witness the making of these emission reductions directly such as, for example, the effect biogas cooking stoves provided to rural villagers will have on local wood-gathering practices, class relations or actual climatic effects (Lohmann 2008: 362).

Consequently, a host of certifying or verifying agents, middlemen and digital infrastructures have emerged to establish this equivalence, and to sell the resultant reduction in CO<sub>2</sub>e as a commodity<sup>6</sup>.

Thus like many other commodities, carbon offsets are labelled with certifications or verifications as a form of guarantee that their content lives up to the standard claims made on the package. When producers cannot be trusted, independent verifiers step in and guarantee products through standardised methodologies that involve practices of verification and certification. The certifications form a key aspect of the labour of justification, and they have themselves become commodities that claim to ensure the value of a carbon offset. There are today several standards, certifications and verifications. Some are stricter than others. One case in point is the Certified Emission Reductions (CER) — “a unit of greenhouse gas reduction that has been certified by an independent auditor” (Knox-Hayes 2016: 10). These are produced under the CDM, and they may count in compliance markets. Another notable unit is the Verified Emission Reductions (also

sometimes ‘Voluntary Emission Reductions’), which can be verified through independent third parties referring to voluntary market standards such as the Gold Standard, the American Carbon Registry, or the Verified Carbon Standard. These are all non-profit organisations funded by fees from consultation, registration and verification of credits. As mentioned above, the voluntary markets have for many years been more informal (focusing on ‘side-benefits’ and lower transaction costs), and they have allowed for a wider range of methods of verification (Lovell and Liverman 2010: 258). For these standards and their verifications, then, the focus is on the efficacy of emissions reduction projects and to a lesser extent on the governance of industrial emissions, which is the dominating issue in the compliance markets (Lovell and Liverman 2010: 260). From the reading of existing methodology guidelines published by the Gold Standard<sup>7</sup>, it is nonetheless my impression that the latter claim to be increasingly ‘rigorous’ and ‘robust’. While these terms are undoubtedly intentioned as rhetorical ploys aimed at generating confidence, they also indicate the growth of elaborate methodologies meant to ensure the credibility of credits, while still retaining a direct link to the specific projects and the ‘side-benefits’ they claim to deliver in terms of poverty alleviation, public health etc.

Despite — or perhaps because of — the language of rigour and robustness, carbon offsetting certifications rely on principles or rules that in themselves are hard to establish or comply with. One is leakage — that the actions responsible for the emissions do not move elsewhere as a result of the emission reducing project. This is often difficult to ensure because of the lack of control over what happens outside the territorial boundary of a project. Another is permanence — that the reduction is not limited in time, such as a forest which must be allowed to continue to exist even after the project period ends. Finally, there is the challenge of additionality, an emission reduction represented by a carbon credit that is *in addition* to what

would have occurred without the funding stemming from sale of the credit. This is assessed from a baseline of what is expected to have happened if the project had not been in existence.

Where offsets rely on additionality they are precisely criticized for being a mere reflection of what the baseline was decided to be. The baseline — the expected reality without the project — can be referred to as a counterfactual, because it is presented as a single imagined parallel reality among multiple theoretically possible realities. By definition, it is a scenario which it is difficult to prove would otherwise have occurred, yet becomes readily accepted in these valuation schemes (see Lohmann 2009; Ehrenstein and Muniesa 2013; Knox-Hayes 2016: 208-10). This counterfactuality underwrites the argument that offsetting is a market which depends for its functioning on “the circulation of virtual representations rather than simply on the production and sale of tangible goods or services” (Cavanagh and Benjaminsen 2014: 62); a market where digitized units of information are detached from the complicated material reality these units claim to represent (e.g. Lohmann 2011; Knox-Hayes 2016).

