

Thinking Out of the Box

by Liz Bossley*

Despite the progress represented by the Cancun Agreements, the goal of meaningful, legally binding caps that include the world's biggest Annex I and non-Annex I emitters remains elusive. Achieving a seamless transition from the first Kyoto Protocol commitment period to a new deal for 2013 and beyond will require some creative thinking.

This article explores a new approach to carbon intensity cap-setting for non-Annex I countries. It proposes that the Copenhagen pledges of the largest and most rapidly developing, non-Annex I countries should be expressed as a legally binding quota of CDM projects. Failure to fill its quota in a commitment period would result in an obligation on the part of the non-Annex I defaulter to make up any shortfall by surrendering its own CERs or by buying secondary CERs, ERUs or AAUs in the international market.

At Cancun an agreement in principle was reached by 190+ countries to bring under the UNFCCC umbrella the emission reduction targets and nationally appropriate mitigating actions that were developed in 2010 as a result of the Copenhagen Accord and to work towards a system of mutual accountability for these goals. In the case of the two largest emitting developing, non-Annex I countries, i.e. China and India, this post-Copenhagen voluntary commitment was to cut emissions intensity:

- by 40-45 percent by 2020 compared to 2005, in the case of China; and,

- by 20-25 percent by 2020 compared to 2005, in the case of India.

Arguably the most encouraging aspect of Cancun was an apparent willingness by China and India to make these commitments legally binding and subject to some form of independent measurement and verification, provided that an acceptable overall package, including financing, is agreed.

The idea of a CDM quota for the largest developing countries builds on this progress at Cancun. The objective is that countries over a threshold level of development would be required to grow using only the most environmentally friendly technology available or suffer the penalty of having to buy allowances in the market. Any non-Annex I country that did not fill its quota by generating domestic CERs or by buying secondary CERs, ERUs or AAUs might be subject to a quota that is 30% higher than it otherwise would be in the next commitment period. The Enforcement Branch of the UNFCCC's Compliance Committee could be responsible for applying this sanction. This sanction is symmetrical with the one to be applied to any developed country that surrenders insufficient allowances to cover its actual emissions in the 2008-2012 period.

The increased CDM project pipeline that this implies would add to the sum total of the supply of allowances in the market as non-Annex I countries invite investors in CDM projects to meet their quota. It would also boost the demand for CERs from developing economies for quota compliance purposes.

Inevitably primary CERs issued to investors in CDM projects would remain theirs to sell in the market as a reward for their investment. But they could be taken into account by the UNFCCC in assessing whether or not a developing country had fulfilled its CDM quota. Such a quota would provide some reassurance that every unit of investment in the developing nations would be tested for its environmental integrity. It would also sharpen the discussions between project investors and host country Designated National Authorities ('DNAs') because the DNAs would need the investment to generate primary CERs, otherwise they

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would have to spend money on purchasing secondary CERs. It could not be misinterpreted as an attempt to limit economic growth in the developing countries. But it would ensure that their growth was achieved with less environmental damage than the business-as-usual ('BAU') scenario and with fewer GHG emissions than were made by the developed economies in reaching their current standard of living.

The promise of an increased flow of primary CERs could also be used to reassure Annex B countries that they could agree to more stringent caps for themselves without the risk of economically damaging emissions prices. This would require a loosening of the limits and conditions placed on the use of CERs by Annex B countries for compliance purposes.

The method used to calculate the quota would be a key component of the success of this proposal.

Proposed CDM quota methodologies

The establishment of a CDM project quota, expressed as an absolute number of tonnes of carbon dioxide equivalent but based on a commitment to cut in the relative number of tonnes of CO₂-eq. per unit of output, is at first glance a complex problem. But it could be achieved with some simplifying guidance principles. This article examines two possible approaches to quota-setting:

- 1 A simple approach that takes the economic growth forecast of each participating developing country and sets a quota for the commitment period in question based on the country's carbon intensity and actual GDP in 2005, compared with its pledged percentage reduction in carbon intensity and its forecast GDP for the relevant period; or,
- 2 A more mechanistic approach that starts with the carbon intensity and economic output for a range of targeted sectors in 2005. At the end of the commitment period the quota would be calculated in two steps:
 - (i) Comparing the 2005 output and carbon intensity for those sectors with the pledged carbon intensity and actual economic output of those same sectors during the commitment period that has just ended;
 - (ii) Comparing the actual carbon intensity and actual economic output with the pledged carbon intensity and actual economic output of those same sectors during that commitment period. The quota would be the difference between the pledged and actual levels, with the minimum retroactive calculation of the quota being set at zero.

Each approach has pros and cons but, on balance, the simple approach has much to recommend it.

Simple approach to quota setting

This approach can best be illustrated by an example. Assume a country produced 100 million units of economic output in 2005. We may also assume for illustrative purposes that, in producing these goods and services, the country emitted 40 million tCO₂-eq., i.e., the country's carbon intensity in 2005 was 0.4 tCO₂-eq./unit of output.

Let's say the country has pledged to cut its carbon intensity by 45% by 2020, in the second commitment period of probably 2013-2020. This cut will be achieved in a linear path leading to a carbon intensity of 0.26 tCO₂-eq./unit of output in 2020, i.e., 0.26 is 45% less than 0.4. This calculated linear carbon intensity reduction path is shown in Table 1.

Table 1. Linear carbon intensity reduction path

Year	Carbon intensity (tCO ₂ -eq./unit)
Initial Carbon Intensity	0.4
2013	0.3825
2014	0.365
2015	0.3475
2016	0.33
2017	0.3125
2018	0.295
2019	0.2775
Final Carbon Intensity 2020	0.26

At the outset, the forecast economic output of the country in question would be agreed. This could be for the economy as a whole or just for those sectors set down in Annex A of the Kyoto Protocol. The source of the forecast may be that of a recognised institution such as the International Energy Agency, the International Monetary Fund or the World Bank. The GHG emissions associated with that forecast level of economic activity would be calculated using the BAU carbon intensity of 0.4 tCO₂-eq./unit of output. This would be compared with the GHG emissions of that level of economic activity using the carbon intensity associated with the linear reduction path. The difference between the two represents the quota. This is illustrated in Table 2.

The developing country would be required to provide proof, audited by the CDM Executive Board, of the number of primary CERs it caused to be issued during the relevant compliance period.

In this simple approach at the end of the True-Up period the country in question would be required to have generated 181 million primary CERs from CDM projects within its own borders. If it had not done so, then it would be required to buy and surrender sufficient secondary CERs, ERUs or AAUs to make up the shortfall.

Table 2. Deriving a quota as the difference between BAU carbon and reduced carbon intensity (million)

	Actual									Total
	2005	2013	2014	2015	2016	2017	2018	2019	2020	2013-2020
Forecast economic output	100	140	154	169	186	205	225	248	273	1,601
Forecast carbon produced with BAU carbon intensity	40	56	62	68	75	82	90	99	109	640
Forecast carbon produced with reduced carbon intensity	40	53.55	51.1	53.5	55.9	58.2	60.5	62.6	64.5	460
Quota		2	11	14	19	24	30	37	45	181

Say, for example, that at the end of the relevant commitment period it transpires that the country had undertaken CDM projects that produced only 100 million CERs. Those 100 million CERs would be in the hands of CDM project participants who may have sold them to an Annex B developed country. But these would be recognised purely for quota accounting purposes by the UNFCCC. The 81 million shortfall of CERs would have to be met by the country by actually surrendering for cancellation any of its own issued domestic CERs that it had earned as a project participant. Or the country would have to buy 81 million secondary CERs, ERUs or AAUs in the market for surrender to the UNFCCC.

It may be argued that the country in question should be required to surrender all 181 million CERs, not just the 81 million shortfall. This argument would likely be that there is double-counting, because the developing country is given accounting credit for the same 100 million CERs that can be sold and surrendered by project participants to cover emissions in a developed country. This is arithmetically correct.

However, the simple approach has certain attractions, not least of which is that it is more likely to be achievable than a quota that requires the developing country to surrender all 181 million CERs. The CDM quota would give developing countries a more urgent incentive to host projects financed by overseas investors to generate primary CERs, which would guarantee that its growth is as green as possible. There could also be no suggestion of any covert constraint on the growth of the developing country, because the higher the forecast economic output agreed in this quota methodology, the larger the CDM quota is. This should provide some reassurance to developed countries that the GHG reducing effort by the developing countries is as demanding as practically possible.

Mechanistic approach to quota setting

To illustrate this more complex approach the same example as before will be used. The main difference with this mechanistic approach is that the country's actual emissions, rather than forecast emissions, during the 2013-2020 period are taken into account in the

True-Up period to establish whether or not the country has met its quota.

If actual emissions turn out to be greater than the number of tonnes implied by actual economic performance taken together with the pledged reduced carbon intensity cut, then the country would be required to surrender to the UNFCCC sufficient allowances to cover the difference. This is the quota and it is based on verified actual data after the event, not on forecasts.

For example, as before, assume the country produced 100 million units of economic output in 2005 and that in producing these goods and services the country emitted 40 million tCO₂-eq., i.e., carbon intensity in 2005 was 0.4 tCO₂-eq./unit of output. Again, the country has pledged to cut its carbon intensity by 45% by 2020, in the second commitment period of 2013-2020 and this will be achieved in a linear path leading to a carbon intensity of 0.26 tCO₂-eq./unit of output, as shown in Table 1 above. This is illustrated in Table 3.

