

Elements of a New Climate Agreement by 2015



PERSPECTIVES SERIES 2013

**UNEP
RISØ
CENTRE**

ENERGY, CLIMATE
AND SUSTAINABLE
DEVELOPMENT

Elements of a New Climate Agreement by 2015

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Climate Agreement by 2015

June 2013
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ISBN: 978-87-92706-08-9

Graphic design:

Kowsky

Printed by:

Frederiksberg Bogtryk A/S, Denmark

Printed on environmentally friendly paper

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FOREWORD

A new global climate agreement by 2015 is crucial to keep global warming below the target of maximum 2 degree increase in this century. This will require enhanced ambitions by all Parties and need transformational change towards sustainable, low carbon development and green growth. Scenarios consistent with a likely chance to meet the 2 degree target have a peak of global emissions before 2020. Green growth and low-carbon development strategies show that economic growth and environmental sustainability are compatible objectives by making emission reductions an integral part of national development plans.

Since 2010, UNEP has published a series of reports on the 'emissions gap' in 2020 between emission levels consistent with the 2°C target and emission levels projected, if countries fulfill their emission reduction pledges made in the Copenhagen Accord and Cancún Agreements. The gap in 2012 for a likely chance to meet the 2°C target is in the range of 8-13 GtCO₂, which is higher than the assessment in 2011 and indicates that global emissions are increasing, which is not in line with the aim of the Convention to stabilize the global climate and avoid dangerous climate change.

The United Nations Environmental Program (UNEP) and its UNEP Risø Centre have in cooperation with the Global Green Growth Institute (GGGI) prepared the Perspectives 2013 to respond to this global challenge. The publication focuses on how elements of a new climate agreement can contribute to close the 'emissions gap'. Six articles have been invited to address crucial aspects of a possible new agreement; 1) framing of the global mitigation challenge, 2) how to limit emissions from international aviation, 3) a vision for the role of the carbon market to 2020 and beyond, 4) how green growth strategies can contribute to close the emissions gap, 5) how REDD+ can be designed in response to the crisis of global deforestation and 6) how Nationally Appropriate Mitigation Actions (NAMAs) can be implemented with the example of Southern Africa to reconcile the gap between global mitigation objectives and local development priorities.

With Perspectives 2013 the GGGI and the UNEP Risø Centre aim to inspire policy- and decision makers to develop the elements of new climate agreement that will meet the 2°C target.



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EDITORIAL

At COP 17 in Durban, the Parties agreed to develop a new global climate agreement to be concluded in 2015 and to come into effect by 2020. Its legal form has not yet been decided. It may be a protocol or another legal instrument, or it may be an agreed outcome with legal force under the Convention applicable to all Parties. At COP 18 in Doha, the Parties agreed that they will consider elements for a draft negotiation text no later than 2014, with a view to making it available before May 2015 and to finalize the agreement at COP 21 in Paris in 2015.

The Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) is negotiating this new climate agreement in two work streams. Work Stream 1 relates to the new agreement to be concluded by 2015, and Work Stream 2 relates to the pre-2020 ambition to keep global warming below 1.5 – 2.0°C. The new agreement must contain national, legally binding targets and actions on mitigation and adaptation supported by finance, technology and capacity development to achieve the goal within an overall framework of ambition, accountability and equity.

This year's *Perspectives* aims to explore important elements of a new agreement with a focus on how to close the ambition gap and ensure the global mitigation effort. Dividing lines in the negotiations have emerged between groups of developed and developing countries over the issues of the differentiation of commitments and the interpretation of the principle of common but differentiated responsibilities and respective capabilities (CBD&RC). Developed countries argue that responsibilities and capabilities evolve over time and that the binary system of Annex 1 and non-Annex 1 is outdated. A new agreement should be based on a dynamic framework, including commitments for all major economies to follow a flexible, scheduled approach and to take into account changing economic realities and national circumstances. Most developing countries are opposed to a re-interpretation of the CBD&RC principle, including a rewriting of its annexes, and stress the historical responsibility of developed countries for global warming. A new agreement must be based on the principles of the Convention, including its annexes, and there should be no negotiation of a new regime.

