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Governing the Carbon Offset Market

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Abstract

Carbon offsets are produced and sold under the international climate change regime (the United Nations Kyoto Protocol) and also within an expanding voluntary offset market in which companies and individuals can voluntarily opt to compensate for their greenhouse gas emissions. The volume of carbon produced and consumed within compliance and voluntary markets has grown dramatically in the last five years, raising a number of governance challenges. This Focus Article gives an overview of the governance of the compliance and voluntary carbon offset markets, and considers the implications of their different governance structures for addressing climate change. It assesses recent changes in the governance of the voluntary carbon offset market in response to concerns about the credibility and robustness of voluntary carbon offsets. Several voluntary offset standards were launched in 2007-09, including the Voluntary Carbon Standard and the Gold Standard. National governments have also taken regulatory action on voluntary offsets, notably the UK government who took the controversial decision in early 2009 to endorse only compliance carbon offsets for use in the UK voluntary market. The UK government's attempt to regulate the voluntary offset market provides a useful case through which to explore some of the inherent tensions in effectively governing the carbon offset market.

Keywords

Carbon offset; CDM (Clean Development Mechanism), Certified Emission Reduction (CER), Governance, United Nations Framework Convention on Climate Change, Voluntary offset

Governing the compliance and voluntary carbon offset markets

The two main types of global carbon offset market currently in operation are the Clean Development Mechanism (CDM)¹ - a regulated or compliance market, established by the Kyoto Protocol - and the voluntary offset market, an informal or 'parallel' market currently governed by a mix of non-governmental and private sector organisations. In conducting an assessment of the governance of carbon offset markets, it is instructive to consider separately the two types of market, as they are regulated in different ways (for a detailed overview of the history of the compliance and voluntary carbon offset markets see Advanced Review (13.5.2.)). Governance - distinct from 'government' and 'governing' - refers here to broad processes of framing and managing the production and consumption of carbon offsets, with close attention to how power and authority are exercised by a range of different actors, both state and non-state, to realize their objectives and interests. Governance of carbon offset markets is important for several reasons, including: addressing ethical concerns about climate fraud [1] and sustainable development [2]; corporate requirements for a robust, transparent system to guarantee and support carbon disclosure and emission allowance reporting [3]; and meeting the overall objective of carbon markets to efficiently and effectively reduce atmospheric greenhouse gas emissions. A carbon offset allows emission reduction targets to be met in one location by purchasing emission reductions from a climate mitigation project based elsewhere (and so relies on the uniform global mixing of greenhouse gases in the atmosphere). Carbon offsets are a sub-set of a broader category - carbon credits - which includes emission allowances as well as project-based offsets. Emission allowances produced in so-called 'cap and trade' systems (most notably the European Emission Trading System (EU ETS)) whereby companies or factories have an overall cap on their emission reductions, and can buy and sell allowances to meet it. This Focus Article discusses project-based carbon offsets only.

The two main types of carbon offset - compliance (CDM) and voluntary - are introduced separately below, before turning to consider the governance of the voluntary offset market in more depth. It is worth emphasizing, however, that the two offset markets - voluntary and compliance - are interlinked: they co-evolved from a common base in the early 1990s; a growing number of carbon offset organisations produce and retail both types of offset; and credits from 'failed' or delayed compliance offset projects are commonly sold in the voluntary market. Conceptually they share two key governance challenges: first, how to produce robust, credible carbon offsets that equate to real atmospheric emission reductions, and, second, how communicate to and reassure consumers of offsets that this is indeed the case.

The Clean Development Mechanism (CDM)

The CDM, established under the 1997 Kyoto Protocol, is primarily governed under The United Nations Framework Convention on Climate Change (UNFCCC). The

UNFCCC incorporates several different committees and levels of administration, the most important of which to carbon offset governance is the CDM Executive Board (and associated UN committees and working groups such as the CDM Methodology Panel, Accreditation Panel, and small scale working group). In practice key governance roles are also played by corporations (verifiers, project originators) and non-governmental organisations. The CDM has mechanisms to define credits strictly and establish standards of quality through project methodologies. This is typically a lengthy and complex process, with each project having to go through several stages (project design, methodology approval, validation, registration and verification) before a CDM offset, termed a Certified Emission Reduction (CER) is finally issued, taking an average of over 500 days from validation to registration [4]. A set of governance concerns has been raised in the compliance offset market regarding the large amount of regulation involved in establishing and verifying emission reduction projects and the time and resource implications for the organisations involved, so-called ‘CDM bureaucracy’ [5].