At the end of the True-Up period in the example in Table 3, actual economic output has turned out to be greater than forecast and the country has also failed to meet its carbon intensity reduction pledge. Consequently the country produced 43 million tCO₂-eq. more GHGs than it would have done had it observed a linear path from a carbon intensity of 0.4 tCO₂-eq./unit of output at the start of the second commitment period to 0.26 tCO₂-eq./unit of output in 2020. It must therefore surrender 43 million of its own domestic CERs or buy 43 million secondary CERs, ERUs or AAUs for cancellation.

Table 4 shows the alternative outcome if the country has under-performed its economic forecast but has again failed to meet its carbon intensity reduction pledge. In this example, the country produced 31 million tCO₂-eq. more GHG than it would have done had it observed a linear path from a carbon intensity of 0.4 tCO₂-eq./unit of output at the start of the second commitment period to 0.26 tCO₂-eq./unit of output in 2020. It must therefore surrender 31 million domestic CERs or buy 31 million secondary CERs, ERUs or AAUs for cancellation.

Table 3. Mechanistic Approach to Quota Setting: Case of out-performance on growth forecast and under-performance on reducing carbon intensity (million)

	Actual									Total 2013- 2020
	2005	2013	2014	2015	2016	2017	2018	2019	2020	
Forecast economic output	100	140	154	169	186	205	225	248	273	1,601
Pledged reduced carbon int.		0.38	0.37	0.35	0.33	0.31	0.30	0.28	0.26	
Forecast carbon produced	40	54	56	59	61	64	67	69	71	500
Actual economic output	100	145	160	175	190	210	230	252	280	1,642
Reduced carbon target	40	55	58	61	63	66	68	70	73	514
Actual carbon produced	40	57	62	69	70	70	72	77	80	557
Actual carbon intensity		0.39	0.39	0.39	0.37	0.33	0.31	0.31	0.29	
Quota		1.5	3.6	8.2	7.3	4.4	4.2	7.1	7.2	43

Hence, irrespective of actual economic performance, if the country fails to meet its intensity reduction pledge it would be obliged to surrender primary CERs or be a net buyer of allowances.

In theory, if the country cuts its carbon intensity by more than its pledge, the quota would be a negative number. This would mean that the world owed the country a quantity of CERs. It is suggested that liability for this 'carbon debt' would be highly contentious and difficult to allocate to other countries. For that reason it is proposed that a floor of zero is placed on the developing countries' quota.

The CDM process

The CDM has been one successful aspect of the Kyoto Protocol, despite the bad press it has received. It is a world-changing idea that has only been in existence for a comparatively short time and it is unsurprising that it is not yet perfect. Prolonged uncertainty over the future of the Kyoto Protocol and the role that the CDM might play in any new deal is undermining confidence in the mechanism. Project developers are turning increasingly to the voluntary sector to finance projects where the revenue to be earned from selling allowances is lower, but the future is considered, rightly or wrongly, to be less uncertain. The inclusion of a CDM quota in any deal that is agreed in Durban at the end of 2011 would restore confidence and re-establish and increase the project flow.

Critics of the CDM often cite excessive bureaucracy in the process. There may be a case for outsourcing some of the detailed work of the Executive Board to the private sector, paid for by the 2% levy on CERs. The appointment of a private contractor could be implemented by public tender. The existing CDM Executive Board could be responsible for oversight of the contractor's activities in the context of performance benchmarks and could be the body to which dissatisfied project participants could appeal. This would shorten the time between project inception and CER issuance and increase the revenue flowing from the 2% levy to pay for itself.

The extended use of the CDM to set developing country quota would doubtless raise objections from environmental groups and from developed country negotiators. There is a school of thought that regards a tonne of GHG not produced in the future compared with a baseline business-as-usual scenario as being somehow less worthwhile than a tonne of GHGs cut from current levels. This is unrealistic thinking. Developing countries will grow, come what may. Any attempt to constrain that growth would be unrealistic.

According to the World Resources Institute, while the income per head in developed economies is greater than USD25,000 per annum, the income per head in developing economies is only about USD5,000 per annum. Failure to address that disparity would neglect the principle of equity enshrined in the UNFCCC.

Table 4. Mechanistic Approach to Quota Setting: Case of under-performance on growth forecast and under-performance on reducing carbon intensity (million)

	Actual									Total 2013- 2020
	2005	2013	2014	2015	2016	2017	2018	2019	2020	
Forecast economic output	100	140	154	169	186	205	225	248	273	1,601
Pledged reduced carbon int.		0.38	0.37	0.35	0.33	0.31	0.30	0.28	0.26	
Forecast carbon produced	40	53.6	56.2	58.9	61.5	64.1	66.5	68.8	70.9	500
Actual economic output	100	130	132	135	140	143	150	160	175	1,165
Reduced carbon target	40	49.73	48.18	46.91	46.20	44.69	44.25	44.40	45.50	514
Actual carbon produced	40	51.10	51.15	53.2	51.6	47.67	47	48.89	50	401
Actual carbon intensity		0.39	0.39	0.39	0.37	0.33	0.31	0.31	0.29	
Quota		1.4	3.0	6.3	5.4	3.0	2.7	4.5	4.5	31

Developing countries will grow their economies to redress this income differential. A CDM quota would ensure that they grow greener than they otherwise would.

The idea of a CDM project quota for large developing countries does nothing to address two other substantial barriers to agreement of a post-2012 deal:

- 1 The inability of the USA negotiators to join in any extension to the Kyoto Protocol in the absence of a mandate from Senate and Congress;
- 2 The unlikelihood of other Annex B countries to sign up to a new deal that:
 - a does not include the USA; and/or.
 - b leaves a large surplus of AAUs in the hands of Russia and the Ukraine.

A robust quota for the largest developing countries would be supportive of the efforts of the Obama administration to gain consent, but it is unlikely to be sufficient on its own to untangle American politics on environmental issues. It may however be enough to bring within the scope of a new global deal certain regions of the USA, such as those states participating in the Regional Greenhouse Gas Initiative, the Western Climate Initiative and the Mid-Western Greenhouse Gas Reduction Accord. Whether or not this is constitutional or legally achievable is outside the scope of this article. But if it was it would be a good start in bringing the USA under the Kyoto umbrella.

Elimination of the AAU surplus, which is bankable into the second commitment period under the Kyoto Protocol, would encourage the acceptance by Annex

I countries of deeper caps post 2012. Ukraine has expressed a willingness to consider a limit on AAU banking under the right circumstances. It is debatable if Russia would do the same.

However, if the CDM quota proposal were to be accepted, it may be possible to reach a compromise with the larger Economies in Transition ('EITs') to replace their Kyoto surplus with a CDM quota for the next commitment period. In other words, move the largest EITs into a new category, as a subset of Annex B. They would retain their Annex I obligations under the UNFCCC and their Annex B obligations under the Kyoto Protocol. It is suggested that it would be inappropriate to allow these EITs to benefit from the Green Climate Fund. But their caps could be replaced with a CDM quota. JI projects in the countries concerned could be re-classified as CDM projects.

This may appear to be a large concession to Russia and Ukraine. However, in practice, the size of the AAU surplus makes toothless any pledge on their part to cut their emissions relative to 1990 levels. Acceptance of a CDM quota would actually achieve more in the way of actual GHG reductions.

There is no 'silver bullet' to resolve the issues standing in the way of a successful deal to succeed the Kyoto Protocol. But the concept of a CDM quota may contribute to a resolution. The idea could only work in the context of an overall package that includes the appropriate funding and deployment of the Green Climate Fund.

The Cancun Agreements

Main elements, Perspectives and Future Negotiations

By Job Taminiau*

"Cancun has done its job" is how Christiana Figueres, the UNFCCC Executive Secretary, summarized the Cancun climate change negotiations result (UNFCCC, 2010).¹ The Cancun Agreements have been widely recognized as a success which re-positions the UNFCCC as the main body to address climate change internationally. This article summarizes the main points of the COP 16 agreements and explores several Parties' perspectives. In addition, we briefly look to the future of the negotiations towards COP 17 (Durban, South Africa, December 2011).

Introduction

The main discussion topic at the 29 November – 11

December 2010 Cancun climate change conference concerned the two-track negotiating process aiming to enhance long-term cooperation under the UNFCCC and the Kyoto Protocol. Since COP 15 in December 2009, the UN based negotiation process had been questioned as to whether it was capable to deliver an international climate policy regime. Prior to the Cancun negotiations, expectations for significant progress were therefore low, although it was widely recognized that progress on certain issues should be feasible, such as: adaptation, technology transfer frameworks, capacity building, a financial mechanism and the launch of a readiness phase for REDD+ in developing countries (ENB, 12 October 2010).²

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¹ UNFCCC, 2010. Press release: UN climate change conference in Cancun delivers balanced package of decisions, restores Faith in multilateral process. UNFCCC, 11 December 2010 <<http://unfccc.int/2860.php>>

While the consensus rule allowed a few countries to block the Copenhagen Accord from becoming an official U.N. document in December 2009, the Cancun Agreements could not be blocked by Bolivia's opposition (ENB, 13 December 2010).³ COP President Espinosa noted: "consensus does not mean that one country has the right of veto, and can prevent 193 others from moving forward" (ENB, 13 December, 2010). With the Cancun Agreements, the UN based negotiation process showed that it is capable of overcoming deadlock, and deliver results.