While the virtual representations are detached from local material realities, there is a paradox in the sense that many of the offsets are still marketed for their ‘extra’ value of contributing to local social sustainability in the places where the emission reductions are produced (Lovell et al. 2009; Ehrenstein and Muniesa 2013). Offsetting depends upon a labour of commensuration of diverse actions and events into a common register of what something ‘costs’ in terms of carbon emissions as an abstract value standard (MacKenzie 2009; Dalsgaard 2013). However, the offset market also performs a parallel effort of differentiating credits based upon how much specific and local ‘good’ they claim to perform in the world (Dalsgaard 2014). This could, for instance, be to market a carbon credit generated by a ‘clean cookstove project’

with reference to the benefits it may have for human health or a forestry project for its benefits for biodiversity. Whereas, for example, organic products involve both the purchase of a thing, and an assurance about that thing (cf. Parker 2021: 46), what is bought by the individual consumer of offsets, or the business trying to comply with obligations of reducing carbon emissions, is not even a thing, but a guarantee that a given reduction will be delivered. It is the promise that there *is* a phone number — but not the actual phone number itself.

### **Making Proxies**

The main point I want to make is not about the effectiveness (or not) of offsetting or carbon trading per se, but about the more general problem of how different forms of action come to balance themselves out against each other to create ‘neutrality’. It makes sense, in other words, to speak about two proxies that need to be aligned. For this to happen, the actors involved must be in compliance with a number of elaborate norms and rules — some very general and a lot more being quite specific. Since these actions are rarely identical, they rely on standards and proxies to allow for them to become constructed as equivalent or commensurate. This is where I will dwell on the labour of justification, which is necessary to construct proxies as objects that can stand as legitimate representations of the emissions and non-emissions that need to be commensurate to each other.

The two different proxies that need to be aligned are determined in two different settings. The proxy in the first setting refers to what an actor needs to establish in order to know what is to be reduced, and by how much, in order to comply with moral obligations of making emission

reductions. In other words, what are the actions that need to be avoided or scaled down? And how much CO<sub>2</sub>e are these actions then worth? However, given that these actions are — rightly or not — thought to be ‘unavoidable’ as pointed out by Lohmann (2008), and that reducing or scaling them down is therefore ‘impossible’, it is necessary then to find, in a different setting, a second proxy. This second proxy must be equivalent in terms of CO<sub>2</sub>e to the first proxy, which can then be purchased to negate the first one. This second setting is where the offsetting project commodifies an amount of carbon, which acts as the second proxy.

When it comes to the first proxy of producing a set of actions that need to be avoided or compensated for, the STS-scholar Ingmar Lippert (2018) presents two examples of how this took place in the corporate settings, where he conducted ethnographic fieldwork in the late 2000s. His work exemplifies how the environment or the climate becomes known and comes into being through techniques and technologies including data, information, algorithms, reporting and much more. A corporation’s ‘carbon accounting’ firstly had to produce a number (an amount of GHG emissions measured in tons), and secondly had to identify actions that could stand in for those emissions. In narrating how the number proxy was produced in one corporation, Lippert points to how it was a senior engineer (identified as a ‘novice in environmental accounting’) who constructed the number by filling out a ‘task form’ through the use of inferences, extrapolations and calculations. These mathematical techniques functioned as a workaround, for example by drawing upon costs of flights and average distances to calculate the total amount of emissions from flights. Apart from relying upon a range of assumptions about the ways that costs and distance relate to each other, the engineer’s calculations effectively ignored details that would have made a difference in terms of actual emissions (e.g., according to standard conversion factors, short-haul flights generate higher emissions per distance travelled than long-hauls). It

even turned out that what were thought to be the costs of flights had included costs for items such as restaurant visits, taxis, visa fees and more. This was solved by the engineer adding a new inference (identifying a factor by which the costs of flights could be reduced). The end result was an ‘employee footprint’, which was presented as a number that could be acted upon (allowing for reductions), but not one that would correspond to ‘a real phone number that one could call’. Yet, it did not have to be accurate let alone correspond to a real number in order to allow for climate offsetting (cf. Mitchell 2008: 1118). Climate change and environmental accounting have thus posed new problems to corporations (see Bowen and Wittneben 2011; Lovell 2014). However, a number of protocols and standards have since been developed to more accurately assess emissions within different organisational fields, including ISO standards for the quantification of emissions, or for the carbon footprints of products. Although the standards are more elaborate than what Lippert’s informant produced, they still rely on proxies.<sup>8</sup>