While this year's *Perspectives* cannot solve the conflicts, a common aim of the papers is to offer recommendations to policy- and decision-makers on how to close the mitigation gap by addressing specific elements of an agreement. Tensions are high among negotiators, and positioning among the Parties to agree on a common solution to global warming seems to have evolved little over the past twenty years. It is appropriate, however, to stress that the situation *has* changed over the years. Not only has climate science painted a much grimmer picture of the consequences we are imminently facing, but global emissions have also increased significantly and are not in line with the aim of the convention to achieve stabilization and avoid dangerous climate change. Thus, in the context of on-going negotiations, the six articles in this year's *Perspectives* cover some of the important elements of a new global climate agreement.

The first paper frames the global mitigation challenge.

Niklas Höhne and *Michel den Elzen* describe the gap between expected emissions in 2020 according to country pledges and emissions consistent with the 2°C target, assuming the emission reduction pledges in the Copenhagen Accord and Cancún Agreements are met. This is based on the UNEP Emissions Gap Report 2012, updated with decisions taken in late 2012. The estimated emissions gap in 2020 is 8 to 12 GtCO₂e, depending on how emission reduction pledges are implemented. The emissions gap could be narrowed through implementing the more stringent, conditional pledges, minimising the use of 'lenient' credits from forests and surplus emission units, avoiding double-counting of offsets and implementing measures beyond current pledges. Closing the gap will become more difficult the more time passes.

The five other articles address key elements of a new agreement.

Mark Lutes and *Shaun Vorster* address the problem of emissions from aircrafts. This sector can make an important contribution to closing the gigatonne emissions gap. The article provides background to the current state of the negotiations for a global multilateral agreement on market-based measures and presents options for an enhanced interpretation of "common but differentiated responsibilities and respective capabilities" (CB-DR&RC) that could contribute to overcoming the longstanding deadlock. These options emerged from a multi-stakeholder process convened by the Worldwide Fund for Nature (WWF) and are to be discussed by the International Civil Aviation Organization (ICAO) at their Assemblies meeting in 2013. This will be their chance to make progress on this fast growing sector in the pre-2020 period, including by putting a price on emissions from aircraft.

Andrei Marcu points out that markets that are well regulated and have clear objectives have a critical role to play in making a new climate change agreement possible. The article starts by outlining the state of play in international negotiations and in the carbon market, including lessons learned from ten years of operating a carbon market. It then provides a series of assumptions on the future architecture of a post-2020 climate change agreement, as well as a vision of the carbon market to 2020 and beyond. Finally, it answers two key questions. Does the carbon market have a role to play in a post-2020 agreement, and what is the role of a post-2020 agreement in the creation and operation of a carbon market?

Inhee Chung, *Dyana Mardon* and *Myung Kyon Lee* aim to identify how implementing Green Growth at the national level can bridge the emission gap

by addressing the political, financial, capacity and governance challenges faced especially by developing and emerging economies. The article investigates how green growth can address the emission gap in general and considers the examples of Ethiopia, Cambodia, and the United Arab Emirates. In all three cases, there is high level of political commitment to ensure the integration of emissions-reducing mechanisms into development plans. Economic growth and environmental sustainability are seen as mutually compatible objectives rather than opposing forces, with the understanding that preserving the sustainability of natural resources will yield significant benefits without sacrificing economic prosperity.

Christian del Valle, Richard M. Saines and Marisa Martin recommend that the new global climate agreement should: 1) design the REDD+ programme to include a financing approach that will attract scaled, sustained private participation in order to attract the requisite level of financing, given the shrinking capacity of governments to fund REDD+ activities alone; 2) collaborate with non-UNFCCC actors in the development of system-wide, credible and transparent monitoring, reporting and verification (MRV), as well as environmental and social safeguards for REDD+ activities, and to encourage the adoption of similar standards at all jurisdictional levels; and 3) encourage REDD+ investment now, in advance of 2020, by establishing a formal prompt-start programme for credible REDD+ activities.

Norbert Nziramasanga suggests ways to define and implement National Appropriate Mitigation Actions (NAMAs) in southern Africa using a less burdensome approach that ensures accelerated migration to cleaner technologies whilst accommodating a region with a limited capacity to monitor and evaluate small and diffuse projects. The article reviews the development priorities of

southern Africa and shows how climate change mitigation initiatives have so far failed to meet development objectives. The gap between local and global objectives is mostly due to technical project appraisal approaches that miss out on the opportunities to integrate climate change mitigation and development.