Main elements of the Cancun Agreements

Throughout 2010, ongoing debate focused on the validity, viability and importance of the Copenhagen Accord. With the Cancun Agreements the main elements of the Copenhagen Accord have essentially been adopted into the UNFCCC process (PCGCC, 2010a).⁴ The main elements of the Cancun Agreements are summarized in Box 1 (see next page).

One of the key aspects of the Cancun Agreements is the outline of a phased approach to strengthen efforts by developing countries to realize REDD+. As such, the Agreements recognize the importance of REDD+ for climate change mitigation. Through a phased approach national REDD+ strategies should evolve "into results-based actions that should be fully measured, reported and verified" (PCGCC, 2010a).

Another key aspect is the creation of a Technology Mechanism to support international technology transfer, especially to developing countries. It will be managed by a Technology Executive Committee (TEC) with the support of a Climate Technology Centre and Network (CTCN). Among the TEC functions are to: provide guidance on policy and programme priorities; recommend actions to address barriers to technology transfer; and to catalyze development and use of technology road maps or action plans (AWG-LCA, 2010).⁵ One of the CTCN functions is to facilitate a network of organizations, networks and initiatives with a view to engaging participants effectively (ENB, 13 December 2010).

Importantly, the target to keep global average temperature rise below 2°C compared to pre-industrial

levels has been included for the first time in a UN official document. Although several sources argue that countries' current emission reduction pledges will not be sufficient to realize this target (CAT, 2010),⁶ it does provide a long term target for international action to move towards. In addition, the Cancun Agreements also emphasize the need to establish a process to define a date for global GHG emissions to peak and to establish a global emission reduction goal for 2050 (EU, 2010).⁷ Additionally, it considers strengthening the above long-term goal should science show the need for limiting the temperature rise to 1.5°C only (ENB, 13 December 2010).

Concerning CDM, the COP/MOP decided that carbon capture and sequestration (CCS) in geological formations is eligible as a CDM project activity (Decision -/CMP.6), provided that the issues identified in decision 2/CMP.5 paragraph 29 are addressed and resolved. Examples of these issues are:

- a) safety;
- b) the potential for perverse outcomes;
- c) monitoring, reporting and verification; and
- d) environmental impacts.

The COP/MOP requested the SBSTA to elaborate modalities and procedures for CCS under the CDM and to provide solutions for the issues mentioned earlier.

Perspective of several negotiating parties

While positions within the climate change negotiations of the different Parties differ considerably, most commented positively on the Cancun Agreements.

U.S. Special Envoy for Climate Change Todd Stern stated that the Parties "largely achieved" the goal of advancing collective efforts to meet the climate change challenge and that the result is "fundamentally consistent with U.S. objectives" (DOS, 14 December 2010).⁸ As such, the USA aims to expand on the chosen direction. However, the USA faces an increasingly difficult domestic situation, as regards to climate change mitigation commitments, due to increasing partisan polarization: "the November election, in which Republicans seized control of the House of Representatives and gained six Senate seats, make the passage of climate legislation virtually impossible for

² Earth Negotiations Bulletin, 2010. Summary of the Tianjin Climate Change Talks: 4-9 October 2010, Vol. 12 No. 485 <<http://iisd.ca/climate/ccwg12>>

³ Earth Negotiations Bulletin, 2010. Summary of the Cancun Climate Change Conference: 29 November – 11 December 2010, published 13 December 2010, Vol. 12 No. 498 <<http://www.iisd.ca/climate/cop16>>

⁴ PCGCC, 2010a. Summary: Cancun climate change conference. Pew Center on Global Climate Change summary <<http://www.pewclimate.org/international/cancu-climate-conference-cop16-summary>>

⁵ AWG-LCA, 2010. Outcome of the work of the Ad Hoc Working Group on long-term Cooperative Action under the Convention. Draft Decision -/CP.16 <<http://unfccc.int/2860.php>>

⁶ CAT, 2010. Cancun Climate Talks - Keeping options open to close the gap. Climate Action Tracker briefing paper advance version of 11 December 2010 <<http://www.climateactiontracker.org/>>

⁷ EU, 2010. European Union welcomes Cancun Agreement as important step towards global framework for climate action. EU press release <<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/10/1699>>

⁸ DOS, 2010. U.S. Department of State briefinf on U.N. climate change conference in Cancun December 14 2010 <<http://www.state.gov/g/oes/rls/remarks/2010/152847.htm>>

Box 1. The main elements of the Cancún Agreements. (AWG-LCA, 2010; KP-AWG, 2010)

- I. Acknowledgement for the first time in a U.N. document of the need to keep global average temperature rise below 2°C.
- II. Industrialized and developing country pledges are officially recognized under the multilateral process.
- III. USD 30 billion in fast start finance up to 2012 and USD 100 billion annually by 2020 from industrialized countries to support climate adaptation in the developing world.
- IV. Establishment of a Technology Mechanism with a TEC and CTCN.
- V. Establishment of a Cancún Adaptation Framework to allow better planning and implementation of adaptation projects.
- VI. Future consideration of new carbon market mechanisms going beyond a project-based approach. In addition, the CDM was strengthened.
- VII. Launch of a REDD+ phased approach.
- VIII. Extension of the work of the AWG-LCA and KP-AWG for another year while leaving open the legal form of the eventual outcome of the negotiations.

the next two years”⁹. Federal legislative options, such as a cap and trade bill or carbon tax, therefore, are less likely. Moreover, this domestic opposition will reduce U.S. negotiation flexibility within the UNFCCC context.

Positioned as a plan B, the Obama Administration focuses on GHG regulation instead of legislation. The Environmental Protection Agency (EPA) enacted the first federal regulations of major stationary sources of GHG emission on 2 January 2011 (Time, 2011;¹⁰ PCGCC, 2010b¹¹). However, as EPA’s authority to implement these regulations has been challenged by a variety of states, especially Texas (Time, 2011), the extent to which EPA will be able to influence U.S. GHG emissions is uncertain. Moreover, failure to domestically address climate change, will influence the U.S. international negotiation position.

As mentioned in the previous JIQ, the interaction between China and the USA is pivotal for international

climate change mitigation action. While both countries openly clashed in Tianjin (Guardian, 6 October 2010a),¹² they did not engage conflict at Cancún (PCGCC, 2010a). India played a prominent role in this respect (HindustanTimes, 2010).¹³ India’s proposal to establish International Consultation and Analysis (ICA)¹⁴ for all countries responsible for at least one percent of GHG emissions was instrumental in the negotiations. While India’s proposal is not directly incorporated into the Cancún Agreements, the introduction of the notion of ICA into the negotiations helped overcome critical obstacles in the MRV discussion. Moreover, Parties generally appeared more willing to accept incremental outcomes (PCGCC, 2010a).

The main issue in the U.S. – China interaction remains the risk of asymmetry between actions in developed countries with commitments and emerging economies without commitments. This was reiterated by Stern: “What we’re saying is we will do legally binding commitments only if they are symmetrical, if the emerging market countries do that also” (DOS, 2010). In the run up to ‘Copenhagen’ China announced to cut the country’s carbon intensity by 40-45 percent by 2020 below 2005 levels. At COP-16 China showed willingness to anchor this pledge into the Cancún Agreements (Australian, 2010).¹⁵

According to Hallding and Olsson (2010),¹⁶ China’s willingness on climate change is essentially a positive side effect of China’s ambitious energy security policies. They conclude that China’s climate policies are increasingly embedded in China’s core policy priorities of innovation, energy security, trade and globalization (Hallding and Olsson, 2010). Nonetheless, China remains firmly committed to the notion that, according to the UNFCCC principle of common but differentiated responsibilities, developed countries need to take the lead in climate change mitigation. China, with the G-77 countries, therefore refused adopting binding emission reduction commitments for developing countries.

Another key aspect from within the negotiations is the continued cooperation of the BASIC¹⁷ configuration. The BASIC countries are also “very happy” with the

⁹ Carson, M., Román, M., 2010. Washington descends deeper into climate gridlock, California and the states creep forward. Policy brief to the Stockholm Environment Institute. <<http://sei-international.org/publications?pid=1649>>

¹⁰ Time, 2011. Political Battle brewing over the EPA’s new emission regulations. 3rd of January 2011 on <<http://www.time.com/time/health/article/0,8599,2040485,00.html>>

¹¹ PCGCC, 2010b. Pew Center on Global Climate Change website. EPA GHG regulation FAQ <<http://www.pewclimate.org/federal/executive/epa-ghg-faq>>

¹² Guardian, 2010a. China and U.S. clash at climate talks. 6 October 2010. <<http://www.guardian.co.uk/environment/2010/oct/06/china-climate-talks-us-negotiator>>

¹³ HindustanTimes, 2010. Jairam Ramesh built bridges in Cancun Climate Talks. December 12, 2010. <<http://www.hindustantimes.com/Jairam-Ramesh-built-bridges-in-Cancun-climate-talks/H1-Article1-637557.aspx>>

¹⁴ International Consultation and Analysis is a transparency mechanism to review whether Parties are carrying out their domestic mitigation pledges.

