

# Voluntary aspects of carbon emissions trading

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Carbon emissions trading markets are unrealistically treated as either voluntary or mandatory. Yet most trading incorporates some voluntary and some regulatory features and there is developing interaction. Diverse emissions trading markets include an array of voluntary aspects. Voluntary features of trading should be evaluated on their own merit according to the context of the scheme in question.

*Keywords:* Climate change; Emissions trading; Voluntary agreements; Cooperation

## Introduction

At Rio de Janeiro in 1992, the United Nations Framework Convention of Climate Change (UNFCCC) was concluded. Signatories made a voluntary commitment to reduce emissions of greenhouse gases to 1990 levels by the year 2000 (Art. 4(2)(a)–(b)). Since then, global emissions have risen rapidly; the few signatories to the Convention that managed to meet the target did so through circumstances that were entirely contingent, such as economic downturn, or a switch from coal to gas caused by changing prices, and rarely by conscious efforts [1]. This has led to criticism of voluntary approaches. In the case of emissions trading, while mandatory markets are enjoying increasing popularity, voluntary methods may be underestimated.

In reality, emissions trading incorporates some voluntary and some regulatory features and interaction between markets is developing rapidly. It is necessary to recognise that diverse emissions trading markets include an array of voluntary aspects. Furthermore, voluntarism in emissions trading is not a static component, but a *dynamic* feature that can change over time. Particular voluntary features of trading should be evaluated on their own merit according to the context of the scheme in question.

Part I outlines the policy space for voluntary emissions reductions. Part II suggests that as emissions markets are maturing the reality of trading is becoming more complex. As a result, the mandatory/voluntary divide is losing its descriptive power. Part III introduces the idea of a spectrum of voluntarism and sets existing ETSs on that scale. Finally, Part IV will explore the interaction of voluntary and non-voluntary activities in the development of international carbon markets.

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## 1. Climate change and the political response

The limited coverage of ‘mandatory’ cap-and-trade schemes so far leaves substantial room for voluntary markets to go ‘beyond compliance’ mandated by governments. The only operating regional scheme, the EU Emissions Trading Scheme, covers roughly half of EU emissions. Internationally, the coverage of the Kyoto Protocol is small; countries bound by the Protocol are responsible for less than half of global emissions [2]. The US and developing countries have no reduction commitments. It is likely that, even if an ambitious deal is reached in Copenhagen in December 2009, substantial portions of the developing world will be left without binding reduction commitments and the pledges of developed states may still fall short of the cuts advocated by scientists.

There are plans for national ETSs in South Korea, Japan, Australia, and Canada, but the coverage of these schemes, their level of ambition, and the timescale for their development are uncertain. Economic concerns have delayed the beginning of Australia’s scheme, which was due to open in 2010 but will now open in 2011 at the earliest [3]. A Senate vote in August 2009 rejected the Carbon Pollution Reduction Scheme in the face of an unlikely coalition of green groups (who thought the legislation too weak) and the Liberal/National opposition (which objected on economic grounds). This may cause further delays for the introduction of trading in Australia, or even scupper plans altogether [4].

The proposed Canadian Domestic Emissions Trading System will aim only for emissions to be 20% below 2006 levels by 2020, much less ambitious than the Canadian Kyoto target of 6% below 1990 levels during the 2008–2012 commitment period. It is also likely to incorporate intensity-based targets, a high degree of offsetting and strict price controls, making the proposed reduction pathway highly uncertain. In Japan—where there is a long-standing culture of voluntary industry initiatives in partnership with government—coverage and strength of commitments are slowly being improved: an initial industry-led scheme (the Keidanren Voluntary Action Plan) was followed in 2005 by a government Voluntary Emissions Trading Scheme and now a trial unified market, which may be converted to a mandatory scheme by 2013. Again, however, low participation, a permeable emissions cap and low ambition combine to reduce the effectiveness of these schemes. Although most of the legislation for New Zealand’s ETS is now in force and the scheme is intended, eventually, to cover most of the economy, it allows unlimited access to international offsetting and its level of ambition is so low that substantial ‘beyond compliance’ action will be needed.

Finally, at an individual level, the coverage of emissions is almost non-existent. At present, it is almost exclusively voluntary emissions trading that has any link to individuals’ emissions.