There are also legal documents to register each CDM greenhouse gas reduction project which enable the buying and selling of credits. All CDM projects must be registered through the CDM Executive Board, and carbon finance is typically channeled through private-sector or World Bank carbon funds, which then finance offset projects in the developing world [6]. For a country to be involved with the CDM (either as a host country, or purchaser of credits) it must be a signatory to the Kyoto Protocol. Developing (host) countries are required to designate a state institution (a ‘Designated National Authority’ (DNA)) that certifies in writing that a CDM project “assists in achieving sustainable development” under UNFCCC treaty requirements [7]. Once the offset project is operational the carbon credits (termed Certified Emission Reductions (CERs)) are then listed in the International Transaction Log (ITL) hosted by the UNFCCC. Developed (Kyoto Protocol Annex I) governments can then use the credits from projects they have invested in as compliance with emissions reductions under the Kyoto Protocol. The ITL aims to provide a transparent and efficient mechanism to trade and account for CERs, and it is a good illustration of the intricate international regulations that have been established in an attempt to ensure robust and transparent governance in the compliance offset market [6].

The voluntary offset market

In contrast to the centralized and bureaucratic offset approval process in the CDM, offset production in the voluntary market is considerably more diverse and flexible. The voluntary offset market allows companies and individuals who wish to offset their emissions to directly compensate for their greenhouse gas emissions. The voluntary offset market has developed relatively independently of the international Kyoto Protocol and anybody – NGOs, businesses, individuals – can produce and consume voluntary offsets however they choose: there are, as yet, no widely-used international standards or regulations. Voluntary offsets, in contrast to the CDM, are

governed principally by private and third sector (NGO and charitable) institutions: there is no voluntary market equivalent of the CDM Executive Board. The voluntary offset market is much more informal than the compliance market, with no single definition for credits and several competing standards which set criteria for how voluntary offset projects should be set up and managed (covering issues such as local community involvement, emission reduction measurement, verification etc.). Voluntary carbon offsets are either called 'VCOs' or 'Verified Emission Reductions' (VERs), depending on whether they have been independently verified (i.e. signed off by an auditor) or not. Confusingly, there are several alternative names used by the different voluntary standards (see Table One). In light of concerns about the degree to which compliance offsetting adequately addresses wider sustainable development issues in the Global South [2], an important additional feature of voluntary carbon offsets compared with compliance offsets produced via the CDM are their sustainable development and poverty-alleviation 'side benefits' [8].

The first voluntary offset organisations were established in the mid to late 1990s and were typically focused on forestry offsets (such as Climate Care and The Carbon Neutral Company (formerly known as Future Forests Ltd.)). Until the year 2005 there were just a handful of voluntary offset organizations producing and retailing carbon credits world-wide, but since then the sector has boomed. There are now hundreds of companies and non-governmental organisations that produce and sell carbon credits in a variety of ways to individual consumers and companies which are currently outside state-based emissions-reduction regulation. Despite the recession the voluntary market has remained relatively buoyant: in 2008 123 million metric tonnes of carbon was transacted in global voluntary carbon markets, representing an 87% growth on 2007 volumes [9]. However, this growth must be viewed in the context of changes in the compliance market (in particular increasingly rigorous CDM approval which has boosted the number of CDM 'pre-compliance' credits reaching the voluntary market, because a large number of CDM offset projects are being held up or rejected), as well as anticipated climate change regulation (e.g. in the US, leading to increased purchasing of voluntary offsets on the expectation that they will be converted in time into compliance offsets).

Unlike offset organisations working within the tightly-regulated structure imposed by the UNFCCC and the CDM, voluntary offset organisations can use a range of approaches and governance practices to source projects and generate carbon credits. Often described as a 'parallel market', voluntary offset projects tend to be smaller, have a greater sustainable development focus (often described as social or community 'side-benefits'), and are typically located in countries not active in the CDM (e.g. the non-Kyoto signatory the United States (produces 28% of voluntary offsets) and Middle Eastern countries (15%), as well as in Asia (45%) – see Figure 1a). By comparison the large majority of CDM offsets originate from China (84%); a country that dominates the compliance market (see Figure 1b).

