

## **The expanding carbon markets: Issues, perspectives, and the role of science**

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In this Briefing Note we summarise our views on a number of issues discussed at Carbon Expo 2009 that were relevant to our current research interests but representative of the whole event. Carbon Expo is the largest symposium for emissions trading schemes and offset projects. We offer our reflections on the issues discussed, participants' perspectives, and the role of science. These issues are entwined with the evolution of climate policy and the complexity of climate governance.

### **Introduction**

Carbon trading is big business. According to the World Bank's latest report transactions totaled \$126bn dollars in 2008 (Capoor and Ambrosi, 2009). As such, there is more than just our future climate at stake in the negotiations of the Kyoto Protocol and its successor this year at Copenhagen. Alongside the political process, conferences and trade fairs promote and debate the future of the various carbon markets. This year's sixth Carbon Expo in Barcelona welcomed over 3,000 participants, 276 companies and 83 countries, 92% of which came from outside Spain. The Carbon Expo is considered the largest exhibition for private and public organisations and institutions involved in the development and operationalisation of emissions trading schemes and offset projects. It is organised by the World Bank and the International Emissions Trading Association and positions itself as "*The carbon market crossroad. The place where the most important messages get across – between the industry, project developers, buyers, decision makers, politicians and governments*". The exhibition stalls host bank and investment funds, emissions trading platforms, carbon brokers,

international law firms, offset project developers, standard-setting organisations,

Designated Operational Entities, private companies from both the renewable and non-renewable energy sectors, and a few country delegations, particularly from Africa and Latin America. The University of East Anglia was the only European university present, promoting its MBA on Strategic Carbon Management.

This year's Expo also held a number of plenaries, side events and workshops related to four main policy and implementation areas: i. project-based emission reductions, ii. carbon trading accounting issues, iii. carbon finance and cities, and iv. the development of new greenhouse gas markets. Each plenary and workshop involved three to five speakers who exposed their views on the discussion topic at hand, guided by a chair. This briefing note sketches our views on a number of issues addressed by the plenaries and sessions we attended (approximately one third of the total). These were selected according to our current research interests and, therefore, they do not attempt to be representative of the whole event. Nevertheless, we hope to offer our readers some insights and critical reflections on the issues discussed, participants' perspectives and the role of science in this sort of event, which are closely entwined with climate policy development and reflects the increasing complexity of climate governance.

### **Creating new markets**

As might be expected, carbon markets in their various forms were praised in many sessions as the most relevant and viable mechanisms to reduce global emissions, a belief which passed unchallenged all through the Conference. Henry Derwent, Chief Executive of the International Emissions Trading Association, set the tone on the first day claiming that 'emissions trading is the best and most-effective tool that humans have to deal with the climate change problem'. In the plenaries we attended, there was very little discussion of the potential role and effectiveness of Overseas Development Assistance, specific funds, performance standards, multi-lateral regulation or carbon taxes in driving emissions reductions. This market emphasis was only tempered by Teresa Ribera, the Spanish Secretary of State on Climate Change, who reminded that international markets must be complementary to other regulatory efforts at national level.

Most participants seemed energised by the idea of a future global carbon market, with fully fungible carbon credits, which would link currently dispersed, emerging emissions trading schemes and clear the path for investors and traders to sell and buy emission reductions at the largest possible scale. However, as we are not yet there, several sessions concentrated on sketching the pillars of the post-2012 European Union Emissions Trading Scheme (EU ETS), of emerging emissions markets in the US, Japan, Australia, Canada and New Zealand and the potential linkages among them. Mrs Yvon Slingenberg from the European Commission outlined the basic procedures of the post-2012 EU ETS and the role of offsets in EU compliance. These principally include a 100% allowance auctioning for the power sector (with limited derogation for the utilities of ten new member States); a progressive phasing out of free allocations for industrial sectors not exposed to carbon leakage risk; the provision that 50% of auctioning revenues are used for climate change related national policies and actions; and the further use of Joint Implementation (JI) and Clean Development Mechanism (CDM) offsets, at up to 50% of emission reduction efforts, which may represent a total volume of 1.6-1.7 billion tonnes for the period 2008-2020. It was also highlighted that there were ongoing discussions on how to link the EU ETS with existing trading systems at national and sub-national levels, and a strategy to support developing countries to develop their own entity-based cap-and-trade systems for certain sectors was also being drafted. Nevertheless, we felt that, although the EU ETS represents by far the largest volume of emissions trades, it did not attract so much discussion or attention. The organisations regulated are limited in number, CO<sub>2</sub> is currently the only gas controlled, the technologies for abatement are discussed in other arenas, and transactions between participants are relatively straightforward to organise.