Acknowledgements

Perspectives 2013 has been made possible thanks to support from the Global Green Growth Institute (GGGI) (www.gggi.org), which opened an office on the DTU Risø Campus in Denmark in 2011 and in May 2013 moved to the United Nations buildings in Copenhagen. The *Perspectives* series started in 2007 thanks to the multi-country, multi-year UNEP project on Capacity Development for the Clean Development Mechanism (CD4CDM), funded by the Ministry of Foreign Affairs of the Netherlands. Since 2009, *Perspectives* has been supported by the EU project on capacity development for the CDM in African, Caribbean and Pacific countries (ACP). A wide range of publications have been developed to support the educational and informational objectives of capacity development for the CDM with the aim of strengthening developing countries' participation in the global carbon market. These publications and analyses are freely available at www.namapipeline.org, www.cdmpipeline.org, www.acp-cd4cdm.org and www.cd4cdm.org.

Finally, we would like to sincerely thank our colleagues in UNEP and the UNEP Risø Centre, particularly Mette Annelie Rasmussen and Surabhi Goswami, for their support with outreach and communication.

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The Gap Between the Pledges and Emissions Needed for 2°C

Abstract

This chapter describes the gap between expected emissions in 2020 according to country pledges and the emissions consistent with the 2°C target, assuming the emission reduction proposals in the Copenhagen Accord and Cancún Agreements are met. It is based on the UNEP Emissions Gap Report 2012 updated with decisions taken late 2012. The estimated emissions gap in 2020 for a “likely” chance of being on track to stay below the 2°C target is 8 to 12 GtCO_{2e} (depending on how emission reduction pledges are implemented). This emissions gap has become larger compared to the previous UNEP assessment, because of higher than expected economic growth and the inclusion of “double counting” of emission offsets in the calculations. The emissions gap could be narrowed through implementing the more stringent, conditional pledges, minimising the use of “lenient” credits from forests and surplus emission units, avoiding double-counting of offsets and implementing measures beyond current pledges. Closing the gap will increasingly become more difficult with more time passing.

Introduction

In December 2010 at the annual conference of Parties (COP) under the United Nations Framework Convention on Climate Change (UNFCCC) in Cancún, Mexico, the international community agreed that further mitigation action is necessary. The conference “recognizes that deep cuts in global greenhouse gas emissions are required according to science, and as documented in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, with a view to reducing global greenhouse gas emissions so as to hold the increase in global average temperature below 2°C above pre-industrial levels, and that Parties should take urgent action to meet this long-term goal, consistent with science and on the basis of equity; Also recognizes the need to consider, in the context of the first review [...] strengthening the long-term global goal on the basis of the best available scientific knowledge, including in relation to a global average temperature rise of 1.5°C” (UNFCCC, 2010).

Already one year earlier, the Copenhagen Accord of 2009 (UNFCCC, 2009) referred to a 2°C target and encouraged countries to submit their

emission reduction proposals and actions for the year 2020. Following that conference, forty-two industrialized countries submitted quantified economy-wide emission targets for 2020. In addition, forty-five developing countries submitted so-called *nationally appropriate mitigation actions* (NAMAs) for inclusion in the Appendices to the 2009 Copenhagen Accord. These pledges were

Least-cost emission scenarios consistent with a “likely” chance of meeting the 2°C target have a peak before 2020

later ‘anchored’ in the 2010 Cancún Agreement (UNFCCC, 2011a, b), and have since become the basis for analysing the extent to which the global community is on track to meet long-term temperature goals.

In the preparation of the Cancún conference the United Nations Environment Programme (UNEP), together with the European Climate Foundation and the National Institute of Ecology (Mexico), presented the Emissions Gap Report (UNEP, 2010) that summarises the scientific findings of recent individual studies on the size of the “gap” between the pledged emissions and the levels consistent with the 2°C climate target. This 2010 report has been followed by the UNEP Bridging the Gap Report (UNEP, 2011), and the latest UNEP Emissions Gap Report 2012 (UNEP, 2012a).

This chapter briefly describes an overview of the emissions gap based on the latest UNEP report, updated taking into account decisions agreed at Doha in December 2012.