¹⁵ Australian, 2010. China sets pace with pledge on emissions. December 8th 2010 <<http://www.theaustralian.com.au/national-affairs/china-sets-pace-with-pledge-on-emissions/story-fn59niix-1225967241371>>

¹⁶ Hallding, Olsson, 2010. Balancing climate concerns and energy security - China searching for a new development pathway. <<http://sei-international.org/publications?pid=1647>>

Cancun Agreements (NDTV, 2010).¹⁸ However, as Olsson et al. (2010)¹⁹ note: “as negotiations drill down to the finer details of an international agreement, the differences between each of the BASIC countries will inevitably come to the surface”. The manner in which continued cooperation within BASIC takes place will be of “growing importance for understanding possible pathways for future international cooperation on climate change” (Olsson et al., 2010).

The Cancun Agreements are also in line with the EU’s objective to use Cancun as a stepping stone to a significant climate deal in South Africa (Reuters, 9 August 2010).²⁰

As noted in the previous JIQ, the political clout of the EU in this issue seems to be diminishing. Identified as a possible option for the EU to influence international climate change negotiations was to form ‘coalitions of the willing’ (Tangen, 2010).²¹ Countries participating in such coalitions would commit themselves to a second commitment period under the Kyoto Protocol in order to push for international action. However, in Cancun Japan, Canada and Russia stated that they refuse to enter into a second commitment period under the protocol (Guardian, 2010b;²² Guardian, 2010c²³). They argued that since the present group of countries with quantified commitments under the protocol account

for less than a quarter of global GHG emissions, the protocol is not an effective tool to address climate change. As such, the option for a coalition of the willing within the Kyoto protocol context has lost much of its potential.

Beyond Cancun, heading for Durban

The Cancun Agreements are considered the best result feasible at COP 16. Throughout 2011, it will be important to maintain momentum and retain confidence in the UN process.

Despite the optimism after ‘Cancun’, important negotiation topics remain to be addressed. The main topic is to decide on the legal format for international climate change policy action. Cancun reiterated the Ad Hoc Working Group to the Kyoto Protocol mandate to “complete its work... as early as possible and in time to ensure that there is no gap between the first and second commitment period” (KP-AWG, 2010²⁴; PCGCC, 2010a). However, this work seems complex in light of the refusal of Russia, Japan and Canada to participate in a second commitment period of the Protocol.

Moreover, both the USA and China have expressed strong reluctance to enter into a Kyoto style follow up framework. Both countries favor domestic bottom-up action over international top-down action. Within the Cancun Agreements, the countries can set their pledges without international interference. These aspects combined, considerably reduce the chances of a global follow-up Kyoto type framework. Instead, it appears much more likely that a follow-up framework will be along the lines of the Cancun Agreements, in the form of a domestic pledge and review framework, accompanied by UN-level arrangement for adaptation, technology transfer, capacity building, and finance.



Standing ovation for COP-16 Espinosa
photo: courtesy IISD, Earth Negotiations Bulletin

¹⁷ In November 2009, Brazil, China, India, and South Africa announced a joint strategy and issued a common set of non-negotiable terms.

¹⁸ NDTV, 2010. Developing countries happy with Cancun draft: Jairam Ramesh. December 11, 2010 <<http://www.ndtv.com/article/india/developing-nations-happy-with-cancun-draft-jairam-ramesh-71944>>

¹⁹ Olsson et al., 2010. Together alone? Brazil, South Africa, India, China (BASIC) and the climate conundrum <<http://sei-international.org/publications>>

²⁰ Reuters, 9 August 2010. Carbon Market Weekly Interview: Cancun will not see big climate deal – EU.

²¹ Tangen, K. (2010). ‘The Odd Couple? The Merits of Two Tracks in the International Climate Change Negotiations’. Briefing Paper No. 59, The Finnish Institute of International Affairs, 30 April.

²² Guardian, 2010b. Cancun Climate change conference : Russia will not renew Kyoto Protocol. 10 December 2010 <<http://www.guardian.co.uk/environment/2010/dec/10/cancun-climate-change-conference-kyoto>>

²³ Guardian, 2010c. Cancun Climate Change Summit: Japan accused of threatening Kyoto Protocol. 2 December 2010 <<http://www.guardian.co.uk/environment/2010/dec/02/japan-stance-kyoto-protocol>>

²⁴ KP-AWG, 2010. Outcome of the work of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its 15th session. Draft Decision -/CMP.6 <<http://unfccc.int/2860.php>>

Emissions Trading and International Competitiveness

Case for the Japanese Industries

by ASUKA Jusen, LU Xiangchun, KANEMOTO Keiichiro*

Many nations and regions have adopted environmental regulatory measures, such as emissions trading systems. Next to their effectiveness in terms of environmental protection, it is of a vital interest to stakeholders how these measures affect corporate activities and behavior, as well as the international competitiveness of industries.

In order to address this question, we first present conclusions from studies for the USA, the UK and Japan on the economic effect of putting a price on GHG emissions. Secondly, we estimate international competitiveness and the carbon intensities of Japanese industries through industry and product level assessments. For this, we use a methodology which has been adopted for the analysis of other emissions trading schemes such as the EU ETS. Thirdly, we determine, as a case study, for a hot-rolled steel plate manufactory in Japan the demand function, price elasticity, substitute elasticity, and domestic and international market shares, using the statistical data on demand-supply trends and price fluctuations.

Table 1 shows the result of the Input-Output analysis to estimate product price changes if emissions allowance prices were passed on into the price. We find that:

1. there is not much difference among the three countries analyzed (Japan, USA, UK),
2. for most industrial sectors, the product price change ratio does not exceed 2%, and
3. any differences among the three countries can be explained by differences in industrial structure and rates of advancement in energy conservation.

Table 2 shows the results of an econometric analysis of the demand for domestically-produced iron and steel products. It can be concluded that net demand

including imported products would decrease by 3.22% and 2.14%, respectively, as a result of passing the price of emission allowances on to the product price. Furthermore, when production leakage is defined as “impacts on demand only for domestic products minus impacts on net demand (consumption),” to indicate the impact on competitiveness in accordance with Aldy and Pizer (2009), we obtain the calculated value of 1.08%.

As can be seen in the third column of Table 2, this result is almost equivalent to the results found by Aldy and Pizer (2009) for the US iron and steel industry (assuming a US emissions trading scheme with an allowance price of 15 USD/tCO₂ which is fully passed on to end product prices) and by Carbon Trust (2008) for the EU’s iron and steel industry (assuming an allowance price of 30 Euro/tCO₂ with 50% of the allowance price passed on to iron and steel prices).

Our conclusion can be summarized as follows:

1. In the EU and the USA, an emissions trading system has a relatively large impact on industries with higher carbon intensities and more severe international competition, such as iron and steel, aluminium, pulp and paper, fertilizers, cement and lime, and inorganic chemicals. This situation is comparable for Japan, where the products manufactured in the sectors iron and steel, cement, petrochemicals, detergents, and pulp and paper, tend to show higher carbon intensities. The combined share of these industries in Gross Domestic Products (GDP) is less than 2% each for the EU and the USA, and the expected rise in unemployment rate is less than 2%, assuming that, in the case of the USA, emission allowances are allocated at the carbon price of 15 USD/tCO₂ and

Table 1. International comparison of the range of produce price increase

	Input-Output table	Emission allowance price	Product price change ratio (economy as a whole)
Japan (Asuka et al, 2010)	Year 2000	3000Yen/tCO ₂	1.25%
US (Weber and Peters, 2009)	Year 2002	30 USD/tCO ₂	1.5%
UK (Stern, 2007)	Year 2003	70 £/t-C	<1%

* Tohoku University, Japan; Institute for Global Environmental Strategies, Japan. This article is a shortened version of a paper by: Asuka Jusen, Lu Xiangchun, Kanemoto Keiichiro (2010). “Emission trading and International Competitiveness: Case study for the Japanese Industries,” Paper prepared for the annual meeting of the Society of Environmental Economics and Policy, Japan Ver. 1.5, revised on 2 December 2009 <<http://www.cneas.tohoku.ac.jp/labs/china/asuka/>> (Japanese version). For English version, please contact: asuka@cneas.tohoku.ac.jp

Table 2. Impacts of product price increase due to the passing of emission allowance purchasing cost upon the demand for iron and steel products

Industry sector (products)	Impacts on the demand for domestic products only	Impacts on the net demand (consumption)	Impacts on international competitiveness (size of production quantity leakage)
Iron and steel products as a whole (US: Aldy and Pizer, 2009)	- 2.7%	- 1.8%	- 0.9%
Iron and steel products as a whole (EU: Carbon Trust, 2008)	-2.5 – 9%	- 2%	- 0.5 – 6.5%
Hot-rolled steel plates (Japan: this study)	- 3.22%	- 2.14%	- 1.08%

Note: The carbon price used in Aldy and Pizer (2009) was 15 USD/tCO₂, in Carbon Trust (2008) it was 30 Euro/tCO₂ with 50 % cost passed onto price, and in the Asuka et al. (2010) report 3000 Yen/t-CO₂. Note also that the result in Carbon Trust (2008) shows ranges rather number, as they did sensitivity analysis using different assumptions on substitute elasticity.