An additional argument commonly put forward by voluntary market supporters is that the voluntary market has lower transaction costs than the CDM. This is seen as an advantage in that it allows more greenhouse gas emission reductions for an equivalent price compared with the CDM. However, the issue actually pertains to the rigorousness of the offset production process: it follows that the more rigorous the rules and regulations are for offset production (e.g. in the CDM), then the higher the price fetched by the offset, because the product comes with a higher guarantee of its value.

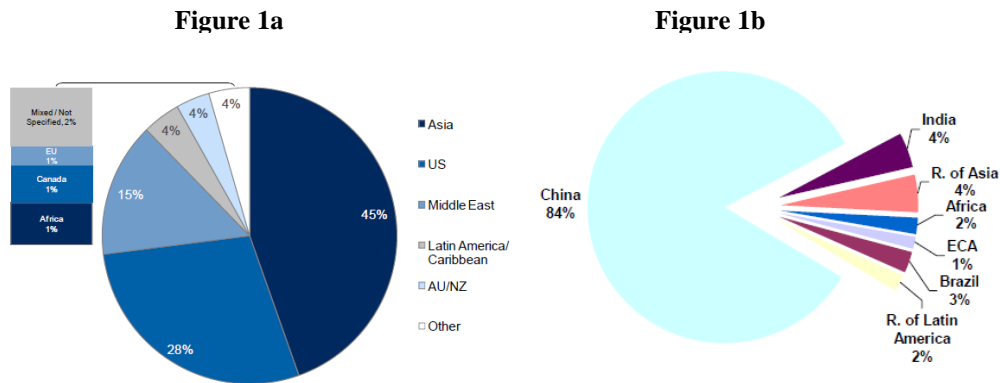


Figure One – Comparison of the origin of voluntary carbon offsets (by region) and CDM offsets (by country)

(Based on 2008 over the counter volume of transactions; sources: 2009 State of the Voluntary Carbon Market Report: iv; 2009 World Bank State of the Carbon Market Report: 35)

Governing carbon offsets: insights from voluntary market standards

The remainder of this short Focus Article concentrates on recent developments in the governance of the voluntary offset market. The fast moving changes in voluntary offset standards in the period 2007-09 provide a useful illustration of issues central to the governance of carbon offset markets as a whole. Moreover, voluntary market actors have deliberately positioned the voluntary market as countering some of the problems experienced in governing the CDM - in particular too much bureaucracy (leading to slow decision-making and project approval), and insufficient attention to sustainable development issues - thereby demonstrating how the two markets are closely interlinked.

The diversity of the voluntary offset market (both in terms of type of institutions involved, and types of project) is evident in the large number of active voluntary offset standards (seventeen in 2008, see [9]) (see Table One and Figure Three). The voluntary offset standards provide criteria against which an offset project must be assessed, and are mostly modeled on the CDM. Typical voluntary offset standard

rules and regulations are about: additionality (whether an offset project would have happened anyway), the offset approval process (registries, verification, use of 3rd party auditors etc.), the type of project allowed (e.g. whether to include industrial gas projects, forestry and so on), and sustainable development 'co-benefits' (such as job creation, improved local air quality etc., benefits that go beyond the project's greenhouse gas reductions).

Recent attempts to standardise and formalise voluntary carbon offset processes and procedures - 2007 was termed 'the Year of the Standard' by the 2008 State of the Voluntary Market Report [10] - have had two drivers: first, the rapid growth of the voluntary market, making transparent governance processes a more pressing concern; and, second, a number of criticisms especially from the media, NGOs and some governments about the rigorousness and credibility of voluntary carbon offsets [for an overview see 11]. Key criticisms have included: the double-counting of offsets (where voluntary offsets are resold rather than retired, and are hence claimed as emission reductions by more than one organisation) [12], and the use of child labour to produce credits [13].