Pathways towards the 2°C target

Least-cost emission scenarios consistent with a “likely” chance of meeting the 2°C target have a peak before 2020, and have emission levels in 2020 of about 44 GtCO₂e (range: 41-47 GtCO₂e) (UNEP 2012a), which is based on the methodology described in Rogelj et al. (2011). Afterwards, global emissions steeply decline (a median of 2.5% per year, with a range of 2.0 to 3.0% per year). Forty percent of the assessed scenarios with a “likely” chance to meet the 2°C target have net negative total greenhouse gas emissions before the end of the century 2100. Accepting a “medium” (50-66%) rather than “likely” chance of staying below the 2°C target relaxes the constraints on emission levels slightly, but global emissions still peak before 2020.

The few scenarios available for a 1.5°C target (Ranger et al., 2012; Rogelj et al., 2013; Schaeffer and Hare, 2009) indicate that scenarios consistent with a “medium” chance of meeting the 1.5°C limit have average emission levels in 2020 of around 43 GtCO₂e (due to the limited number of studies no range was calculated), and are followed by very rapid rates of global emission reduction, amounting to 3% per year (range 2.1 to 3.4%). Some studies also find that some overshoot of the 1.5°C target over the course of the century is inevitable.

Based on a limited number of studies (e.g., OECD, 2012; Rogelj et al., 2012; van Vliet et al., 2012), it is expected that scenarios with higher global emissions in 2020 are likely to have higher medium- and long-term mitigation costs, and – more importantly – pose serious risks of not being feasible in practice.

The estimates of the emissions gap in the UNEP gap reports so far were based on least cost scenarios which depict the trend in global emissions up to 2100 under the assumption that climate targets are met by the cheapest combination of policies, measures and technologies considered in a particular model. There are now a few published studies on later action scenarios that have taken a different approach. These scenarios also seek to limit greenhouse gas emissions to levels consistent with 2°C, but assume less short-term mitigation and thus higher emissions in the near term. Because of the small number of studies along these lines, the question about the costs and risks of these later action scenarios cannot be conclusively quantified right now.

That being said, it is clear that later action will imply lower near-term mitigation costs. But the increased lock-in of carbon-intensive technologies will lead to significantly higher mitigation costs over the medium- and long-term. In addition, later action will lead to more climate change with greater and more costly impacts, and higher emission levels will eventually have to be brought down by society at a price likely to be higher than current mitigation costs per tonne of greenhouse gas.

Moreover, later action will have a higher risk of failure. For example, later action scenarios are likely to require even higher levels of “net negative emissions” to stay within the 2°C target, and less flexibility for policy makers in choosing technological options. Later action could also require much higher rates of energy efficiency improvement after 2020 than have ever been realised so far, not only in industrialized countries but also in developing countries.

The emissions gap

Global greenhouse gas emissions are estimated to be 58 GtCO₂e (range 57 to 60 GtCO₂e) in 2020 under business-as-usual (BAU) conditions, which is about 2 GtCO₂e higher than the BAU estimated in the Bridging the Emissions Gap Report (UNEP, 2011). BAU emissions were derived based on estimates from seven modelling groups¹ that have analysed a selection of emission reduction proposals by countries and have updated their analysis since 2010. This data set is used in the remainder of this chapter.

But the increased lock-in of carbon-intensive technologies will lead to significantly higher mitigation costs over the medium- and long-term

Since November 2010, no major economy has significantly changed its emission reduction pledge under the UNFCCC. Some countries have clarified their assumptions and specified the methods by which they would like emissions accounted for. For example, Australia has provided its interpretation on how to account for its base year under the Kyoto Protocol and Brazil has provided a new estimate for its BAU emissions, to which its pledge is to be applied. Belarus expressed their 2020 target as a single 8% reduction compared to 1990 levels rather than the range 5-10%, and Kazakhstan changed their reference year from

¹ The modelling groups are: Climate Action Tracker by Ecofys (Climate Action Tracker, 2010); Climate Analytics and Potsdam Institute for Climate Impact Research, PIK, www.climateactiontracker.org; Climate Interactive (C-ROADS), www.climateinteractive.org/scoreboard; Fondazione Eni Enrico Mattei (FEEM), <http://www.feem.it/>; Grantham Research Institute, London School of Economics; OECD Environmental Outlook to 2050 (OECD, 2012); PBL Netherlands (den Elzen et al., 2012b) and UNEP Risoe Centre (UNEP, 2012b).