In contrast, the proposed Waxman-Markey bill in the US was indeed further discussed and referred in several sessions, probably due to the impact that US policy developments may have on the international climate regime and in the business sector growing around it. The bill is currently moving through the legislature with amendments and compromises from its initial formulation. It consists of a mandatory entity-based cap-and-trade framework which includes

the five Kyoto greenhouse gases plus Nitrogen Trifluoride (NF<sub>3</sub>) and aims to reduce emissions to 17% below 2005 levels by 2020, and 80% below 2005 levels by 2050. The bill also establishes a renewable electricity standard, a low carbon fuel standard, and energy efficiency programs and standards for buildings, lighting, appliances, and vehicles and engines. The regulated sectors cover up to 85% of total greenhouse gas emissions in the country and, initially, 85% of allowances will be granted for free, whilst the other 15% will be auctioned. Allowances will be peaking in 2016, at around 5.5 billion, and offsets will be limited to 2 billion tonnes of CO<sub>2</sub>e per year split evenly between domestic and international (the bill requires entities using offsets to submit 1.25 tons of offsets for each ton of emissions being offset). The bill has already spurred debates and opinions in the media and the blogosphere, which did not deserve considerable attention in the Expo's rooms. Some, for example, argue about the likely cost and benefits of implementing the bill, particularly for consumers, while others criticise it for giving away pollution permits for free to certain industry and energy supply groups, and for the bill's likelihood to rely on weak offset standards. Others, like economist Robert Stavins, have reminded that "distributional battles over the allowance allocation in a cap-and-trade system do not raise the overall cost of the program nor affect its environmental impacts" and that the bill accrues 80% of the value of allowances to consumer and public purposes and the rest to private industry<sup>1</sup>.

In a context of consolidating and expanding emissions trading schemes, it is not surprising that for many in the Expo the priority over the next few years must be bringing as many participants as possible into the market, both from developed and (large) developing countries. The latter should be financially and technically supported to develop their own trading systems and correspondent linking

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<sup>1</sup> See e.g. the following website articles: Teryn Norris, Climate Bill Analysis, Part VI: Strategic Reserve May Allow "Cap" to Rise by 10 Percent. Breakthrough Institute; Mulkern, A. Experts plumb cap-and-trade bill in search of bottom line. The New York Times, June 5th, 2009. Stavins, R. The Wonderful Politics of Cap-and-Trade: A Closer Look at Waxman-Markey. Belfer Center for Science and International Affairs, Harvard University, May 27th, 2009.

mechanisms with existing markets, as the EU seems to be heading towards. In fact, according to some, this transition must be prioritised above discussions over stringent targets (or regulated sectors) under each trading scheme. As Russell Mills, director of Global Energy and Climate Change Policy at Dow Chemical put it, 'start low, start fast, and with many people as

possible'. From an economic perspective, the usual justification for expanding and linking carbon markets include minimising costs for regulated entities through greater diversity of emission sources and abatement options whilst from a political perspective linking carbon markets is justified on the grounds that it may make stricter targets more acceptable, reduce international leakage and bring the US into a common market-based framework to tackle climate change (Schüle and Sterk, 2009).

Linking, however, also allows further value creation in trading, expert services and financial speculation, which in turn also generate employment, new forms of expertise and profit-making activities. Consequently, the biophysical processes which underpin climate change and justify the need of fast and deep emission cuts appeared to be of secondary importance to many market actors during the event. As Kevin Anderson (2009) reminds us, 'there is now very little hope of staying below the 2°C threshold between 'acceptable' and 'dangerous' climate change... The sooner deep reductions in global CO<sub>2</sub> emissions can be achieved, the less we will venture into this 'dangerous' and unpredictable territory'. There was little discussion of the ways in which energy supply and demand systems in highly emitting countries should be reformed and how carbon markets should be designed to achieve more substantive emission reductions. Furthermore, the current emerging divergencies between the procedures of emerging trading systems and the EU ETS framework, which would complicate the linking process if the environmental integrity of emissions trading is to be maintained (Sterk and Schüle, 2009), were not discussed. In this regard, for example, Haites and Wang (2009) argue that linking emissions trading may in fact lead to higher aggregate emissions as a result of a number of factors, such as 'changes to the "business as usual" emissions of the affected sources, effectiveness of enforcement activity, design of the schemes, accuracy of monitoring technologies, and integrity of the allowance registry' (ibid.: 467). Consequently, maintaining the environmental integrity of

linked emissions trading schemes can only be addressed through inter-scheme regulatory procedures, including annual meetings of the schemes' administrators, common verification systems, as well as procedures to enable each party to terminate linking under specified circumstances (ibid.).