Conceptually the development of voluntary standards can be seen as an attempt at industry 'self-regulation' where companies work together to set quality standards in order to respond to consumer and media concerns and avoid, anticipate and steer government rules to stabilise neoliberal environmental markets [14]. Organisations in the voluntary offset market have a delicate balance to set between enhancing the credibility of voluntary offsets, and yet maintaining certain advantages of the voluntary offset production process, such as the speed of greenhouse gas emission reductions, an ability to experiment with new emission reduction methods, and the inclusion of sustainable development co-benefits.

Table One summarises the four international voluntary offset standards which currently have the largest market share (representing 79% of the verified voluntary offset market). Almost all voluntary offsets produced in 2008 were verified, a total of 96% (up from 87% in 2007) and by the end of 2008 there were no less than seventeen different standards available for project developers to choose from (Hamilton et al., 2009). Other voluntary standards with smaller market share (not included in Table One) include: Chicago Climate Exchange (3%), Greenhouse Friendly (3%), and the Climate, Community & Biodiversity Standard (CCB) (3%). -

Name of Standard	Organisation(s) involved	Market Share (% of verified credits)	Offset project types allowed	Date established	Average Price (US\$ per credit)	Comments
Voluntary Carbon Standard (VCS)	<p><i>Creators:</i> The Climate Group, the International Emissions Trading Association (IETA).</p> <p><i>Supporters:</i> the World Economic Forum, The World Business Council for Sustainable Development</p>	48%	All minus new Hydro Fluro Carbon (HFC) industrial gas projects	2007 (initiated in 2005)	5.50	<p>Market-leading global standard for approval of voluntary offsets.</p> <p>Credits certified via the VCS are called Voluntary Carbon Units (VCUs).</p> <p>Second version of the VCS launched November 2007 (pilot version active since 2006)</p> <p>Accepts project methodologies approved by the CDM and the Climate Action Registry.</p> <p>VCS along with 3 registry providers (APX, Caisse des Depots, and TZ1) provide the infrastructure for the VCS Registry System, operational since early 2009.</p> <p>http://www.v-c-s.org/about.html</p>
Gold Standard (GS)	<p><i>Creator:</i> WWF</p> <p><i>Supporters :</i></p>	12%	Energy efficiency,	2006	14.40	Operates as an additional standard for both the compliance (Kyoto) and voluntary carbon offset

	endorsed by over 60 NGOs. Also receives funding (over \$200,000/a) from: The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Merrill Lynch Commodities, and Renewable Energy and Energy Efficiency Partnership (REEEP)		renewable energy only			markets Provides best practice methodologies for renewable energy and energy efficiency offset projects that contribute significantly to sustainable development. The Gold Standard is a non-profit foundation supported by 60 NGOs. There is a registry specifically for Gold Standard VERs (managed by the private firm APX) and a project database for projects selling Gold Standard-verified CDM and JI credits as well as VERs. http://www.cdmgoldstandard.org/
The Climate Action Reserve (CAR)	<i>Creators:</i> California Climate Action Registry (CCAR) (established by the State of	10%	Forestry, urban forestry, landfill, and livestock	2008 (CCAR operational since 2001)	8.90	Voluntary carbon credits for the United States market. CAR emerged out of (and is now the parent organisation of) the California Climate Action Registry (CCAR) and is endorsed by the California state government.

	<p>California (US) in 2001).</p> <p><i>Supporters:</i> Californian Environmental Protection Agency (EPA), the State of Pennsylvania, the Environmental Defense Fund, Natural Resources Defense Council and Sierra Club.</p>		<p>methane. Others under development e.g. coal mine methane</p>			<p>Rapid growth during 2008 (rose to 11% of voluntary offset market, from negligible base) because it is expected that CAR credits will be eligible under a future mandatory US carbon markets, termed 'pre-compliance' offsets.</p> <p>Credits called Climate Reserve Tonnes (CRT).</p> <p>http://www.climateactionreserve.org/</p>
<p>American Carbon Registry (ACR)</p>	<p><i>Creators:</i> Environmental Defense Fund, Environmental Resources Trust, Winrock International</p> <p><i>Supporters:</i> Blue Source, Nike,</p>	9%	All types of offset project	2008 (operational as an offset registry since 1997)	3.80	<p>Established as a non-profit independent registry for the early voluntary carbon market, since 2008 has its own set of standards and operates both as a voluntary emissions reporting registry and an offsets registry.</p> <p>The registry accepts offsets verified to ACR standards as well as to select other standards' methodologies (e.g.CDM, VCS, and EPA Climate Leaders).</p> <p>As with the CAR, experienced rapid growth in 2008</p>