- entire cost increases are passed onto product prices as an opportunity cost.
- The case study of hot-rolled steel plates manufactured in Japan indicates changes in product prices, demand-supply situation, and trade patterns following the introduction of emissions trading system are smaller than the changes seen in the past 10 years. It is assumed that emission allowances are auctioned (at the carbon price of 3000 Yen/t-CO₂) and the entire cost increases are passed on to product prices. The demand for domestic products will decrease by around 3%, which coincides with the conclusions from similar studies on iron and steel products in EU and the USA.
 - Considering recent energy efficiency improvement and energy price hikes in trading partner countries, especially China, the risks of carbon leakage that may occur due to differences in carbon constraint levels may have been over-estimated.

In order to allow for a transition towards an emission trading scheme and thus greater political acceptability, some form of protective measures could be in place upon the introduction of an emissions trading system in order to get political acceptability. Possible policy options for such a transition are: 1) allocating free of charge emissions allowances; 2) tax reductions and subsidies; 3) linking emissions trading schemes with international offset mechanisms (e.g., CDM); 4) trade measures; 5) sectoral commitments; 6) voluntary export control by developing countries; and 7) consumption based accounting.

The most practical and realistic option is the free allocation of emissions allowances. In fact, both the US and Australian governments adopted this option, having learned from the experiences of the EU ETS first phase. At this moment, the Japanese government

is considering the free allocation as well, with some special treatment for the company that produce high energy efficiency products.

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hot-rolled steel plates (photo: <http://img.ecplaza.com>)

Australian Domestic Offset Policies: An example for achieving real greenhouse gas emissions reductions?

By Regina Betz, Iain MacGill and Robert Passey*

Australia provides an interesting context for considering domestic offset policies. It was a signatory of the Kyoto Protocol with a target of 108% of 1990 emissions. The government, however, decided not to ratify whilst still maintaining a commitment to meet the target. The government did implement the world's first Mandatory Renewable Energy Target through tradeable certificates (MRET) in 2001, and established a voluntary domestic offset program, Greenhouse Friendly. In the absence of specific emissions trading policies by the Federal Government, a number of State Governments implemented domestic baseline and credit GHG related mechanisms. In particular, the NSW Greenhouse Gas Abatement Scheme (GGAS) was introduced in 2003 as one of the world's first mandatory emissions reductions trading Scheme.¹

One of the first actions of a newly elected Federal Government in late 2007 was to ratify the Kyoto Protocol and commence the formal design of an emissions trading scheme called Carbon Pollution Reduction Scheme (CPRS) that would cover more than 70% of Australian (Kyoto) emissions. This scheme was intended to commence in 2010. The government has also developed a National Carbon Offset Standard (NCOS) in recognition of the impact of the CPRS (and Kyoto ratification) on existing offset schemes. An extraordinary set of circumstances saw the CPRS delayed to 2011, then deferred until at least 2013, then put back on the agenda after a hung election that resulted in a minority government reliant on the Australian Green Party to pass legislation.

As such, there are a range of Australian State and Federal domestic offset schemes that have had to endure a change in Federal Government and Kyoto ratification, and then on-again off-again national emission trading commitments. We will briefly highlight four key experiences with domestic offsets in Australia that may provide useful lessons for others:

- 1 The perils of poor scheme design – particularly with respect to additionality – on offset scheme effectiveness and equity as demonstrated by the NSW GGAS scheme.
- 2 The challenges of transitioning domestic offset schemes within a policy context that changes to include formal international targets and national

emissions trading proposals, as seen with the Australian Greenhouse Friendly Program.

- 3 The concerns of accounting for domestic offsets and voluntary action became rather controversial during the CPRS development. We highlight one approach to address these concerns, namely the Additional Action Reserve.
- 4 The challenges of establishing frameworks for domestic offsets within the Kyoto accounting framework, and in the context of proposals for a very broad national emission trading scheme that covers all emissions sectors other than land-use and agriculture. Specifically, the Australian government has recently introduced the National Carbon Offset Standard (NCOS) and the Carbon Farming Initiative (CFI) which both have to grapple with these issues.

The NSW Greenhouse Gas Reduction Scheme

The NSW Government introduced one of the world's first mandatory GHG emissions trading schemes with the commencement of the NSW Greenhouse Gas Reduction Scheme (GGAS) in 2003, which was joined by the Australian Capital Territory (ACT) in 2005. The stated policy intent is to reduce GHG emissions created through electricity consumption in NSW and to encourage activities that offset these emissions. The NSW Government's intention is to phase out the GGAS once a national emissions trading scheme is in place. In anticipation of this, the NSW Energy Savings Scheme (ESS), which separates out the components of the GGAS intended to drive energy efficiency, was initiated on 1 July 2009. Because of the uncertainty surrounding the introduction of a national emissions trading scheme, it is unclear what will happen to the remainder of the GGAS.

The GGAS imposes mandatory GHG benchmark targets on all NSW electricity retailers (benchmark participants) and certain other parties for electricity consumed in NSW (large electricity users) (see Figure 1 for the structure of the scheme). The Scheme compares a declining per-capita NSW state target for these emissions to an imputed estimate of actual NSW emissions from the electricity sector each year. In 2003 the per capita level in NSW was set at 8.65 tonnes of (tCO₂-eq.) and it has been progressively decreased to 7.27 t CO₂-eq per capita by 2007, where

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¹ The Scheme's name has been changed from the Greenhouse Gas Abatement Scheme to the Greenhouse Gas Reduction Scheme but retains the acronym GGAS.

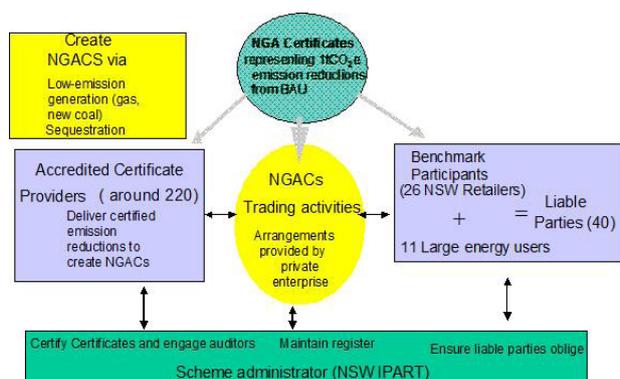


Figure 1. Structure of GGAS

it will most likely be kept until the GGAS is terminated. The resulting annual emissions reduction target is assigned to liable parties based on their respective market shares of NSW electricity sales. These parties can then demonstrate compliance with their targets by annually surrendering an appropriate number of NSW Greenhouse Gas Abatement Certificates (NGACs), each representing an imputed tonne of CO₂-eq of 'avoided' GHG emissions.

Alternatively, liable parties must pay a penalty for each imputed tCO₂-eq over their target. NGACs can be created through certified low-emission generation and a range of offset activities involving waste methane in States/Territories connected to the National Electricity Market, demand-side activities in NSW and the ACT (some of which have now been transitioned into the ESS), and biomass sequestration activities in NSW. Large electricity users can create Large User Abatement Certificates (LUACs) if they have elected to manage their own GHG benchmark and undertaken accredited 'offset' emission reduction activities that do not relate to electricity consumption. Unless otherwise stated, below, we do not distinguish between NGACs and LUACs as NGACs dominate the scheme.

By the end of 2009, 65% of all NGACs had been created based on the Generation Rule which has dominated the scheme and includes four different categories:²

- **Category A** (40% of Generation Rule NGACs) – those generating systems which entered into power purchase agreements with electricity retailers under the previous NSW voluntary benchmarks scheme where these contracts are still operational. This category of generation will not be eligible under the Scheme as of the 1 July 2010. Most NGACs have been created by waste, coal mine, landfill and natural gas projects.
- **Category B** (8%) – Base-load generating systems located in NSW (the 'NSW pool generators'). Most

NGACs in this category have been created by coal and biomass projects.

- **Category C** (22%) – These are generating systems that generally pre-date the announcement of GGAS, on 1 January 2002, and are not classified as Category A, B or D. Most NGACs have been created by coal and natural gas projects.
- **Category D** (31%) – Effectively 'new generation' plant, in that their operation commenced after the announcement of GGAS. It also includes fossil fuel plants <30 MW that started operation after 30 June 1997, and all renewable generation plants established after 1 January 1997. Most NGACs in this category have been created by landfill gas and gas projects.

Another 28% were based on the Demand Side Abatement (DSA) rules. Of the total of 72 DSA projects, around 31 transitioned into the new Energy Savings Scheme in 2010; only the 'on-site generation' projects stayed in GGAS. Given the introduction of the EES, the NGACs from DSA projects have significantly declined from 2009.

Large User Abatement (LUAC) rules accounted for only 4% followed by the carbon sequestration rules which made up only around 3% of the created NGACs.

The price development of NGACs (see Figure 2) shows that prices peaked in 2006 at around A-\$ 16 per NGAC and reached their lowest level in 2009 at around \$3. It seems very likely that the NGAC prices were influenced by the uncertainty surrounding an Australian-wide ETS. This started with the National Emissions Taskforce of the States in 2006 followed by the Federal Government's release of several ETS proposals since 2007 and the near adoption of the legislation at the end of 2009. The NSW Government had already negotiated the exchange rate of NGACs to Australian Emissions Units (the unit of the most recently proposed ETS, the Carbon Pollution Reduction Scheme, CPRS) which may have influenced the price development as well.