The difference in the emissions reduction targets mandated by international, regional and national law and the cuts that will eventually need to be made in order to stabilise the climate can be seen as the ‘negative spaces’ for emissions trading which have begun to be filled by voluntary markets and voluntary components to mandatory markets. Currently, the UN estimates that commitments made by developed nations amount to a 15–21% reduction on 1990 levels by 2020, but this average is likely to be worsened by the inclusion of relatively weak American targets; a large shortfall compared to the call of the Intergovernmental Panel on Climate Change (IPCC) for 25–40% reductions by 2020 [5]. The difference between policy objectives and what needs to be done is what drove voluntary reductions before the mandatory markets existed. The perception will continue while these differences remain.

### **1.1. The voluntary response**

The conviction that emissions must be curbed and that the political response does not go far enough partly explains voluntary involvement in emissions trading. Other reasons include:

1. marketing opportunities from the 'carbon neutral' or 'green' image;
2. shareholder pressure;
3. institutional pressure from stock analysts/insurance companies favouring the climate-friendly;
4. threat of climate litigation;
5. the wish to influence future regulations; and
6. the possibility that mitigation can be an economic opportunity (e.g. in energy efficiency or trading profits) [6].

The advantages of the emissions markets include:

1. genuine emissions reductions;
2. sustainable development benefits of trading that channels finance to projects that can take a wider view of social and environmental objectives than the mandatory markets;
3. the opportunity to introduce schemes in countries and sectors where mandatory schemes might not be practicable; and
4. learning and participation benefits of increased public awareness.

On the other hand, the voluntary markets are often criticised for a lack of transparency that masks problems which can undermine the environmental benefits. For example, in his most recent book James Lovelock compares offsets to papal indulgences [7]. In other words, offsets are purchased to assuage the guilt associated with polluting without changing the lifestyle that causes it. Other problems are associated with the quality of offsets themselves. Further, environmental groups have suggested that voluntary trading funds projects are prone to:

1. non-additionality (i.e. the projects would have happened anyway);
2. substantial price mark-ups by middle men;
3. leakage and rebound (i.e. the emissions avoided simply happen elsewhere); and
4. non-permanence (e.g. trees planted for sequestration might die, burn or be cut down).

In addition, reduction targets for emitters that are based on voluntary commitments are said either to lack ambition or else to be ignored because of the absence of punitive measures for non-compliance. They may also be a strategy for avoiding more serious commitments.

This paper does not seek to decide the case one way or the other. Instead, it argues that the consideration of the costs and benefits of voluntary markets in isolation from the consideration of the costs and benefits of non-voluntary markets is beginning from a false premise: that these markets are functionally separate from one another. A more realistic view of the markets is needed.

## **2. The definition of voluntary emissions trading**

Emissions trading markets have generally been divided into voluntary and mandatory sectors for analytical purposes. The portion described as 'voluntary' is small in terms of volumes

traded and size of payments: in 2008, 123.4 Mt CO<sub>2</sub>e were traded in the voluntary markets [8]. Yet the market is growing each year, it is relatively diverse in the range and type of emissions reductions undertaken and the potential number of buyers is enormous; anyone can participate in the market [8, p. 36]. The units of trading in the 'voluntary' sector are verified emissions reductions (VERs).

On the other hand, mandatory emissions trading deals with much greater volumes and prices. Almost 5bn tonnes were traded in the compliance markets in 2008, worth c. \$126bn [9]. The units in the 'mandatory' markets are the Kyoto units as well as the more particular commodities in regional schemes, most prominently the EU allowances (EUAs) in the EU ETS. (Kyoto units include AAs for trading under Article 17; CERs for the CDM and ERUs for JI.)

This apparently clean divide, however, masks a complicated reality.

### **2.1. Limits of the standard definition: targets**

The definition of 'voluntary' among market participants, analysts and in the academic literature centres on voluntary as 'beyond compliance with legally imposed targets'. *State and Trends of the Global Carbon Market 2006*, for example, defines the voluntary market by drawing the distinction 'between transactions intended for regulatory compliance' and those undertaken 'for voluntary purposes' [10].

The first drawback of using the nature of targets as a basis for the mandatory/voluntary divide is that there are ambiguities in what can be called 'mandatory' in both the *imposition of targets* and the *setting of targets*.