	World Bank, Interface					<p>as a likely 'pre-compliance' offset in the US.</p> <p>ACR's first voluntary project standard on forest carbon launched in March 2009.</p> <p>Credits called Emission Reduction Tons (ERTs).</p> <p>http://www.americancarbonregistry.org/</p>
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Table One - Summary of the four market-leading international voluntary carbon offset standards

(sources: Hamilton et al., 2009 State of the Voluntary Market Report; Kollmus et. al. (2008))

As Table One illustrates, the price of a voluntary offset varies considerably: the average price of VER credits in the over-the-counter market was US\$7.34 in 2008 (Hamilton et al., 2009), but Gold Standard voluntary credits cost almost double this at US\$14.40. The premium price of Gold Standard credits stems from the focus of this standard on relatively expensive renewable energy and energy efficiency offset projects, as well as its stringent sustainable development criteria (including, for example, detailed rules for local stakeholder consultation).

Figure Three and Table Two provide additional summary data on the fast pace of change in voluntary offset standards. Table Two illustrates the rapid growth in two US voluntary offset standards – the Climate Action Reserve (CAR) and the American Carbon Registry (ACR) in the period 2007-08; both of which only commenced in 2008 and yet reached a significant 10% of market share respectively. This dramatic growth reflects hopes that voluntary offsets accredited under these standards will become mandatory credits if and when the US introduces a national carbon market. Figure Three and Table Two also reveal the consolidation of the Voluntary Carbon Standard (VCS), which had strong growth (19%) in 2007-08, and now represents almost half (48%) of all verified voluntary credits.

Name of voluntary carbon standard	2007 Market Share	2008 Market Share	% change 2007-08
Voluntary Carbon Standard	29%	48%	+19%
Gold Standard	9%	12%	+3%
The Climate Action Reserve (CAR)	n/a	10%	+10%
American Carbon Registry	n/a	9%	+9%
Chicago Climate Exchange	7%	3%	-4%
VER+	9%	2%	-7%

Table Two – Comparison of market share of leading voluntary offset standards: 2007 and 2008 (source: Hamilton et al., 2009 State of the Voluntary Market Report).

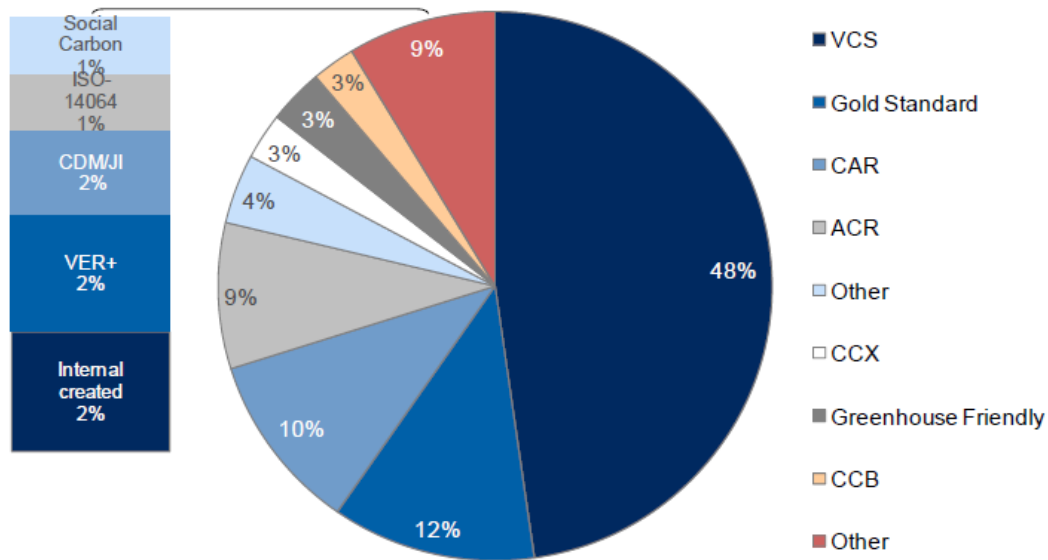


Figure Three – Market share of voluntary offset standards (2008) (source: 2009 State of the Voluntary Carbon Market Report: 56).