Evaluation of GGAS

One of the fundamental design features of any baseline and credit scheme is the additionality of the projects which allow for the creation of certificates. If additionality is not ensured, environmental integrity is compromised. However, the GGAS scheme does not explicitly discuss or attempt to assess additionality at all and no additionality test, e.g., similar to the CDM, is part of the GGAS rules. Therefore, it is no surprise that the additionality of NGACs created has been seriously

² IPART 2010: Compliance and Operation of the NSW Greenhouse Gas Reduction Scheme during 2009, <http://www.greenhousegas.nsw.gov.au/documents/SchRep09.pdf>.

³ E.g. Passey, R., MacGill, I. and Outhred, H. (2008) "The governance challenge for implementing effective market-based climate policies: a case study of The New South Wales Greenhouse Gas Reduction Scheme", *Energy Policy*, 36(8), p3009-3018.



Note: This figure shows a 4 week rolling average of the last market spot price. This data accounts only for NGACs traded through NGES and may not reflect the price paid by NGAC buyers at the times shown. The Scheme Administrator recommends that persons seek independent advice before buying or selling NGACs, and cautions against making decisions based solely on this chart.
Data source: The Green Room, published by NGES (see www.nges.com.au)

Figure 2. NGACs price development (IPART 2010)

questioned.³ This was also reflected by the Australian Greenhouse Office estimates of the contribution of GGAS to Australia’s emissions abatement: from 18.1 Mt of CO₂-eq. emission reductions claimed by the scheme in 2010 only 4.7Mt (which is around 25%) were actually directly linked to the scheme alone.⁴ It is likely that these issues remain, either because some of the NGACs created for those compliance periods remain in circulation or because most NGACs rules – apart from the termination of Category A projects and DSA - have not been modified.

Furthermore, the equity of the GGAS scheme can be criticised. It seems that the cost of the NGACs have been passed through to electricity consumers in NSW and transferred to the accredited certificate providers, who are not always undertaking “additional” abatement projects. Thus, electricity consumers are paying for projects which do not deliver real GHG abatement.

A more positive design experience is the nomination process of certificate providers. This feature enables bundling of projects, which can reduce transaction costs. In addition, standard verification occurs internally and IPART as the administration body is the client for third party verification (special verification needs). The internal verification reduces transaction costs and the nomination by IPART of third party verification bodies ensures that project developers cannot build up special relationships with a particular verification body.

Greenhouse Friendly programme

Another Australian Government climate policy is the Greenhouse Friendly programme, which was introduced in 2001. Its aim was to “..Enable companies to market carbon neutral products and services, deliver greenhouse gas abatement and give

Australian consumers greater purchasing choice.” The programme claimed that “abatement activities offered permanent, independently verified offsets which represented emissions reductions or sequestration which had contributed to a net reduction of Australia’s emissions.”⁵ In contrast to GGAS the Greenhouse Friendly programme also involved testing of additionality.

However, in 2010 the programme was wound up with the following reasons: “The (proposed) CPRS’s broad sectoral coverage means less scope to pursue offset activities which are limited to emissions sources not covered by the CPRS. All Greenhouse Friendly abatement is in sectors that would be covered by the CPRS (once it is introduced) and that are counted towards Australia’s Kyoto Protocol target. Abatement in these sectors would not meet test of being additional to ‘business as usual’, and therefore cannot be used to support carbon neutral claims.” Those statements created uncertainty for the participants of the scheme when it was cancelled but the CPRS was not implemented at the end which was one of the reasons for introducing the National Carbon Offset Standard (NCOS). The option for co-existence of domestic offsets and a cap and trade scheme will be further assessed in the following.

Accounting for Domestic Offset Projects and voluntary action under an ETS

An inherent design feature of cap-and-trade schemes is that once the cap on emissions has been set, then no actions (including domestic offset projects, DOP) by individuals, organizations such as non-governmental organisations or governments within the system can provide additional reductions beyond the level of the cap. Thus the emissions cap is also an emissions floor. However, allowing for individual action and including offset projects from non-covered sectors in an emissions trading scheme (ETS; cap and trade) can reduce costs for the sectors covered by the ETS and may create additional innovation incentives for projects which may not be implemented by the carbon market without its provisions.

However, it will not lead to additional GHG reductions as mentioned above as the certificates created are used to allow a corresponding increase in emissions in the covered sector (see Figure 3), unless an equivalent number of certificates from the covered sectors are cancelled or the target is reduced. The problem with reducing the target is that the quantity of emissions reductions by DOP and voluntary action may not be known when the covered sector’s target is set. An approach that can be used to cancel certificates -

⁴ Australian Greenhouse Office (AGO), *Stationary Energy Sector Greenhouse Gas Emissions Projections 2003*, Canberra.

⁵ <http://www.climatechange.gov.au/greenhousefriendly/>

⁶ Twomey, P., Betz, R., MacGill, I and Passey, R. 2010, Additional Action Reserve: A proposed mechanism to facilitate additional voluntary and policy emission reductions efforts in emissions trading schemes, EERH Research Report No.48.

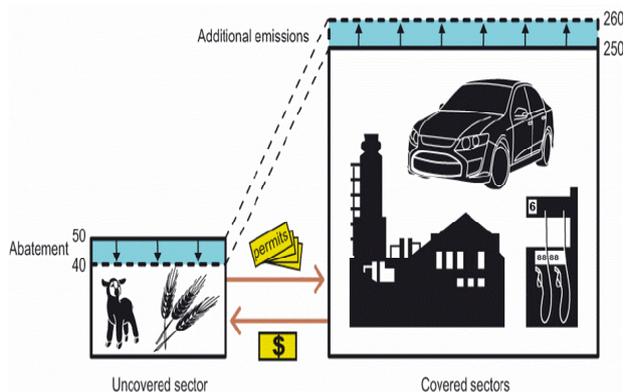


Figure 3. Effect of including domestic offsets in a cap and trade scheme (Commonwealth of Australia, 2008)

named the Additional Action Reserve (AAR) - has been developed by the Centre for Energy and Environmental Markets (CEEM) to account for voluntary action under the proposed Australian ETS.⁶

Additional Action Reserve

The key idea of the AAR is to annually set aside a proportion of the emissions units of the cap and trade scheme which can then be retired if DOP are implemented or state or local government, businesses or individuals take specific voluntary emission reduction measures which go beyond those expected to be driven by the ETS. Those emissions units which are allocated to the reserve that are not retired through those DOP or voluntary activities would then be made available to ETS participants.

By providing an upper bound to such actions, the scheme would limit the uncertainty as to the quantity of available units for emitters and provide a limit to the potential losses of auctioning revenue from ETS retirements. Compared to some other options to allow for additional action (such as buying-and-retiring of permits or future reductions of the national cap) the scheme not only accounts for DOP or tangible, psychologically-satisfying actions (such as installing a home solar PV system) but also provides a transparent process that assures the participant that such actions are having an immediate effect in reducing national emissions.

Developments in the Australian offset market

Recently, the Australian Government has introduced two new climate policy approaches: The National Carbon Offset Standard (NCOS) and Carbon Farming Initiative (CFI). Both of these include mechanisms to ensure that the abatement is additional even in the context of a national ETS. The NCOS has been introduced to replace the Greenhouse Friendly

programme. It was released in December 2009 and came into effect 1 July 2010. It is a voluntary standard and the "government has developed NCOS to provide national consistency and give consumers confidence in the voluntary carbon offset market"⁷ Its first aim is to provide integrity of offsets by specifying the types of carbon offsets that constitute genuine, additional emissions reductions in the context of an ETS. Organisations aiming to achieve carbon neutrality can purchase from a range of eligible offset credits.

The current list of eligible units, which is expected to be reviewed over time, includes Australian Emissions Units, CERs (but not long-term CERs and temporary CERs), ERUs, Removal Units (RMUs), Gold Standard Voluntary Emissions Reductions, Voluntary Carbon Units and "Offsets generated from emissions sources in Australia not counted toward Australia's Kyoto Protocol target, where they meet eligibility criteria and use a methodology that has been approved under the Standard"(NCOS, 2010). The Australian offsets must be independently audited and tracked in a publicly transparent registry.

The second aim of the NCOS is to provide integrity to carbon neutral products by specifying the processes that must be undertaken to claim that an organisation or their product(s) are carbon neutral. This involves a carbon footprint calculation, the steps undertaken to reduce emissions, the certificates required to offset the remaining emissions, and the processes for recoding and maintaining any relevant information. Any offsets used must be retired into a registry, and all this should be publicly reported. Compliance with these processes will allow the organisation to use the NCOS logo.

In addition to the NCOS the Australian government announced in August 2010 the Carbon Farming Initiative (CFI).⁸ The CFI was most likely the reaction of the Australian Government of not directly covering the agriculture and forestry sector under a future emissions trading scheme but rather including it through an offset mechanism. The CFI program would recognise Land use, land use change and forestry (LULUCF), agricultural and waste projects including (but not necessarily limited to): reforestation, avoided deforestation, forest management, revegetation, cropland management, grazing land management, livestock and fertiliser application, manure management, rice cultivation and landfill waste.

The proposal states that certified units will be differentiated into:

- 'Kyoto' CFI credits - Article 3.3 Kyoto Protocol activities such as reforestation and avoided deforestation, agriculture and waste projects;

⁷ NCOS, 2010, National Carbon Offset Standard, Commonwealth Government of Australia.