The Kyoto Protocol created the mandatory emissions market by introducing targets and a mechanism for international trading. The basis for labelling these targets 'mandatory' is in Article 3 of the Protocol, which stipulates that 'the Parties included in Annex I shall ... ensure that their aggregate anthropogenic carbon dioxide equivalent emissions ... do not exceed their assigned amounts calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B'. Yet it is possible to question whether these can be called mandatory targets.

First of all, far from being imposed on Parties, the decision to adopt targets resembles the opt-in/opt-out provision usually associated with voluntary trading. The US and Australia, for example, avoided the binding targets by deciding not to ratify the Protocol (though Australia has since ratified). Even for those states that did ratify, Article 27 provides that a Party can renounce its commitments either by withdrawing from the Framework Convention, or by giving notice to the Depositary.

In the absence of an international legislative body, both target-setting and participation in the regime are contingent on states' consent, a voluntary process in the garb of international law. Unless the rules codified in an international convention have the force of customary law, they are not binding on a state unless it has ratified the convention [11]. Aldy *et al.* point out that while a state's 'acceptance of a commitment is voluntary, its fulfilment of the commitment is not', but the same can be said of nominally voluntary programmes such as the Chicago Climate Exchange, in which the repercussions of non-compliance can be serious [12].

The determination of targets has been a negotiated, political affair rather than a transposition of science-based targets into law. In the aftermath of the US decision not to ratify, proponents of the Protocol were compelled to offer concessions to significant emitters in order to secure their cooperation. Canada, Japan and Russia were all 'bought' in this way by lowering targets and by the inclusion of carbon sinks in the agreement, which gave them great numbers of extra credits [2, pp. 372–3]. This process of negotiation and legislation is not far removed

from the process of negotiation followed by legally-binding contract that is typically placed in the ‘voluntary’ category.

## **2.2. Limitations of the standard definition: the voluntary/mandatory ‘package’**

It is difficult to divide voluntary from mandatory markets because emissions trading entails a whole set of design options, in which different features can be left to voluntary control, including:

- imposition of targets (voluntary/mandatory participation);
- target setting;
- registries;
- monitoring and verification rules; and
- binding targets and enforcement.

It is the whole package of mandatory/voluntary elements and public/private responsibilities that defines the characteristics of a market. As the following discussion will demonstrate, there are areas even in the Kyoto and retail markets where the voluntary/mandatory distinction is blurred, and where distinctions break down.

The standardisation of registries is a hallmark of the mandatory markets. Article 4(1)(a) of the UNFCCC requires every signatory state to construct ‘national inventories of anthropogenic emissions’. Article 5(1) of Kyoto requires national systems to estimate sources and sinks. The details of accounting for different credit types were settled at COP 8 in Delhi which introduced serial numbers for all Kyoto credits. Similarly, one of the few elements of the EU ETS that was not delegated to Member States was the creation by Regulation of the EU Community Registry (Community Independent Transaction Log), which acts as a hub for the accounting of all transactions of Kyoto units and EUAs in the EU.

This standardisation, however, has been echoed by the improvement of registries in several of the markets categorised as voluntary. The Bank of New York has developed a registry for VERs, as have the states of California, Ontario, Wisconsin and New Hampshire, and in the UK the government registry was at the heart of the voluntary UK ETS. The American Carbon Registry, the Climate Action Reserve, the New South Wales Greenhouse Gas Abatement Scheme Registry and the BlueRegistry all offer third-party registry services to ensure that VERs may be reliably tracked. In 2001 the government of California created the California Climate Action Registry (CCAR) (recently re-branded the Climate Action Reserve) to facilitate trading and to give confidence to voluntary market participants that their efforts would be rewarded in the event of the creation of a mandatory emissions regime. The legislation explicitly stated that the registry would be created because ‘mandatory greenhouse gas emissions reductions may be imposed on California sources at some future point’ – a state-level legislative support for voluntary trading [13]. In these developments, voluntary markets reproduce business and regulatory systems.

A second feature that might often be associated with ‘mandatory’ markets is the use of binding commitments. Yet there is not necessarily a correlation between the mandatory/voluntary and binding/non-binding divides; voluntary schemes may be subject to more binding rules and be more wide-ranging than mandatory schemes. For example, in the Chicago Climate Exchange members are subject to binding rules and penalties for non-compliance. Opt-in is voluntary, but participants are then subject to a legally binding, rules-based regime, that Bayon *et al.* describe as a ‘mandatory reductions policy’ [14]. In the same way, in the

voluntary UK ETS, for which very few elements of trading were legally defined, targets were legally enforceable because of the contracts that were signed between emitters and the Secretary of State. Therefore, the definition of non-voluntary that depends on the imposition of targets cannot show the extent to which targets which may not have been *forced* by law are nevertheless *enforced* by law.