The second proxy — the emission reductions allegedly generated by a carbon offsetting project — also consists of a number of actions and events that stand for an amount of CO<sub>2</sub>e, but here it is of course emissions reduced or avoided. How they are determined is described for example by the STS-scholars Vera Ehrenstein and Fabian Muniesa (2013). Based upon Ehrenstein’s ethnographic fieldwork with a carbon reducing reforestation project in the Democratic Republic of Congo, they demonstrate the construction of the carbon sequestration *potential* of the project through the calculation of the difference in emissions between what the project initiator *expects* will happen with the implementation of his project, and what he argues *would* have happened in absence of the project. In this case, the project was based upon a tract of land which the project developer argued would remain degraded and possibly even continue to degrade in terms of forestation if the project did not bring human intervention (ibid.: 170). This



calculative labour of justification is written into a 'Project Design Document' (PDD), which is the main tool through which the value of the offsetting is established. The PDD is where the counterfactual baseline which I mentioned above is presented. This counterfactual written into the PDD relies upon both temporal (years of duration) and territorial (geographical coordinates) delimitations of the project, a reference (would-be) scenario, and a calculated estimate of the amount of carbon credits that the project can produce within these parameters. The PDD must also describe the context of the project's implementation including the project participants and their characteristics, the technologies deployed etc., which is itself a political identification of the human and non-human agents involved. An independent auditor then carries out a validation of the project based upon the PDD's contents (including baseline, methodologies, calculations, financial estimates, feasibility studies, impact assessments etc.). Once validated, the PDD is then the reference point for subsequent implementation, monitoring and later verifications. For the project analysed by Ehrenstein and Muniesa, the activities of making the number of the proxy first involved four potential scenarios, one of which was selected as the baseline (the most plausible scenario in the absence of the project). In the PDD, the project developer then had to quantify the expected carbon stock to be gained through the project, that is a quantification of something that did not yet exist. This required the construction on paper of a 'virtual forest' reduced to names of different species and their theoretical properties regarding biomass, growth rate etc. (ibid.: 175-77). As with the example discussed by Lippert, this was again done via proxies and was achieved by following yet other rules or standards. To quantify the carbon stock (the expected annual growth of biomass of the trees), the PDD in this project referred to default standard values such as biomass expansion factors for the species in question (eucalyptus and acacias), the standard density of the wood of these species, and their standard carbon fractions

(ibid.: 177). Ehrenstein and Muniesa refer to the result as a counterfactual display, because this labour produces credits that can be sold, but the actual greenhouse gasses have yet to be sequestered. The proxy here then seems to consist of *potential* non-emissions rather than actual existing reductions.

### **Relying on Proxies for Compliance**

Many economic calculations of everyday life rely on counterfactuals more or less formally (e.g., ‘if I don’t buy this, then I can buy that instead’), but when offsetting projects are scrutinized it becomes clear that the proxies that they produce are sometimes empty representations. In January and February 2020, Danish investigative journalists from the national newspaper *Politiken* published a series of critical articles under the tag ‘the climate fraud’ (Danish: *klimabedraget*). The purpose of the articles was to shed a critical light on the use of carbon offsetting in Denmark (Danish: *klimakompensation* or ‘climate compensation’), and to reveal fraudulent cases. In addition, the articles exposed the uncritical stance towards offsetting mechanisms taken by several Danish companies and past Danish governments, in their efforts to reduce greenhouse gas emissions and comply with emission reduction targets. The articles demonstrated that the use of offsetting in Denmark had increased significantly during 2019 and that offsets were purchased by several public and private actors, small and large. Most critically, the journalists tracked specific carbon offsets bought and sold by Danish offsetting companies, and they proved that the effect of several of these emission reduction projects, funded with the offsets by Danish companies and in some cases by Danish government institutions, were of a