⁸ Department of Climate Change and Energy Efficiency, Design of the Carbon Farming Initiative, Consultation Paper 2010, Canberra, www.climatechange.gov.au

- 'non-Kyoto' CFI credits - created by the additional Article 3.4 Kyoto Protocol LULUCF activities and any soil carbon activities, none of which Australia opted to include in its accounting for the first commitment period of the Kyoto Protocol.

'Kyoto' CFI units could be converted to Kyoto Protocol AAUs or ERUs and potentially traded in international compliance markets until 2012. 'Non-Kyoto' CFI units would be eligible as voluntary units only, which could be used within the NCOS or potentially recognised under other international voluntary programmes. The certification process plans to involve methodologies which need to be approved by the Domestic Offsets Integrity Committee (DOIC) and the Minister for Climate Change. The project developer has to be accredited as a 'Recognised Offset Entity', offsets must be independently audited, and registered and tracked in a publicly transparent registry.

Conclusions

The analysis shows that Australia has some experience with DOPs and is planning to introduce further DOPs

in the future. The evaluation of GGAS showed that some design choices reduced the effectiveness of the scheme in achieving real abatement and its equity. The former was mainly due to the absence of additional requirements.

It is clear that DOPs need to be carefully integrated with cap and trade schemes because the former may not contribute to additional reductions and so may only lower costs for the covered sector. However, they can be valuable as they may create additional innovation incentives for projects which may not be implemented by the carbon market without its provisions. To ensure that DOP reductions are additional an Additional Action Reserve or similar approach could be used.

The NCOS and the CFI are two recent developments in the Australian market that provide interesting examples of approaches to both accredit and create offsets. With the NCOS only recently operational and the CFI yet to begin, it remains to be seen how effective they will be.

State of Play with Domestic Offsets: NEON Event Report

Under the Kyoto Protocol, EU Member States (except Malta and Cyprus) have been assigned with a national amount of GHGs that they can emit during the period 2008-2012. Through the EU emissions trading scheme (ETS) part of these so-called assigned amounts have been further allocated to European installations in energy-intensive sectors. Most abatement activities within and outside the ETS have been implemented separately, even though the common policy aim for both sector clusters is to reduce GHG emissions.

One possibility to combine abatement actions in the non-ETS and ETS sectors is through Non-ETS offset projects, which would be one option for so-called domestic offsets (DO).¹ Such projects reduce emissions of CO₂-eq. in the non-ETS sectors (energy end-use sectors), and are verified and certified. The certified emissions can be used in form of credits by EU ETS installations for compliance, could be purchased by the host government to meet its emissions target or in the voluntary offset market for companies or individuals aiming to offset their emissions.

The Joint Implementation Network (JIN) together with the Non-ETS Offset project Network (NEON)² hosted a two day workshop in Groningen on 23-24 November 2010, in the framework of the Energy Delta Convention 2010. The workshop explored the current state of affairs of DO, learned from experiences of several countries and discussed options to further develop a DO scheme within the EU. This article briefly outlines the main lessons learned during the workshop and provides several policy recommendations.

Domestic Offsetting within the EU

The possibility of Domestic Offsetting within the EU is opened up with Article 24a (Directive 2009/29/EC): "implementing measures for issuing allowances or credits in respect of projects administered by Member States that reduce GHG emissions not covered by the Community scheme may be adopted".³ Therefore, while JI is a mechanism for bilateral cooperation, Article 24a opens the door to purely domestic action. Figure 1 illustrates how Article 24a projects fits into the general UNFCCC and Kyoto Protocol framework.

¹ For literature on Domestic Offsets see: <http://www.jiqweb.org/index.php/domestic-offsets/domestic-offsets-literature>

² The NEON network members are: JIN (the Netherlands), Joanneum Research Institute (Austria), Government Institute for Economic Research (VATT, Finland), CDC Climat (France), General Council of Catalan Chambers of Commerce (Spain), CE.SI.S.P. (Italy), Fondazione per l' Ambiente 'T. Fenoglio' (Italy) Energieinstitut der Wirtschaft (Austria), National Technical University of Athens (NTUA-EPU, Greece), eco2ro (Romania), Emissierechten.nl (the Netherlands). For more information on the network please visit <http://www.jiqweb.org/index.php/domestic-offsets/domestic-offsets-in-brief>

³ Article 24a(1) of Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC

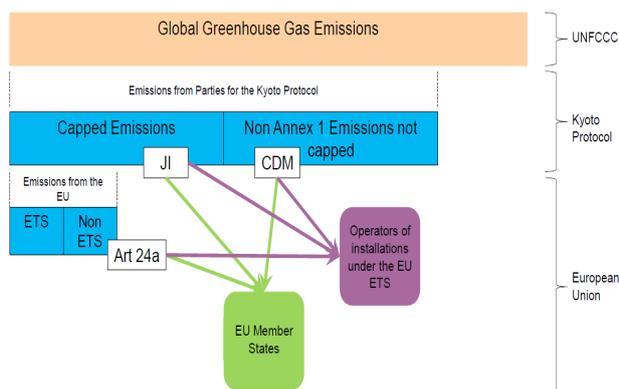


Figure 1. Illustration of how Article 24a projects would fit in the scheme of the UNFCCC and the Kyoto Protocol (Source: Hoogzaad 2010, Martin 2010).

The basis on which a possible DO can build has already been established by CDM and JI. For instance, the concept of offsetting has been legitimized by the CDM and JI. In addition, the exhaustive discussions regarding quality concerns, such as environmental integrity of projects, provide valuable lessons for DO. Moreover, the accounting and reporting infrastructure is already in place for countries that comply with JI Track I rules.

Information and experience from other schemes

While the concept of DO has not been applied on a large scale within the EU countries are experimenting with DO-like schemes both inside and outside the EU. Speakers from France, Denmark, Ireland, Poland, Switzerland, Germany and Australia outlined their schemes and experiences at the workshop.

Australia's Greenhouse Gas Abatement Scheme

Australia has implemented a DO-like scheme in New South Wales since 2003. For further information about this scheme, see contribution by Betz *et al.* elsewhere in this issue.

Germany's JI programme of activities

With 11 domestic JI and 16 JI Programme of Activities (PoA) projects, Germany has gathered extensive experience with the implementation of DO. The majority of domestic JI emission reductions are concerned with non-CO₂ gases, mainly nitric acid and adipic acid. There are also a number of projects regarding transportation, households and various industrial applications.

Inclusion of nitric acid and adipic acid into the EU ETS will lead to termination of the non-CO₂ projects. This provides an important lesson for future DO schemes: the projects show that DO is not contradictory to the EU ETS. In fact, the projects facilitated implementation of relevant monitoring methods and have been relevant for benchmark discussions within the EU ETS. Therefore, not only are DO not necessarily

contradictory to the functioning of the EU ETS, work on DO can actually complement the EU ETS.

From the implementation of DO projects regarding transportation, households, and various industrial applications several other important lessons can be learned. First, it was found that standardized and simple monitoring approaches are crucial for successful implementation of PoAs. Second, current long approval procedures and the shortened crediting period might have lowered attractiveness of the scheme which has led to a lower number of participants than expected. Third, Germany experienced a high interest in the mechanism of DO and positive feedback from the majority of participants.

Switzerland Voluntary Domestic Offsetting

In part due to the argument of "nationalism" (emission reductions within the national borders), the experience in Switzerland shows that parties are willing to pay higher prices for DO credits. Figure 2 illustrates the reductions versus costs ratio of domestic projects and CDM projects. Clearly, the domestic projects are more expensive in relation to CDM projects and realize fewer emission reductions. This is, however, not considered a barrier in the Swiss DO scheme.



Figure 2. Illustration of the costs and benefits of DO projects in the Swiss scheme compared to costs and benefits of CDM projects (Source: Stadelmann 2010).

France's Domestic JI

The projects in France, which mainly concern nitric and adipic acid installations, show that DO can target sectors that are difficult to address with other policy tools. However, small and diffuse sectors such as agriculture, transport and the built environment find it difficult to access the scheme. Several issues were identified as possible causes. First, the long approval process might deter applicants. France's introduction of benchmark approaches is expected to address this issue. Second, an international investor party is currently required for domestic JI. France aims to modify national legislation in order to remove this obligation. Instead, the investor Letter of Approval (LoA) will suffice. Finally, verification fees can become quite high. The introduction of sampling regulation is intended to reduce verification costs.

France's experiences show that it is important to keep a DO scheme user-friendly and simple. Current regulations in France result in delays, simplification is required. Also, it is important to consider complications from the start. Anticipating why, when and where issues will complicate the scheme and addressing this in the design phase will remove many problems later on. In addition, allowing PoAs and bundled projects will simplify the scheme and increase its potential. France is experimenting with rules for sampling for monitoring purposes in order to reduce costs.

Ireland's plans to introduce DO

Due to an unusual sectoral spread, the key policy demand in Ireland is to reduce emissions from non-ETS sectors. Ireland aims to investigate the potential of DO to address these sectors. Currently, a scoping study into DO applications and criteria in Ireland is being conducted. The report of that study will determine whether Ireland will make further work of DO. The criteria that Ireland has set are: a) emission reductions need to be verifiable, permanent, additional and cost effective; b) projects need to contribute to a low-carbon society via long-lived changes; c) emission reductions need to advance Ireland towards its target and; d) benefits of the schemes need to justify the costs.