On the other hand, there is an element of voluntary opt-in written into the Kyoto Protocol in the provision for participation by non-Annex I (developing) countries. Article 12(5) states that CERs may be produced on the basis of '(a) Voluntary participation approved by each Party involved'. It is up to a particular developing state whether to involve itself in emissions trading by choosing a Designated Operational Entity (DOE) to administer the CDM and it is then up to individual project managers to undertake the emissions reductions to be sold as CERs. The baseline and credit flexible mechanisms of Kyoto, then, which are founded on international law and transposed into the national legislation of signatory states, are non-binding and essentially voluntary in their nature.

A mix of voluntary and regulatory aspects, therefore, is clearly identifiable on both sides of what has been thought of as the voluntary/non-voluntary divide.

### 2.3. Different definitions

The tendency to identify a transaction as voluntary by reference to features of the supply side shows the way in which the voluntary/non-voluntary distinction is wider than a consideration of the legal framework of target-setting. The supply-side view creates the mandatory/voluntary divide by reference to the nature of the source of carbon units. The International Emissions Trading Association (IETA), for example, has formulated a standard for certifying credits as Voluntary Carbon Units (VCUs). Thus it is possible for a credit to be certified as a 'voluntary' credit independently of the motivations of a buyer. There are, in fact, a host of nascent accreditation systems that apply to voluntary credits: the Climate, Community and Biodiversity (CCB) Standard; the Chicago Climate Exchange; the Climate Neutral Network; Green-e; ISO 14064; and the Voluntary Gold Standard all offer alternatives to the VCS that accredit explicitly voluntary carbon units [14, p. 23].

### 2.4. The quality of units

By cutting off the voluntary market from the main body of emissions markets, analysts do not only create a descriptive divide; they also reinforce the normative divide, with markets on the unregulated side of the divide assumed to be less effective and reliable. This may hamper the development of the market by undermining consumer confidence in the environmental service being offered. It may also create the impression that operators of mandatory schemes have nothing to learn from their voluntary counterparts.

It is true that the units of trade in the Kyoto and EU markets are highly standardised. The nature of VERs, on the other hand, tends to be contractually based, rather than relying on a standard definition [15]. VERs are selected for different characteristics according to the scheme or project that produced them. The variety of project types in the retail offset market, for example, can endow some units with added-value if there are perceived to be benefits bundled with the carbon commodity, such as a contribution to sustainable development or biodiversity [14, p. 103].

This apparent divide between standardised units in mandatory schemes and *sui generis* units in voluntary trading, however, again masks a different reality, this time of common

features in both markets. In the case of the mandatory units, a variety of commodities become legally interchangeable even though they are of varied environmental quality. The imperatives of the economic model dictate that different units should be interchangeable for the sake of efficiency, allowing reductions to be achieved at least cost. Unfortunately, this means that increases in a state's net emissions account can be cancelled using very unreliable units. In the first phase of the Kyoto market there may be a surplus of AAUs of c.550Mt [16]. Countries with large allocations could sell to those countries that emit more than their allowance, while doing nothing to curb their emissions output. There can, in other words, be as much variety in the quality of units in a mandatory scheme as in a voluntary scheme, but this is masked by the market imperative.

In future, linkage between emissions markets could increase the interplay between nominally voluntary and mandatory units. For example, the Canadian Climate Change Plan for domestic emissions trading envisages the acceptance of ISO-approved VERs for compliance with the government scheme. This kind of mixing will be catalysed by the need to bring more emitters into schemes and by the increasing hybridisation of trading frameworks. With the application of standards such as the Voluntary Gold Standard and the IEA's Voluntary Carbon Unit, and with the increasing diversity of projects allowed under the Kyoto mechanisms, the qualitative gap between offsetting in the CDM and in voluntary schemes is closing. In 2006 the British government announced that it would investigate the possibility of linking with California's voluntary scheme [1, p. 418]. Similarly, it is possible for players in the voluntary market to purchase Kyoto or EU ETS credits. In the UK, for example, David Miliband proposed a certification scheme for *voluntary* offsetting which would recognise *only* credits produced by the Kyoto mechanisms.