### **Expanding the supply of offset credits**

Whilst it is striking to note the variety of organisations represented at the Expo, there seemed to be a predominance of offset associated businesses. Although there were consultants, brokers and investment banks, the majority of exhibitors were oriented towards creating credits through compliance and voluntary markets. The Expo advertises itself as a forum for new deals to be struck and partnerships developed between those with industrial facilities in the uncapped economies. Offsets, financial instruments that increase the volume of a cap and trade scheme, are attractive to governments or companies seeking to meet their compliance targets at the lowest short term cost. For their advocates, offsets have allowed developing countries, especially large growing economies, to benefit from carbon trading and, in some cases, to benefit from technology transfer –albeit this is a very contested issue as we highlight below. Offsets have contributed to create a whole industry around them, which involves project developers, validators, verifiers, standard-setting entities, consultants, and many more, which have strong vested interests on the continuous development of emissions trading and complementary offset markets.

This new 'offsets industry' is growing and it is likely to continue doing so, particularly in the light of an increasing demand for offsets by the EU and the US in the near and coming future. The World Bank latest carbon market report states the EU, Japan and the rest of Annex-B countries are likely to require 1.6 billion tonnes of offsets (including AAUs) between 2008-2012, most of which will be supplied by CDM/JI projects provided they deliver as contracted (Capoor and Ambrosi, 2009: 55). As noted above, the forthcoming US market will demand up to 2 billion tonnes of domestic and international offsets per year until 2020, with lower but also substantial figures also expected for the EU for the period 2013-2020. There seemed to be a widely held view that the current CDM procedures would be unable to supply this volume so it seems likely that the

'offsets industry' may grow even larger in the future through new certifying bodies, new procedures and new project types. As a result, discussions regarding offsets during the Expo revolved around three main topics; i) the future architecture of the Clean Development Mechanism, including new eligible activities and technology transfer, ii) the role and treatment of offsets by the future US trading scheme, and iii) the role of forestry offsets in both markets, including the eligibility of Reducing Emissions from Deforestation and Forest Degradation (REDD) projects and programmes as offset activities.

Mrs Slingberg from the EU Commission highlighted that discussions on how to reform the CDM continue, particularly regarding eligible project types and mechanisms to further ensure projects' environmental and social integrity. This was one of the few moments that we recall when there was a reflection on the potential negative impacts of CDM projects for local populations or a precautionary note was heard regarding credit creation. Additionality deserved some reference in a few sessions, with the general perception that the CDM Executive Board has been too strict interpreting this concept to date and that a more flexible approach should be taken in the future in order to scale up the mechanism. In a session dedicated to 'Institutional and Procedural Reform of the CDM', Lex de Jonge, Chair of the CDM Executive Board, described a series of improvements implemented over the last 12 months and changes approved at their most recent meeting. There have been new timelines agreed by the UNFCCC secretariat and project auditors for the review and exchange of documents, and as well as there being more scrutiny of auditors, a manual for the validation and verification of projects, the VVM, has been developed and rolled out in a series of workshops. The most recent EB meeting considered the administration of the EB's activities, procedural matters for the approval of methodologies, scaling up CDM by better defining Programme of Activities (PoAs) and development of new terms of reference for inclusion of CCS and "forests in exhaustion" for discussion in Copenhagen. In this session, project developers and auditors voiced their frustrations at recent project rejections and delays imposed by the EB's detailed procedures for what were, in their eyes, minor and insignificant deviations from the registered documents. One project auditor also argued that they can only verify against guidance from

the EB and that developing the relevant standards has been a case of 'learning by doing' with the VVM a great help in training new staff and clarifying expectations. However, despite these recent developments, there was still scepticism that the CDM's administration could handle the volume of credits anticipated by the Waxman-Markey bill.