1992 to 1990. South Africa and Mexico included a range instead of a fixed value for their BAU in 2020, which changes their BAU-related pledges. South Korea updated their BAU emissions in 2020 downwards, which reduces estimated emission levels after implementing its pledge. These changes may be significant for the countries in question but are minor at the global level (in aggregate, they are smaller than 1 GtCO₂e in 2020).

Since November 2010, no major economy has significantly changed its emission reduction pledge under the UNFCCC

The projection of global emissions in 2020 as a result of the pledges depends on whether the pledges are actually implemented and on the accounting rules used for the implementation of these pledges:

- A “conditional” pledge depends on factors such as the ability of a national legislature to enact necessary laws, action from other countries, or the provision of finance or technical support. Some countries did not attach conditions to their pledge, described here as an “unconditional” pledge.
- International rules on how emission reductions are to be measured after the first commitment period of the Kyoto Protocol have not yet been defined. Accounting rules for emissions from land use, land-use change and forestry (LULUCF) for Annex I countries have been agreed at the COP conference in Durban (2011) for a second commitment period under the Kyoto

Protocol (Grassi et al., 2012; UNFCCC, 2012a). However, accounting rules for emissions from developed countries that are not participating in the second commitment period of the Kyoto Protocol (e.g. USA and perhaps Russia, Japan, Canada), as well as rules for non-Annex I countries, have not been agreed upon.

- In addition, rules have been agreed for using surplus emissions credits, which will occur when countries’ actual emissions are below their emission reduction targets of the first commitment period of the Kyoto Protocol, at the COP conference in Doha (2012) (Kollmuss, 2013; UNFCCC, 2012b). More specifically, allowances not used in the first commitment period can be carried over to the next commitment period, but the recent decisions significantly limit the use of such surplus allowances and prevent build-up of new ones. Countries participating in the second commitment period can sell their surplus allowances. This will exclude Russia, which is the largest holder of surplus allowances, but will not participate in the second commitment period. Buyer countries can only purchase up to 2% of their own initial assigned amount for the first commitment period. In addition, a number of countries – Australia, the EU, Japan, Liechtenstein, Monaco, Norway and Switzerland – have signed a declaration that they will not purchase these units. Finally, new surplus allowances are prevented by the fact that targets for 2020 may not be above the country’s 2008-2010 emissions average, which affects Ukraine, Kazakhstan and Belarus, who proposed target emission levels in their pledges above that average.
- Finally, there is potential “double counting”, where emission reductions in developing countries that are supported by developed countries through offsets (for example, using the Clean

Development Mechanism) are counted towards meeting the pledges of both countries. These reductions occur only once and should be accounted for only towards the developed for the developing country, not to both. Rules on how to treat such potential double counting have not been agreed to, nor have countries agreed to avoid double counting. For example, some countries have stated that emission reductions sold to other jurisdictions will still be considered as meeting their pledge as well.

The UNEP Emissions Gap Report 2012 describes four scenario cases of emissions in 2020, based on whether pledges are conditional, or not; and on whether accounting rules are strict or more lenient (see Figure 1). The gap reports define “strict” rules to mean that allowances from LULUCF accounting and surplus emission credits will not be counted towards the emission reduction pledges. Under “lenient” rules, these allowances can be counted as part of countries meeting their pledges.

The UNEP Emissions Gap 2012 report estimated the potential contribution of LULUCF accounting under the new rules as adopted in Durban at 0.3 GtCO₂e in the lenient case, assuming that all Annex I countries adopt the new rules, based on one study (Grassi et al., 2012). This assumption is also used here.

The Gap 2012 report used for the impact of the Kyoto surpluses an estimate of 1.8 GtCO₂e in the lenient case, to show the maximum impact in 2020 that would occur if all surplus credits were purchased by countries with pledges that do require emission reductions, displacing mitigation action in those countries. The decision made in Doha on surpluses effectively reduce the maximum impact of surpluses in 2020. Here, we assume a conservative maximum estimate of 0.6

GtCO₂e, which is based on the impact of only domestic use of Kyoto surpluses under the conditional pledge case, as analysed by den Elzen et al. (2012a). This estimate is used in the calculations of the pledges presented below, and leads to lower global emission estimates for the lenient cases compared to the UNEP Gap 2012 report. Similar as in the UNEP 2012 report, we further assume no new surpluses, i.e. Ukraine, Kazakhstan and Belarus follow BAU emissions, and do not sell their Kyoto surpluses, as there is no demand.