dubious nature. Some — the cleanup of waste from a coalmine in Ukraine; an alleged forest in Uganda that had never been planted; and the reselling of ‘retired’ (i.e., used) credits through financial mechanisms — even seemed to be clear-cut scams (Skjoldager et al. 2020a, 2020b, 2021). The Danish journalists also visited Kenyan villages where an English company named CO2balance had distributed so-called ‘clean cookstoves’ (Skjoldager et al. 2020c). Used properly the cookstoves could — according to tests referred to by the company — reduce the use of firewood by 50%. Yet, the cookstoves were rarely used, because they were not designed for the types of cooking the Kenyan villagers were doing. Despite the reported non-use of the cookstoves, CO2balance had sold carbon credits in the voluntary markets — including to Danish vendors and organisations — amounting to more than 233,000 tons of emission reductions. Confronted by the journalists, CO2balance maintained that they strictly followed the guidelines of the Gold Standard by collecting surveys about use, making counts of wood consumption, and interviewing selected users. None of these verification activities could be confirmed by the journalists upon their own visit to the villages, where only few of the villagers knew that they had taken part in an offsetting project. Based upon readings of the project methodologies and results, academics consulted by the journalists likewise found the reductions claimed by CO2balance to be unrealistic, and it rather confirmed long-term research that has failed to identify any substantial effects of the new cookstoves (e.g. Hanna et al. 2016; Lampe et al. 2020).

While many voluntary offsets may be useless in terms of the emission reductions they promise, but cannot deliver, one could argue that they do not do any direct harm either. In the absence of an offset opportunity the potential buyer of an offset would probably not have reduced their own emissions anyway. However, the problem with some of the other offsets

discussed by the *Politiken* journalists was that some of them had also been allowed to count within the compliance markets. For example, the large Danish energy supplier Ørsted tried to meet the limits of their cap by buying credits from a coal mine project in Ukraine through the European Union's carbon exchange. The reductions claimed by the coal mine came from the removal of black coal from mountains of mining waste that carried a risk of self-ignition. The coal was then sold by the mining company for a profit and used by energy companies. However, the risk of self-ignition was, according to independent experts, highly exaggerated, with the result that the offset thus likely paid for an increase in emissions from the mine, and in addition the amount of 'cleaned up' coal was also boosted by counting coal from the regular mining extraction (Skjoldager et al. 2021).

Not all offset projects are as dubious, but they point to weaknesses in the market that offers compliance by proxy. The offset is produced far from the agent in need of compliance, and while legitimate offsetting may exist, even carbon market proponents admitted at one point that 20% of the offsets on the voluntary market were not 'additional' and the reductions they represented would have happened in the absence of the offset (Sneyd and Shopley 2009: 84). A critical study conducted for the European Commission has more recently assessed that non-additional offsets may account for as much as 85% of the market (Cames et al. 2016).

Proponents of carbon markets may claim that scams or inaccurate accounting are unfortunate side effects with reference to a narrative that posits markets as experiments (see Callon 2009), and proponents in the financial and offsetting industry (e.g. Streck 2021) maintain their optimism simply by continually calling for more robust and rigorous standards, even if there is already a multitude of different standards available. Yet, offsetting has continually been shown to be problematic by both academic and activist critiques — from indulgence accusations to neo-

colonialism (e.g. Agarwal and Narain 1991; Smith 2007; Lohmann 2008; Dalsgaard 2022) — and it is hard to imagine that these can be fixed by simply adding more rules and standards which again would demand additional assessments of compliance

The *Politiken* articles demonstrated how attempts to comply with moral and political pressure ‘to do good’ through proxies resulted in a public humiliation and backlash for many of the companies involved and especially for the vendors. The articles gave rise to accusations of greenwashing and brought about an increased focus on the problems of carbon offsetting with some of the smaller and more insecure Danish companies today instead doing ‘greenhushing’ by apparently underreporting rather than overreporting how ‘green’ they perceive themselves to be, and how they try to achieve emission reductions.

The controversy illustrated how easily consumers and corporations are led to go along with and possibly even trust the labour of justification embodied by certifications and the companies that sell them, even when it turned out that it was fairly easy to make scams, and despite the critical journalists easily unravelling some of the least robust attempts at generating offsets. What Danish companies tried to comply with has elsewhere been termed a fantasy (Watt 2021), or a mere ‘appearance’ (Cavanagh and Benjaminsen 2014). When they could not (or would not) comply with the moral norm directly, they had could choose to comply indirectly through an accounting proxy, which was highly uncertain and technically difficult to verify, but proved very convenient until it was exposed.