There was a common-shared view that the implementation of a growing number of Programme of Activities (PoAs) under the CDM will be crucial to ensure that a large volume of credits can be provided through the mechanism. PoAs are a group of policies and schemes that are intended to reduce greenhouse gas emissions but which individually would not be able to enter the CDM. For example, schemes to subsidise more efficient infrastructure, such as low energy light bulbs, or to enforce existing environmental legislation that is currently overlooked. CDM Programme Activities, CPAs, can be packaged together and changed without going through a new validation process, reducing transaction costs and increasing the rate of approval and hence supply. This mode will likely become prominent in the future, given that HFCs and nitric acid projects have been exhausted in many countries and that demand for credits is likely to increase. PoAs are seen as an opportunity to upscale emission reduction micro-projects and make them more attractive to carbon finance. Nonetheless, project developers and brokers also highlighted in several sessions the present lack of available finance for the further promotion of offset projects, both in developing and developed countries, and DOEs manifested concerns regarding liabilities under PoAs. For high offsets volume PoAs, DOEs may not like to become highly exposed, whilst at the same time it may be difficult and financially impossible to attach liabilities to project developers.

On technology transfer and the CDM there were divergent views across speakers. Mr. Daniele Violetti, from the CDM Executive Board, presented the results from a TT study commissioned by the UNFCCC and noted that only 36% of projects in the CDM pipeline (registered and under validation up to June 2008) involved technology transfer, understood as the transfer of environmentally safe and sound technology and know-how to the host parties (Seres and Haites, 2008). The study remarks that the probability of TT increases with project size, host country's GDP and the

involvement of foreign participants is more likely for agriculture, HFCs, N<sub>2</sub>O, landfill gas, and wind projects and less likely for biomass energy, cement, fugitive gas capture, and hydro. In contrast, some project developers argued that many more CDM projects than a 36% involve TT even if they do not label it as such in Project Design Documents. They suggested that the CDM has so far been effective in incentivising TT, although the latter may have indeed been hampered by some domestic policy environments. Notwithstanding, CDM consultants recognised that the mechanism is designed to focus on the transfer of existing and commercially viable technologies and biased against new or very innovative ones.

Two sessions emphasised that the way in which project-based offsets will be integrated into the US cap-and-trade framework is still subject to negotiations, as many congressmen and senators are being lobbied by different groups on this issue. For example, some NGOs only support domestic offsets whilst others openly support international offsets, particularly forest conservation projects in tropical countries. As noted above, it is already certain that the US scheme will contemplate both domestic and international offsets, although project types have not yet been defined. A report by Point Carbon highlights that domestic offsets will be the cheapest cost compliance option in the US but they will still be unable to supply the expected demand, which will then need to be met through international projects<sup>2</sup>. Attending members of the US administration suggested that these projects will very likely have their own procedural framework regarding eligibility criteria, with the mechanisms for validation, verification and credits issuance being likely regulated through the US Environment Protection Agency rather than through the CDM Executive Board. The credibility of the CDM as a whole is questioned in the US and there is the possibility that credits generated under voluntary and regional standards, such as the VCS or CCAR, will be accepted. This is divergent from the EU position which admits only credits certified by the UNFCCC into the EU ETS, and of those there are limited further restrictions.

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<sup>2</sup> Point Carbon, 2009. A US Cap-and-Trade Program: Options for Compliance.  
<http://www.pointcarbon.com/aboutus/pressroom/pressreleases/1.1093890>

Finally, regarding forestry offsets and REDD activities, EU negotiators stated that afforestation and reforestation credits will remain excluded from the EU ETS, largely to the disappointment of many project developers and forestry mitigation advocates present in the Expo. The impermanence of biologically sequestered carbon remains the key objection to such credits being fully fungible with emissions permits. However, the EU does not discard the inclusion of a pilot phase which would generate REDD-type emission reductions only for governments' compliance. The US, in contrast and as suggested above, is likely to support tropical conservation projects and programs of activities, as far as they are measured against a host country national baseline and leakage is controlled. Two sessions at the Expo addressed these issues and brought together speakers from NGOs (e.g EcoCarbone, Equator), validators (TÜV-SÜD), UN policy-makers, indigenous peoples' representatives and investment funds. Panellists were generally supportive of extending the use of forest conservation activities as a source of carbon offsets, on the common grounds that land-use change contributes up to 20-25% of global emissions and therefore cannot be excluded from any climate deal (and therefore of markets as the most likely source of relevant funding). It was argued that most technical problems faced by forestry and REDD offsets, such as leakage, permanence and baseline setting, can be easily resolved through existing methodologies and that, in fact, forestry has not yet been fully supported by the CDM or effectively linked with the EU ETS due to the EU strict regulations. It was acknowledged that clear land ownership will be key to mobilise capital and traders supported the full fungibility of forestry credits in emissions trading markets in order to scale up investment in forestry and design more ambitious targets.