The connection between the voluntary and mandatory markets is therefore more than procedural – there can be direct connections through legislation and through trading of different units. This is manifest in a direct effect on price. Competition for CERs between mandatory schemes and voluntary offsetting programmes constitutes an indirect link between these markets. Anticipation of future interactions between markets can also influence prices. For example, when the EU ETS began in 2005 prices in the voluntary market responded to the prices in mandatory markets. As Capoor and Ambrosi noted at the time, 'the "EUA-effect" appeared to have been felt in unconnected markets such as the U.S. voluntary Chicago Climate Exchange (CCX) and in Australia's New South Wales (NSW) market, where carbon prices in those non-Kyoto markets have also seen upward movement'. Since then, however, NSW prices have slumped as it became clear that supply of credits far exceeds demand and the NSW units will not be converted into Australian Emissions Units for a forthcoming federal scheme, in itself an example of anticipated interaction between voluntary and mandatory markets affecting prices [9,10, p. i].

### 3. The reality of voluntarism

Mandatory and voluntary markets are increasingly alike and interact on a number of levels. This section deals with a spectrum of voluntarism.

The stages run as follows:

1. Laissez-faire voluntary markets.
2. Standardised voluntary markets.

3. Predominantly voluntary markets.
4. Government-led markets.
5. Pre-compliance markets.
6. Predominantly legislative markets.

The categorisation under these headings indicates the variety of combinations of voluntary and regulatory aspects in ETSs. A mark of voluntarism is that it is changeable. It is likely that as markets develop they may shift position in this scale. Besides, it will in general hold true that markets toward the mandatory end of the scale will incorporate the regulatory features of those lower down the scale, but this is not always the case; for example, a legislative market need not always be a compliance market.

### **3.1. *Laissez-faire* voluntary markets**

*e.g. Retail offset market.* The voluntary end of the spectrum of markets is very various. Trading may be based on *sui generis* contracts which promise unsubstantiated environmental services in response to demand from a particular buyer. VERs are contractual rights, transferring the benefits accruing from an emissions reduction from one private party to another. Unlike cap-and-trade markets, in which both parties will often act in different circumstances as buyer and seller, in the voluntary markets, deals are direct between a buying party and a supplying party or mediated by a broker. This was the nature of the first carbon emissions trading, pioneered in 1989 by AES Corp, an American company which funded forestry projects in Guatemala in order to claim positive environmental credentials [17]. VERs intended for offsetting will often be retired by a buyer upon purchase.

### **3.2. *Standardised* voluntary markets**

*e.g. Offsetting with the Voluntary Gold Standard.* The standardisation of voluntary markets began as a way to facilitate trading. Contracts for purchase of VERs need to be carefully drawn because of the abstract nature of the good and the high risk associated with projects. Therefore, a typical contract would refer to the physical project, a baseline for counterfactual calculations, an assessment and validation methodology and a definition of the commodity, commercial terms and the risks and warranties associated with the deal [18]. This degree of standardisation allows the development of a retail market in VERs, in which credits are sold 'over-the-counter' direct to consumers, for example by the Small Group and Tree Planting Alliance, who sell VERs on e-Bay [14, p. 18]. As well as protecting the customer and vendor of credits, the standardisation of contracts improves the environmental integrity of VERs by guarding against double counting of credits, for example.

Just as the development of model contracts under legislative schemes has led to the standardisation of contracts for voluntary transactions, so the development of standard registries for voluntary units (VERs) is modelled on the Kyoto registries. The first steps in this process have been taken by the Bank of New York, for example, which now offers a third-party registry system for VERs which will put the accounting of transactions in the voluntary markets on a par with accounting in mandatory markets [16, p. 15].

For offsetting, the main development has been certification of individual projects and of providers. A range of accreditation schemes has emerged from the private sector and NGOs as well as from public institutions. For example, the IETA has formulated the Voluntary Carbon Standard (VCU), which it claims to be 'a robust standard for the measurement and

recognition of verified emission reductions created for voluntary use by corporations, organizations and individuals' [19]. The Voluntary Gold Standard, the Forestry Stewardship Council, ISO 14064 and the Climate, Community and Biodiversity Standard (CCBS) all provide alternative accreditation procedures. Ninety-six percent of credits were third-party verified in 2008 [8, p. 10].