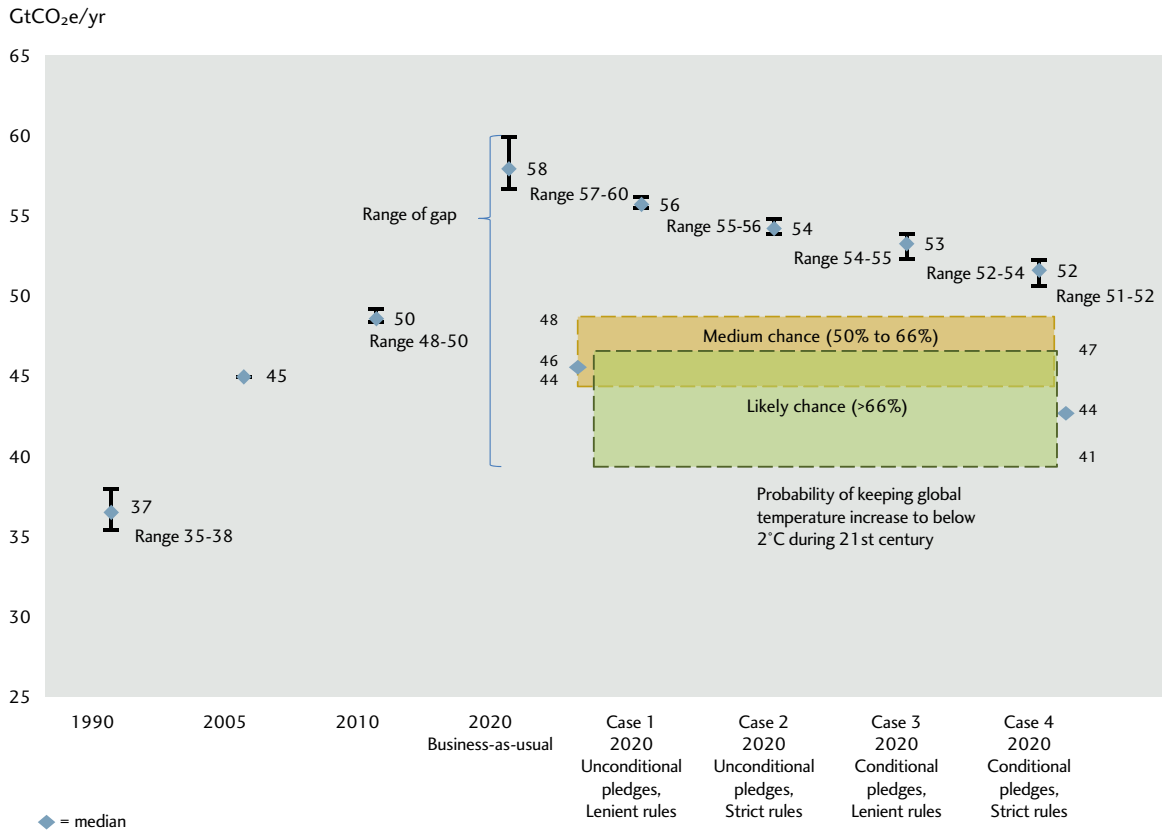
Rules on how to treat such potential double counting have not been agreed to, nor have countries agreed to avoid double counting

Finally, double counting of reductions increases the upper limit of pledged emissions in the lenient case compared to the 2011 UNEP gap report by additional 0.75 GtCO₂e. This is calculated roughly by simply assuming that international emissions offsets could account for 33% of the difference between BAU and pledged emission levels by 2020 for all Annex I countries excluding the US and Canada, which have indicated only to make very limited use of offset credits. In addition, there is a risk of 0.15 GtCO₂e that more offset credits are generated than emissions are actually reduced.

This leads to the following results:

Case 1 – “Unconditional pledges, lenient rules” If countries implement their lower-ambition pledges and are subject to “lenient” accounting rules, then the median estimate of annual greenhouse gas emissions in 2020 is 56 GtCO₂e, within a range of 55-56 GtCO₂e.