What I find interesting here is on the one hand the ‘spectacles’, ‘appearances’, ‘performances’ or ‘displays’ of constructing proxies as a labour of justification, but also on the other hand how the making of proxies entails the interconnection of different forms of compliance. Compliance to methodologies that construct a would-be singular reality out of

multiple possible realities is translated into another form of compliance of living up to goals of reducing emissions in a completely different context. The interconnectedness of the different forms of compliance can become problematic not merely because one rule might be slighted here or there, but because the offsetting markets rely upon the interconnectivity of the whole network of compliance to a multitude of rules, norms and standards that are put in place for a variety of reasons and supporting a variety of interests. One tonne of CO<sub>2</sub>e is what connects many of the standards, but there is not one single way of defining what one tonne of CO<sub>2</sub>e amounts to. Just as a phone number may appear to consist of merely seven digits, in reality it consists of much more.

How to capture this ‘much more’ for offsets is the key point. Both the engineer in the corporation studied by Lippert and the project developer working with the Congolese reforestation project had to construct a number from proxies for emissions and emission reductions respectively. Yet much has happened since both Lippert’s and Ehrenstein’s fieldwork. For the former there has been a development of data types and data streams that claim to give a more accurate picture for both corporations and individual consumers of the emissions they are responsible for, and numerous consultancies offer their assistance in mapping corporate emissions (see footnote 8 above). For the latter, there are today claims about technological developments that may support the documentation and verification of emission reductions. Some projects and companies now rely upon both decentralised information flows from local actors (see Bumpus et al. 2019), but also satellite images, photos with GPS coordinates or drones, to verify for example the continued existence and growth of forest carbon sinks (e.g. trofaco.org), while the deployment of fintech innovations including blockchain technology have been suggested to help channel the financial transactions involved (see Thompson 2017; Howson et al. 2019). While the latter could have prevented some of the scams documented by the *Politiken*

journalists by in theory ensuring that credits would not be resold after they were retired, it would not have solved the ultimate challenge of aligning two vastly different realities and their proxies.

## **Conclusion**

### **Controversies of Voluntary Compliance**

It may seem obvious that to provide seven random digits instead of a phone number could become a problem if someone wants to call you, but what does the problem of correspondence between number and phone look like in the trading of carbon offsets? In spite of the labour of justification performed to construct and value offsets as ‘real’ emission reductions, evident problems appear. These include the lack of accountability, the opacity of the value which is generated, the ease with which it can be manipulated, and that compliance by proxy is often not really compliance at all, even if the labour of justification may present it as such to several of the actors involved. To appreciate compliance within voluntary offsetting, then, is a question of focusing on how it is distributed, but it also speaks to both a question of what it ‘means’ to be compliant, and a question of how compliance is implicated in a shaping of the self as it accommodates itself to collective norms (see Rollason and Hirsch 2021: 4, 13-14).

Starting with the question of distribution, one could take a cue from an article by anthropologist and STS-scholar Lucy Suchman (2002) and argue that her call in that article for ‘locating accountability’ should be taken as an urge to locate how compliance is also sociotechnically distributed in carbon offsetting through various infrastructures. Indeed, for compliance by proxy to work it must be widely recognised *as* distributed. Compliance — and

with it the following of rules — is in this perspective itself an ‘object’ to be constructed, but not one that can be detached from the networks or infrastructures where it is pursued, and it will thus invariably be interpreted, known and valued differently across different social positions with differential stakes in its ‘performance’ and its meaning (cf. Barth 1993, 2002).