### **3.3. Predominantly voluntary markets**

*e.g. Chicago Climate Exchange.* This category marks the middle ground in the spectrum of voluntarism. Here the standardisation of trading means that the characteristics of the process and the credits begin to resemble those of the regulated market. In this category especially the voluntary/mandatory distinction cannot express any substantive differences because coverage, rules and robustness of these voluntary markets may go further than they do in the mandatory markets. In this area the dialectic of development between the voluntary and mandatory markets is apparent, as participants in one market learn from participants in others and the same actors participate in both the voluntary and mandatory spheres [16, p. 15].

Regulation in the voluntary cap-and-trade market has been centred on the adoption of targets. Voluntary trading has begun to develop teeth that resemble those of the mandatory sector. The Chicago Climate Exchange (CCX) has targets that are both increasingly effective (as allowances are ratcheted down each year) and rules that are increasingly robust. Although participation in the scheme is voluntary, targets become legally binding and there are penalties for non-compliance. The growing size of the CCX, which has increased from 13 Charter Members when it opened in 2003 to over 350 institutions today, stands in contrast to the perception of a voluntary market of small-scale one-off trades (<http://www.chicagoclimatex.com>). The CCX also allows for the use of Kyoto credits and EU Allowances for compliance alongside CFIs won by over-compliance and generated through CCX-approved projects. This pooling of carbon commodities from the mandatory and voluntary markets is a function of increasing interaction between them.

### **3.4. Government-led markets**

*e.g. UK ETS, Japanese Voluntary Emissions Trading Scheme, Swiss ETS.* Conversely, government-run schemes are not always mandatory; in fact, they may exhibit more voluntary features than some of the non-legislative trading schemes. This category includes essentially voluntary trading that is supported by government, through the offer of incentives, creation of accreditation schemes or the use of legislation to create a framework for trading.

The legislative establishment of registries for VERs in the US is helping to create certainty in the American voluntary markets to rival that of the mandatory European market. In California, for example, the California Climate Action Registry (CCAR) was created to facilitate voluntary action in advance of a mandatory scheme, with the recognition that 'the state has responsibility to use its best efforts to ensure that organizations that voluntarily reduce their emissions receive appropriate consideration for emissions reductions made prior to the implementation of any mandatory programs' [13]. Similarly, the United States Department of Energy created a National Voluntary Reporting Greenhouse Gases programme under the Energy Policy Act.

Among the most prominent voluntary features that have so far been used in government-led schemes is voluntary opt-in. In Japan, the Voluntary Emissions Trading Scheme (JVETS) began in 2005 with the Kyoto Target Achievement Plan. Joining the scheme is voluntary and

participants are offered government subsidies in return for emissions reductions, but failure to meet targets is penalised. In the UK, the core of the UK ETS was a voluntary opt-in cap-and-trade system in which entities agreed to make emissions reductions in return for government incentives. The government set up this market to create an incentive for emissions reductions in advance of the EU ETS and to allow companies to benefit from the learning experience of trading. The scheme, however, remained a voluntary one based on contracts between participants and the Secretary of State. There was no primary legislation to create it.

### **3.5. Pre-compliance markets**

*e.g. Climate Action Reserve units, Albertan Emission Performance Credits, JVETS JPAs, Tokyo Emissions Credits.* In recent months, an offshoot of the voluntary markets in the US, Canada, Australia, New Zealand and Japan has been the pre-compliance market, where trading is taking place under the assumption that units from a sub-federal scheme will be acknowledged by a forthcoming federal ETS [8, pp. 23–24]. Pre-compliance trading uses the structures of the voluntary market in anticipation of mandatory rules. Its effect can be seen in the re-branding of a number of voluntary standards, such as the Climate Action Reserve and RGGI, positioning themselves as pre-compliance standards.

The Waxman-Markey Bill currently under consideration in the US Congress has indicated that offsets recognised by ‘state or tribal law or regulation prior to 2009’, which meet standards agreed by ‘public consultation’ and are listed in a publicly available registry may be included in the ‘offset supply’ in a federal compliance market, prompting new interest in RGGI and CCX [20]. After the California Air Resources Board (CARB) recognised the Climate Action Reserve Standard, its popularity was boosted by a surge of speculative pre-compliance trade [8, p. 66]. This demonstrates the interaction between regulatory progress and trading in a variety of emissions markets, as regulatory decisions shape demand and voluntary trading.