It was unfortunate that participants' views on forestry and REDD activities were supported by very weak scientific evidence. Nobody discussed the fact that data on land-use change are subject to different levels of uncertainty depending upon the scale of analysis and the modelling technique, and that the causes of deforestation and degradation are complex, multi-facted and context specific, which all together make land-use change baselines highly hypothetical and the problem difficult to tackle only through economic incentives (Estrada et al., 2007). It was also regrettable that the social conflicts which some forestry and

REDD projects may cause on local populations and how such projects may interact with other ongoing processes of natural resource use, as well as with land tenure issues, were not discussed. The analyses, as for other offset-related sessions, were heavily decontextualised and uncritical with projects' purpose and performance. In this regard, the Deputy Director of the International Climate and Forest Initiative from the Norwegian government, which supports the development of REDD programs in developing countries, was queried about how his ministry had so far involved other Norwegian ministries to regulate the imports of tropical timber, oil palm and soy beans which are not sustainably produced, in order to "walk their talk" and be consistent with their international REDD policy which demands policy coordination in host countries. The Director acknowledged that such conversations had not yet happened and that government coordination on these matters was indeed poor.

#### **Conclusive thoughts – the complexity of governing carbon markets**

Carbon Expo reflects the increasing complexity of clean development governance through carbon markets, with an expanding number of carbon trading systems and with an increasing diversity of social actors with vested interests at different stages of the carbon commodity chain, from allowances allocation and offset project development, to verification of emission reductions and speculative trading in the financial banking sector. These actors support the further development of carbon markets to increase their economic activity which, under a profit or non-for-profit remit, will contribute, they say, to reduce greenhouse gas emissions and halt climate change. However, we believe that such thrust for expanding carbon markets and promoting offsets which are at best climatically neutral occurs at the expense of overseeing scientific independent research which argues for radical cuts of emissions in the next decade to avoid dangerous climate change, and disregarding emerging findings on the environmental effectiveness and social implications of emissions trading and offsetting.

Research on the actual environmental benefits and socio-economic impacts of offset projects indicates that offsets will not only fall short in delivering the reductions they claim, but they will also be limited in promoting other benefits beyond emission reductions (Boyd et al., 2007; Wara, 2007; Corbera and Estrada, 2009).

Nevertheless, such views do not stop existing and new cap-and-trade systems to favour international offsets, even in a context where there are not enough DOEs to cover the demand for projects' verification under the CDM, and neither have these companies the available capital to underwrite any liabilities, thus exacerbating the risk of trading inexistent or non-additional reductions. Furthermore, many countries, particularly in Africa, are still designing their institutional frameworks to deal with CDM offsets' 'production and sale'. The lack of human and institutional capacities, and the lack of policy frameworks which make financially attractive the development of carbon projects in different sectors, explain why many countries do not have yet many African CDM projects in place. The proliferation of new trading systems, which in turn create new procedures to generate offsets, is thus likely to complicate carbon governance issues in developing countries and create confusion. More importantly, the rush for cheap carbon offsets, particularly from US investors, may lead towards the delivery of low-cost, social value offsets at the expense of more costly, technology transfer and development-oriented projects, as it has been the case for a number of CDM projects to date (Olsen, 2007).

An issue which deserves further research attention is the financial dimension of carbon trading and value creation along the commodity chain. Data is available on exchange traded financial instruments like EUAs however research on project-based carbon transactions is difficult as information is kept confidential. There is uncertainty as to what abatement the EU ETS will achieve in its second phase because of its fixed supply of permits and the collapse in demand due to the economic downturn. However, the volumes of permits exchanged on both spot and futures markets have never been higher as installations with cash flow difficulties sell to those who will bank permits to phase three and speculate on a rising price of carbon. Whilst uncertainty over crediting and acceptability of credits generated after 2012 appeared to be the primary concern amongst developers at Carbon Expo, the surplus of permits and depressed price of EUAs has reduced the profit margin on CERs and may also have ramifications for the the flow of "carbon finance" to projects. This may leave only those projects of questionable additionality in a position to enter the CDM i.e. a project that is profitable "business as usual" is more likely to be able to attract finance with a low income

from the sale of carbon credits than one that deviates substantially and requires significant investment. With less strict controls on crediting and cancellation in the voluntary market, forward financing may support projects with high start up costs but leaves open the risk of non-delivery and the question of enforcement. It is these features of a financial carbon market, distinct from emissions control through carbon taxation, subsidy of new infrastructure, regulatory interventions and performance standards, that are rarely discussed in climate policy but will have substantial implications for future emissions trajectories.

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