A perspective emphasising the distributed understanding of what compliance ‘means’ may help reveal how actors such as western companies — even if they are genuine in their desires to reduce their carbon footprints — can be unsure about and misunderstand what a carbon footprint is, and thus what they need to comply with and how to do so. That is, if they want to mitigate climate change rather than merely appear to do so as they accommodate the societal norms of being ‘green’. While the severity of the current climate crisis has engendered growth in the number of well-meaning NGOs and consultancies advising corporations and consumers about how to be ‘carbon neutral’ or achieve ‘net zero emissions’, the majority continue to support a system that relies on simplified understandings of greenhouse gas emissions. In this system, compliance is voluntary and therefore not bound by laws, only norms, and it allows for emission reductions to take place via dubious proxies. These live on, because they are driven by a market logic, which — as has been pointed out decades ago — commodifies nature as well as carbon (e.g. McAfee 1999; Lohmann 2005). The problem with that commodification is that it is not really ‘nature’ (or ‘carbon’), which is traded, but spectacles, performances or displays that keep buyers far removed from the realities where the offsets are produced (e.g. Ehrenstein and Muniesa 2013; Cavanagh and Benjaminsen 2014; Knox-Hayes 2016). It is easy, then, to confront buyers of offsets with the accusation that offsetting — relying on the agency of others to produce one’s compliance — is a compliance by proxy and therefore a matter of ‘falsity’ (cf. Milton as cited by Rollason and Hirsch 2021: 4). In contrast to this we can



also find perspectives which argue that offsetting has still played a crucial role in shaping or disciplining the corporate or individual self as a ‘green’ or ‘climate conscious’ subject (see Paterson and Stripple 2010; Lövbrand and Stripple 2011). Even if this subject formation is difficult to verify in social practice (see Moser and Kleinhüchelkotten 2018), it does point to the degree to which human actors deploy market logics to accommodate themselves to the demands of others in terms of both performative actions and social identities, ‘false’ or not (cf. Rollason and Hirsch 2021: 4, 13, see also Sampson 2021).

Finally, embedded in the above questions of how to follow and locate compliance is that the climate solutions presented through carbon offsetting are subject to a market logic of commodification, which separates the compliant action from the collectivity that demands it. As argued by Rollason and Hirsch (2021: 21), discussions of compliance as an idea require the possibility of ‘failure’ to follow the rules. Relying on compliance by proxy thus produces an inherently political grey area of interpretation of what this means. For offsetting, it is a matter of appreciating that if compliance can be bought as a proxy, then we can better explain how it can be that the climate ‘solutions’ that are paid for through offsetting do not perform changes that really change anything. Compliance via proxies is part of the unfortunate mechanisms that support such change of no change, but as long as seven digits appear like a phone number that no one really needs to call, this form of accommodating oneself to the norms of collective life may unfortunately be bound to continue.

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## Notes

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1. Early comparisons of compliance and voluntary markets can be found in Corbera et al. (2009) and in Lovell and Liverman (2010). An up-to-date discussion of the market types with a focus on governance has been done by Ahonen et al. (2022).
2. In the early 2010s, the Australian agent Climate Friendly advertised carbon credit ‘package deals’ that included one called ‘gifts for a climate skeptic’ (cf. Dalsgaard 2013: 89; Lovell et al. 2009, see also Dalsgaard 2022).
3. See for example the methodologies of the Gold Standard (<https://globalgoals.goldstandard.org/documents/methodology/>).
4. Carbon offsetting has – for similar reasons – been invoked in discussions of climate justice, shifts in responsibility away from the polluter, and how market development reinforces North-South relations of inequality (e.g. Lohmann 2008). The cited literature mentions numerous other

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critiques that could be levelled against carbon markets and their assumptions, which I cannot go into here.

5. Methane for example has a higher radiative forcing than carbon dioxide, but it dissolves much more rapidly in the atmosphere. So, the comparative GWP of methane versus carbon dioxide depends upon whether they are compared over a 10 year period or a 100 year period.

6. Knox-Hayes (2016) provides an overview of intermediaries and the mechanisms of financialization.

7. The different Gold Standard methodologies can be accessed at

<https://globalgoals.goldstandard.org/documents/methodology/>

8. Apart from the ISO standards, some of the more common contemporary examples include the GHG Protocol (<https://ghgprotocol.org>) and the Carbon Trust

(<https://www.carbontrust.com/resources/briefing-what-are-scope-3-emissions>). Other carbon accounting methods appear as tailormade software to specific business needs

(<https://plana.earth/academy/how-to-choose-best-carbon-accounting-method-company/>).