Global emissions, including LULUCF emissions



		BAU	Case 1	Case 2	Case 3	Case 4
What is the expected “gap” for a “likely” chance of staying below 2°C? (In parenthesis figure of the 2011 assessment)	Median gap (GtCO ₂ e)	14 (12)	12 (11)	10 (9)	9 (9)	8 (6)
	Gap Range (GtCO ₂ e)	10-19 (9-18)	9-15 (7-16)	7-14 (6-14)	5-13 (6-14)	4-11 (3-11)
What is the expected “gap” for a “medium” chance of staying below 2°C? (In parenthesis figure of the 2011 assessment)	Median gap (GtCO ₂ e)	12 (10)	10 (9)	8 (7)	7 (7)	6 (4)
	Gap Range (GtCO ₂ e)	9-16 (6-14)	8-12 (4-12)	6-11 (3-10)	4-10 (3-10)	3-8 (0-7)

Figure 1. Summary of the gaps that result from four different interpretations of how the pledges are followed, and for a “likely” (greater than 66%) and a “medium” (50-66%) chance of staying below 2°C.

Case 2 – “Unconditional pledges, strict rules”

This case occurs if countries keep to their lower-ambition pledges, but are subject to “strict” accounting rules. In this case, the median estimate of emissions in 2020 is 54 GtCO₂e, within a range of 54-55 GtCO₂e.

Case 3 – “Conditional pledges, lenient rules”

Some countries offered to be more ambitious with their pledges, but linked that to various conditions described previously. If the more ambitious conditional pledges are taken into account, but accounting rules are “lenient”, median estimates of emissions in 2020 are 53 GtCO₂e within a range of 52-54 GtCO₂e.

Case 4 – “Conditional pledges, strict rules”

If countries adopt higher-ambition pledges and are also subject to “strict” accounting rules, the median estimate of emissions in 2020 is 52 GtCO₂e, within a range of 51-52 GtCO₂e.

For Annex I countries, in the least ambitious case (“unconditional pledges, lenient rules”), emissions are estimated to be between 5 per cent below 1990 levels and 5 per cent above 1990 levels or equivalent to business-as-usual emissions in 2020. In the most ambitious case, Annex I emissions in 2020 are expected to be 15-18 per cent below 1990 levels. For non-Annex I countries, in the less ambitious cases emissions are estimated to be 4-10 per cent lower than business-as-usual emissions, in the ambitious cases 7-13 per cent lower than business-as-usual. This implies that the aggregate Annex I countries’ emission goals fall short of reaching the 25-40 per cent reduction by 2020 (compared with 1990) suggested in the IPCC Fourth Assessment Report (Gupta et al., 2007). Similarly, the non-Annex I countries’ goals, collectively, fall short of reaching the 15-30 per cent deviation from business-as-usual which is also commonly used as a benchmark (den Elzen

and Höhne, 2008, 2010). Whilst these values are helpful as a benchmark, they have to be regularly updated with the latest knowledge.

The estimated emissions gap in 2020 for a “likely” chance of being on track to stay below the 2°C target is 8 to 12 GtCO₂e (depending on how emission reduction pledges are implemented), as compared to 6 to 11 GtCO₂e in last years’ Bridging the Emissions Gap Report. The gap is larger because of higher than expected economic growth and the inclusion of “double counting” of emission offsets in the calculations.

The estimated emissions gap in 2020 for a “likely” chance of being on track to stay below the 2°C target is 8 to 12 GtCO₂e (depending on how emission reduction pledges are implemented), as compared to 6 to 11 GtCO₂e in last years’ Bridging the Emissions Gap Report. The gap is larger because of higher than expected economic growth and the inclusion of “double counting” of emission offsets in the calculations.

The assessment clearly shows that country pledges, if fully implemented, will help reduce emissions to below the BAU level in 2020, but not to a level consistent with the agreed upon 2°C target, and therefore will lead to a considerable “emissions gap”. As a reference point, the emissions gap in 2020 between BAU emissions and emissions with a “likely” chance of meeting the 2°C target is 14 GtCO₂e. As in previous reports, four cases are considered which combine assumptions about

pledges (unconditional or conditional) and rules for complying with pledges (lenient or strict).