A key governance challenge in developing voluntary offset standards has been the relative weighting given to sustainable development issues versus emission reductions. There have been ongoing concerns about the degree to which compliance offsetting adequately addresses wider sustainable development issues in the Global South, and partly as a response to this an important additional feature of voluntary carbon offsets compared with compliance offsets produced via the CDM are their sustainable development and poverty-alleviation ‘side benefits’ [2, 8]. It is notable, however, that the Voluntary Carbon Standard – the current market leader, - ultimately decided to focus just on the carbon emission reduction aspects of voluntary offset production, because of the difficulties in verifying the diverse and hard-to-measure sustainability benefits arising from voluntary offset projects (see Opinion Article (13.1.7)).

A second tension in the development of voluntary carbon standards has been in balancing demands for stricter criteria and audit of voluntary offsetting against the benefits of relative speed and low-cost establishment of voluntary offset projects (which has tended to encourage the inclusion of smaller community-based projects, and also yields a quicker emission reduction benefit to the atmosphere). The voluntary offset market offers some advantages in this respect, because audit procedures have to date not been so onerous. The rigour of carbon offset audit and verification procedures was one of the key issues to emerge from the UK government’s intervention in the voluntary offset market, in the form of a 2009 Quality Assurance Scheme for offset providers, discussed below.

Case study: UK government regulation of voluntary carbon offsets (2007-09)

The UK government took the controversial decision in early 2009 to accredit only compliance (Kyoto-based) carbon offsets under its new Quality Assurance Scheme (QAS) for Carbon Offsetting. Exploring the issues raised by this decision provides a good illustration of the most pertinent governance issues currently under consideration across both voluntary and compliance carbon offset markets. The QAS case study illustrates the delicate balance to be struck in developing more rigorous governance structures for the voluntary market without damaging its benefits. It is also an example of how a public authority – the UK government – has attempted reassert its power in the largely NGO and privately-governed voluntary offset market, through establishing new rules and regulations in response to concerns that practices of voluntary offsetting were becoming detrimental to the carbon offset market as a whole.

The QAS is a UK Government-led initiative, managed by a private-sector contractor, AEA Group Plc, and with input from an Advisory Forum (including corporate and NGO members). It is aimed at providing voluntary offset consumers with better information and assurance about what they are purchasing, and involves use of a quality kitemark that demonstrates the offsets have met QAS requirements and procedures [15]. Offset providers are free to choose whether to apply for the QAS kitemark or not; it is not mandatory (and indeed only a few have done so, see below). The rules of the QAS have been set by the UK government, with input from stakeholders. The initial consultation on regulating voluntary carbon offsets was launched in January 2007, a Draft Code of Best Practice for Voluntary Carbon Offset Providers was then published in February 2008, and final details of the QAS published in January 2009, almost a year late (ENDS, 2009). Arguably, however, very little changed in substance of government proposals over this two year period: from the outset the government recommended including only compliance offsets (from the CDM, and European Emissions Trading Scheme) and carbon offset organisations were vigorously opposed to the idea of excluding voluntary market offsets (VERs).

In response to the launch of the QAS in early 2009 most key voluntary offset organisations said they were not going to apply for accreditation because the leading voluntary standards (the VCS and Gold Standard) had been excluded [16]. To date only four offset organizations, two companies and two trade organizations have had their voluntary offset products accredited (DECC, 2009a). However, there does remain provision in the QAS to allow for accreditation of voluntary offsets in the coming years if rigorous, credible voluntary offset standards do emerge, thereby giving the voluntary offset industry an incentive to self-regulate. The QAS states: "... Voluntary Emissions Reduction credits (VERs) may also be allowed at a future point, subject to a satisfactory level of assurance becoming available about their quality, and especially additionality." [17: 2]. Indeed, several industry experts, in interview (including individuals directly

involved in developing VCS, and senior civil servants in the UK government), suggested that if the launch of the Voluntary Carbon Standard (the market leader, see Table One) had not been repeatedly delayed in the period 2006-07 then the UK government might not have implemented the QAS, thereby highlighting the flexibility of boundaries between public and private authority in the governance of carbon offsets.