### **3.6. Predominantly legislative markets**

*e.g. Kyoto and EU ETS.* Predominantly legislative markets now exist at the international, regional, national and sub-state levels. Internationally, the most important mandatory targets are the Kyoto targets. Regionally, the most important scheme is the EU ETS, in which EUAs are traded for compliance with targets set under the Burden Sharing Agreement. At a national level, measures have been introduced in the UK, for instance, to set legally binding emissions budgets for CO<sub>2</sub> emissions in the Climate Change Act 2008, which also creates enabling powers for emissions trading to meet those targets. A number of sub-national legislatures are cooperating to create legislative emissions trading regimes. In the US, many states are taking part in cap-and-trade schemes. The Regional Greenhouse Gas Initiative (RGGI) will create binding targets for the power sector in nine north-east and mid-Atlantic US states (<http://www.rggi.org/about.htm>). Together with the Western Climate Initiative and the Midwestern Greenhouse Gas Initiative, the majority of US states and a number of Canadian provinces are covered.

## **4. Voluntary aspects of emissions trading and international negotiations**

The interaction of markets at different points along the spectrum of voluntarism has contributed to the development of the international emissions trading regime. The interdependence

of different markets means that mandatory/voluntary markets can be mutually reinforcing in both a technical and a political sense.

The creation of the international emissions trading regime began as a 'top down' endeavour, but securing agreements through the UN negotiating systems has been an arduous process that has often resulted in deadlock. Developments have been hampered by the difficulties of securing trans-border agreements that would affect competition and especially by the resistance of industry. This problem has been exacerbated by the negotiation process under the UNFCCC which effectively gives veto powers to all parties. In trying to reconcile these differences, climate negotiations have come up against two classic problems of political cooperation, the open access problem and the public goods problem. The 'tragedy of the commons' is such that, while access to a common resource is open, each individual self-interested actor may exploit that resource to the detriment of all. Conversely, the public good of mitigation of climate change will be under-supplied because each actor is unwilling to tolerate others free riding [21]. We all need to take advantage of the benefit by sharing the burden.

The development of carbon markets depends on the construction of a consensus at a domestic level that will give negotiators the mandate to secure significant agreement. This domestic support may develop as business becomes familiar with emissions trading through engagement with voluntary markets, benefiting from the learning experience and increased certainty in the future of emissions trading. The futility of negotiating an international settlement without a base of domestic support was demonstrated when the senate, devoted to competition, undermined the deal struck by President Clinton [22]. Voluntary trading has begun to mature since the Framework Convention, adding to this base of domestic support and contributing to technical learning. In this context, voluntary components to emissions trading should be seen both as the manifestation of that stimulus from above telling emitters that change must be achieved and as a stimulus from below that is beginning to help break political deadlock.

#### *4.1. Voluntarism as a dynamic factor*

Many emissions trading markets are in a state of flux, developing over time as they are refined by new negotiations, as new players enter the market or as different markets begin to overlap. It is seldom possible to define a market simply by reference to the original agreement.

Voluntarism components of emissions markets can drive the development of markets over time. Land use, land use change and forestry (LULUCF), for example, offers great potential for environmental benefits and mitigation of damage, but implementation has been hampered by practical and political problems, such as the difficulties of monitoring and enforcement and the leakage of environmental degradation to other areas. The long offsetting experience of voluntary activities such as tree planting, however, has provided both the practical know-how and the political momentum for methodologies to be worked out and agreed in the regulated emissions markets. First, afforestation and reforestation were both recognised by the Marrakesh Accords as possible projects under the CDM, then COP 9 created special credits – temporary CERs (tCERs) and long-term CERs (lCERs) – in recognition of the precarious existence of some of the forestry projects. Furthermore, groups such as the Nature Conservancy Trust and WWF are collaborating to establish reliable methods for crediting avoided deforestation in Kyoto (<http://go.worldbank.org/3VNNC6EPV0>). In the New Zealand ETS, forestry is the first sector to be covered by the scheme.

In this way, the voluntary market is blazing a trail for the regulated markets. Significantly, voluntary carbon markets have led the way on adaptation and development – one of the major

sticking points in international negotiations – with projects receiving added value for sustainable development and adaptation benefits in areas that have proven largely inaccessible to the UN and EU carbon markets. The prospect of transposing the emphasis on adaptation from the voluntary to the regulated markets may help to catalyse future negotiations. In the UK, for example, the *Road to Copenhagen* paper – a position statement in advance of the COP15 negotiations – proposed that carbon finance could supply c.90% of a £60 billion future adaptation fund for developing countries [23,24]. The voluntary markets are fulfilling their role as a testing ground for ideas that can subsequently be scaled up in more regulated markets.