DO enabling environment in Denmark

Denmark has provided the option for DO projects in Danish law since 2007. However, so far no projects have been implemented. High regulatory levels, the requirement for foreign investment and the notion that projects are too small to cover transaction costs are identified as possible reasons. In addition, Denmark is not interested in transferring ERUs.

In order to gain experience with DO in a strictly regulated capped environment, the Danish

Government has initiated a DO pilot project. The project aims to develop simplified methods and procedures, to discover the reduction potential, to implement and test new innovative solutions and technologies and to provide a basis for further expansion of DO in Denmark. A successful pilot project will be followed by the inclusion of DO into the national 2013-2020 climate strategy.

Policy concerns and recommendations

From the experiences of countries and the other presentations several policy issues were identified. Table 1 summarizes the main policy issues identified at the workshop and their identified possible solutions.

Concluding remarks

The potential of DO was recognized by workshop participants. The experiences of the various countries with modalities of DO show that DO can be a valuable support mechanism within the policy setting. Fruitful discussions identified various policy concerns and design options that will be useful for further consideration of DO schemes.

From a business perspective, the workshop concluded that DO is an interesting mechanism. Experience with current market based mechanisms clearly shows that there is a high demand from the private sectors. Moreover, as found in Switzerland, participating parties are willing to pay higher prices for domestic reductions. From a policy perspective, it became clear that interest in developing a DO scheme in the EU is high.

The workshop organized by NEON has provided valuable insights into a possible DO scheme. To further explore and more fully comprehend the potential of DO, NEON plans to initiate a set of webinars on specific topics and issues related to DO.

Table 1. Identified policy issues and their identified possible solutions

Description of policy issue	Identified solutions
- Additionality is difficult to determine and slows down the process	<ul style="list-style-type: none"> ○ Programmatic approach ○ Unproductive to focus excessively on additionality ○ Developed markets require lower level of stringency ○ Other climate change schemes do not address additionality
- Anxiety and uncertainty over the continuation of the Kyoto Protocol	<ul style="list-style-type: none"> ○ Use DO as a fall back option
- Possible conflict of DO schemes with national climate targets	<ul style="list-style-type: none"> ○ Time-limited crediting ○ Restrictions on international trade ○ Discounting of credits ○ Tendering of projects
- Co-existence ETS and DO implies risk of double counting emission reductions	<ul style="list-style-type: none"> ○ Limit to sectors and technologies not linked to EU ETS. Examples are: built environment, agriculture, transportation
- Potential for cheap GHG abatement in developed economies might be small	<ul style="list-style-type: none"> ○ Aggregation of projects can realize sufficient scale
- DO easily considered to be too complicated	<ul style="list-style-type: none"> ○ DO allows for much simpler transactions than JI ○ Programmatic approach or bundling of projects
- Coordinated approach between countries might be more fruitful	<ul style="list-style-type: none"> ○ Coordinated pilot project to demonstrate DO

Beurain, F. and G. Schmidt-Traub, 2010, Developing CDM Programmes of Activities: a Guidebook, South Pole Carbon Asset Management Ltd.
<www.southpolecarbon.com>

This handbook documents implementation issues and pitfalls surrounding the CDM to guide developers of CDM Programmes of Activities (PoA) during preparations of PoA documentation. The handbook informs readers about new market opportunities. Finally, it addresses management and operational issues associated with PoAs.

Kant, P., 2010, Taking CDM beyond China and India, IGREC Working Paper,

This report argues that attempts by the Nairobi Framework to address the imbalance in the geographical distribution of CDM projects bring only small incremental relief because they address issues that are peripheral to the core problem of poor and corrupt governance in many developing countries presenting unacceptably high political and sovereign risks to foreign direct investments.

The report argues that these risks can be reduced significantly by creating partnerships with host country government and an influential multilateral organization like the World Bank along with private investors from a consortium of developed countries for CDM investments in a Public-Private-Partnership mode.

Morris, D., 2010, Carbo diem - Seizing Italy's opportunities in the EU ETS, 13 December 2010, Sandbag Climate Campaign, London, UK

This report reviews Italy's recent environmental performance – with a particular emphasis on the traded sector – to explore to what extent its resistance to proposed climate legislation is justified or prudent. The report concludes that Italy's lack of climate ambition in the sectors of its economy covered by the EU ETS has placed it at risk of missing its Kyoto targets. The report also finds that Italy's heavy reliance on offsets to meet its climate obligations both in the traded and non-traded sectors of the economy is unnecessarily diverting money out of the country that could be better spent renovating Italy's energy infrastructure and protecting its long term energy security.

Stadelmann, M., J. Timmons Roberts, Axel Michaelowa, 2010, Keeping a big promise: options for baselines to assess "new and additional" climate finance, available as CIS Discussion Paper no. 66 at <http://www.cis.ethz.ch/publications/>

publications/2010_WP66_Stadelmann_Michaelowa.pdf

All major climate policy agreements - the UNFCCC, the Kyoto Protocol and the Copenhagen Accord - have stated that climate finance for developing countries will be "new and additional". However, the term "new and additional" has never been properly defined. Agreeing a system to measure a baseline from which "new and additional" funding will be calculated will be central to building trust and realising any post-Kyoto agreement. We explore eight different options for a baseline, and assess each according to several criteria: novelty to existing pledges, additionality to development assistance, environmental effectiveness, distributional consequences, and institutional and political feasibility. Only two baseline options do well on these criteria and are therefore viable: "new funds only" and "above pre-defined business as usual level of development assistance". The final section assesses the impact of the baseline definition on the novelty and additionality of "fast start finance" pledged under the 2009 Copenhagen Accord, showing that values can vary from 0 to 100% depending on the definition.

The Climate Institute, 2010, Putting a price tag on pollution – driving competitiveness in the clean energy economy <<http://www.climateinstitute.org.au/our-publications/reports/744-putting-a-price-tag-on-pollution>>

Putting a price on GHG emissions can be done explicitly, through either an emissions trading scheme or a carbon tax, or implicitly, through measures such as subsidies, feed-in tariffs or minimum obligations for renewable energy generation. To determine the extent to which countries are establishing robust emissions policies, and hence already moving towards a low-carbon economy, all of these policies need to be considered. In this report, the authors seek to quantitatively compare a range of low-carbon policies in the electricity sector to develop a measure of comparable effort across economies with different sets of policy levers in action.

UNFCCC, 2010, UNFCCC Clean Development Mechanism Methodology Booklet November 2010 (up to EB 56)
<<https://cdm.unfccc.int/methodologies/>>

This publication serves to guide potential CDM project participants by clearly summarizing, classifying and illustrating the methodologies available under the CDM, and then enhancing the means by which to search those methodologies.

The **Joint Implementation Quarterly** is an independent magazine with background information about the Kyoto mechanisms, emissions trading, and other climate policy issues. *JIQ* is of special interest to policy makers, representatives from business, science and NGOs, and staff of international organisations involved in climate policy negotiations and operationalisation of climate policy instruments.

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Abbreviations

AAU	Assigned Amount Unit
Annex A	Kyoto Protocol Annex with GHGs and sector/source categories
Annex B	Annex to the Kyoto Protocol listing the quantified emission limitation or reduction commitment per Party
Annex I Parties	Industrialised countries (OECD, Central and Eastern European Countries, listed in Annex I to the UNFCCC)
Annex II Parties	OECD countries (listed in Annex II to the UNFCCC)
non-Annex I Parties	Developing countries
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction (Article 12 Kyoto Protocol)
COP	Conference of the Parties to the UNFCCC
DOE	Designated Operational Entity
DNA	Designated National Authority
EGTT	Expert Group on Technology Transfer
ERU	Emission Reduction Unit (Article 6 Kyoto Protocol)
EU ETS	European Union Emissions Trading Scheme
EUA	European Union Allowance (under the EU ETS)
GHG	Greenhouse Gas
IET	International Emissions Trading
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
LULUCF	Land Use, Land-Use Change and Forestry
PIN	Project Information Note
PDD	Project Design Document
REDD	Reducing emissions from deforestation and forest degradation in developing countries, including conservation, sustainable management of forests and enhancement of forest carbon sinks
SBSTA	Subsidiary Body for Scientific and Technological Advice
SBI	Subsidiary Body for Implementation
TNA	Technology Needs Assessment
UNFCCC	UN Framework Convention on Climate Change

JIQ Meeting Planner

20 - 21 January 2011, Vienna, Austria

The 7th Austrian JI/CDM Workshop
 Contact: workshop2011@kommunalkredit.at

28 January 2011, Brussels, Belgium

Stakeholder meeting on the role of agriculture and forestry in achieving the EU's climate change commitments
 Contact: CLIMA-LULUCF@ec.europa.eu

13 -15 April 2011, Los Angeles, UK

Navigating the American Carbon World (NACW)
 Contact: Conference@pointcarbon.com

8-13 May 2011, Linköping, Sweden

World Renewable Energy Congress (WREC) 2011 at Linköping Univ., Sweden
 Contact: info@wrec2011.com, www.wrec2011.com.

6 - 17 June 2011, Bonn, Germany

First sessional period in 2011
 Contact: <http://unfccc.int/meetings/items/2654.php>