From the UK Government's perspective there was a strong desire through the QAS to establish rigorous governance procedures and processes for voluntary offsets because the government views itself as ultimately responsible for consumer protection. It is seen by the government as its duty to ensure that people are not being sold something – a carbon offset - that does not do what it claims, i.e. take carbon out of the atmosphere. A further key reason given by the UK government for the implementation of the 2009 QAS was that there is a comprehensive governance structure for an international offsets in place – the CDM – and that is it best to make use of these rigorous, state-based rules and regulations, as a UK official explained: “The UK government's position is that we have invested an awful lot in setting up a system [the CDM] ... so that it makes sense to use that, because that is something – although it is not perfect – it is something we've invested a lot of time and effort into getting as good as we can.” (Interview, UK Department of the Environment, June 2007).

Yet with the voluntary offset industry largely shunning the QAS [16] (with only four UK-based offset organizations so far signed up, out of a possible twenty or more), it appears that the UK government's authority to regulate voluntary offsets is constrained. In effect offset organisations have rejected and made irrelevant the UK government's QAS by the major offset organisations saying they are not going to sign up for it. A joint industry statement by ICROA (the International Carbon Reduction and Offset Alliance, a voluntary offset organization industry body) and the Carbon Markets & Investors Association in response to the launch of the QAS stated:

“In our view VERs developed under robust voluntary standards are equally effective in achieving emissions reductions as Kyoto compliant instruments while providing important cobenefits such as the promotion of sustainable development, the alleviation of poverty, and in some cases, the restoration of critical ecosystems and habitat. We believe that since the inception of the scheme in 2007, DECC [UK Department of Energy and Climate Change] has failed to keep pace with developments in the voluntary carbon market which has significantly progressed in sophistication, quality, and self-regulation.”

http://www.icroa.org/pdf/ICROA_Q&A_on_DECC_Quality_Assurance_scheme.pdf

The QAS case highlights the powerful role of carbon offset organizations in relation to nation-states and other public authorities. Uncertainty has been voiced by the offset organisations about the ultimate authority of the UK government in what has become an

international market for voluntary offsets, developed and governed by non-state actors. As the above quotation illustrates, in the debate about QAS carbon offset organizations have positioned themselves as having better knowledge and expertise in offsetting than the UK government, with concerns expressed about the poor level of government understanding of offsets, and with a prevailing view of governments and international state-based organisations as poorly informed and out of date. As a manager of an international voluntary offset organisation stated: “the DEFRA Code [latterly the QAS]... is founded on a complete lack of understanding of what is actually happening on the ground.” (Interview, October 2007). The net effect of this for UK offset organizations is that initiatives led by non-state actors have been equally as important as the QAS in prompting the development of voluntary offsets standards, including from the media, the financial sector and corporate clients. In other words, different types of authority – public and private - are intricately mixed from the perspective of offset organizations, and they negotiate through and operate within these hybrid fast-changing governance networks.

Conclusion

In conclusion, this brief Focus Article provides some insights into why the governance of carbon offsets is important, the key issues at stake, and how we might best understand voluntary and compliance offset governance challenges. Carbon offsets are produced within two separate, although inter-linked, markets: voluntary and compliance. These two markets do however share common governance issues, for instance in balancing bureaucracy with speed and transparency in the production of offsets. Indeed, the compliance and voluntary markets have evolved over time in parallel, and leading organisations in the voluntary market have deliberately positioned the voluntary market as able to counteract some of the perceived failings of the CDM. These are complex, intricate governance debates – for instance regarding methodologies for measuring and producing carbon credits - that often appear to be dissociated from the problem of climate change itself. It is important though that connections are maintained, particularly looking forward to the future when climate change is likely to manifest more clearly, and, for example, attention might increasingly be directed towards offset projects that meet standards for climate change adaptation as well as sustainable development.

Notes

¹ Note that the Kyoto Protocol also includes a secondary, smaller carbon offset market called ‘Joint Implementation’ (JI), which allows emission reduction projects to be initiated and hosted by Annex 1 partner countries, producing credits called Emission Reduction Units (ERUs) is not discussed here.

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