In the US, the development of state-level and voluntary ETSs has helped to build momentum and institutional learning in advance of a national scheme. After 12 governors wrote to accept President Obama's offer that 'any governor willing to promote clean energy will have a partner in the White House', the lessons of these regional initiatives such as RGGI, WCI and MGGRA have informed federal progress (<http://www.wisgov.state.wi.us/docview.asp?docid=15821>). The *American Clean Energy and Security Act*, sponsored by Democrats Henry Waxman (California) and Ed Markey (Massachusetts), which passed the House of Representatives by 219 votes to 212 on 26 June 2009, incorporates many of the features of the state-based schemes and it is likely that some emissions reductions achieved under the state schemes will later be transferable to the federal scheme. In Japan, the progression from the industry-led and voluntary Keidanren Voluntary Action Plan, through the Japanese Voluntary ETS to a trial ETS, which may be mandatory by 2013 shows a clear path from a voluntary learning phase to a more regulated scheme. Much of the infrastructure, such as the JVETS registry system, will function for the eventual unified scheme. In this way, voluntary and 'bottom up' schemes have helped to rally the domestic support and technical know-how that was missing during earlier negotiations.

## 5. Conclusion

Emissions markets are not accurately described as either mandatory or voluntary. There are many 'grey areas' where the complexity of markets defies categorisation. This has led to inconsistency in the way analysts have labelled different markets; more seriously, it implies a normative divide, which can undervalue voluntary and overvalue mandatory regimes. A spectrum of voluntarism offers a more realistic portrayal of the range of markets in existence.

The question remains as to which voluntary aspects of trading can gainfully be incorporated in the post-2012 emissions trading regime. Kyoto's successor may include a variety of voluntary or unregulated components. Administrative efficiencies and political realities such as the North–South developmental divide may encourage the inclusion of voluntary features and there are likely to be serious costs in terms of the economic and environmental robustness of the regime. One way to manage the trade-offs between participation and reliability entailed by certain voluntary aspects of trading may be to incorporate 'graduation criteria', which would subject a state to additional regulatory constraints once pre-ordained developments are achieved, such as the attainment of a certain GDP *per capita* [25]. Alternatively, developing countries might be allocated 'dual targets', which combine an achievable binding target with a higher target that would credit for trading for over-compliance, but would not impose any penalties for non-compliance [26]. Individual sectors might be able to opt-in to a sector-based programme, in advance of country-wide participation. These concessions would allow a regime to take advantage from voluntary aspects of trading as a short-term building block while ensuring a transition to full participation.

It is also possible for individual states and groups of states to go ‘voluntarily’ beyond their international requirement. The UK Climate Change Act proposes a legislative step beyond compliance with the UK’s international obligations. Similarly, many states have begun negotiating future commitments in forums separate from the United Nations, such as the dialogue on climate change launch at the G8 meeting at Gleneagles [27]. Such multilateral and regional efforts may help to broaden emissions markets away from the UNFCCC, unencumbered by the need for consensus. They may also help to invigorate the framework process from below, as suggested by Yvo de Boer when he speculated that the work of the G8 in Heiligendamm may reinforce the UNFCCC post-Koto negotiations [28].

At lower levels of political organisation, voluntary components of trading are likely to continue to play an important role. Unless a comprehensive emissions trading pact is struck in Copenhagen in 2009, progress toward a global carbon market will continue through the development and linking of national and regional market. The American and Canadian processes show that voluntary aspects of trading can provide a pragmatic path toward regulation. The Japanese model shows a direct progression from voluntary to mandatory rules, with important elements of voluntary markets being preserved along the scale of voluntarism. Voluntary and mandatory markets cannot be neatly divided.

As long as substantial emissions continue to occur in the ‘negative spaces’ that are not covered by schemes mandated by states, it is almost certain that emissions markets at the voluntary end of the spectrum will carry on expanding. It is also likely that the process of hybridisation will continue and that there will be more interactions between different levels of trading. The question is which voluntary components can advantageously be incorporated in national and international emissions trading regimes. The normative and analytical divide between voluntary and mandatory markets needs to be abandoned.

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