- Under Case 1 – “Unconditional pledges, lenient rules”, the gap would be about 12 GtCO₂e (range: 9-15 GtCO₂e). Projected emissions are about 2 GtCO₂e lower than the business-as-usual level.
- Under Case 2 – “Unconditional pledges, strict rules”, the gap would be about 10 GtCO₂e (range: 7-14 GtCO₂e). Projected emissions are about 4 GtCO₂e lower than the business-as-usual level.
- Under Case 3 – “Conditional pledges, lenient rules”, the gap would be about 9 GtCO₂e (range: 5-13 GtCO₂e). Projected emissions are about 5 GtCO₂e lower than the business-as-usual level.
- Under Case 4 – “Conditional pledges, strict rules”, the gap would be about 8 GtCO₂e (range: 4-11 GtCO₂e). Projected emissions are about 6 GtCO₂e lower than the business-as-usual level.

Rules on how to treat such potential double counting have not been agreed to, nor have countries agreed to avoid double counting

There is increasing uncertainty that conditions currently attached to the high end of country pledges will be met and in addition there is some doubt that governments may agree to stringent international accounting rules for pledges. It is therefore more probable than not that the gap in 2020 will be at the high end of the 8 to 12 Gt-

CO₂e range. On the positive side, fully implementing the conditional pledges and applying strict rules brings emissions more than 40% of the way from BAU to the 2°C target.

Options to increase the 2020 ambition

Several options are available to increase the ambition level of greenhouse gas reductions until 2020:

- **Minimise the use of lenient land use credits and surplus emission units and impact of double counting (1-2 GtCO₂e):** If industrialized countries applied strict accounting rules to minimise the use of “lenient LULUCF credits” and avoided the use of surplus emissions units for meeting their targets, they would strengthen the effect of their pledges and thus reduce the emissions gap in 2020 by about 1 to 2 GtCO₂e (with up to 0.3 GtCO₂e coming from LULUCF accounting and up to 0.6 GtCO₂e from surplus emissions units). Double counting of offsets could lead to an increase of the gap of up to 0.75 GtCO₂e, depending on whether countries implement their unconditional or conditional pledges.
- **Implement the more ambitious conditional pledges (2-3 GtCO₂e):** If all countries were to move to their conditional pledges, it would significantly narrow the 2020 emissions gap towards 2°C. The gap would be reduced by about 2 to 3 GtCO₂e, with most of the emission reductions coming from industrialized countries and a smaller, but important, share coming from developing countries. This would require that conditions on those pledges be fulfilled. These conditions include expected actions of other countries as well as the provision of adequate financing, technology transfer and capacity building. Alternatively it would imply

that conditions for some countries are relaxed or removed.

- **Implement measures that go beyond current pledges and/or strengthen pledges (potentially closing the gap):** Mitigation scenarios from modelling studies indicate that it is technically possible to reduce emissions beyond present national plans in 2020 (UNEP, 2011). These scenarios show that the gap could be closed, and that emission levels consistent with 2°C could be achieved through the implementation of a wide portfolio of mitigation measures, including energy efficiency and conservation, renewables, nuclear, carbon capture and storage, non-CO₂ emissions mitigation, reducing international aviation and maritime emissions, hydro-electric power, afforestation and avoided deforestation. Additional international climate finance could induce additional reductions. As an example, if Annex I countries would reduce their emissions by 25% below 1990 in 2020, it would decrease the gap by an additional 1.6 GtCO₂e beyond the strict conditional case. At 40% below 1990 it would be 4.5 GtCO₂e.

Conclusions

We have seen that a global emissions gap is likely between expected emissions as a result of the pledges and emission levels consistent with putting the world on a cost-effective trajectory in 2020 to avoid expected global warming above the 2°C target. Our calculated scenarios for emissions in 2020 result in emissions of 52 to 56 GtCO₂e (median) and therefore leave a gap of 8 to 12 GtCO₂e (depending on how emission reduction pledges are implemented) to what would be necessary to be on a credible least-cost effective path towards 2°C with a likely chance. This emissions gap has become larger in compared to the previous 2011 UNEP assessment, because of higher

than expected economic growth and the inclusion of “double counting” of emission offsets in the calculations. Some groups calculated that in the least ambitious case, no reductions beyond business-as-usual would be required from the group of Annex I countries to meet their targets.

But our analysis of options for implementing the reduction proposals has also shown that the gap could be narrowed if not closed through several policy options: by increasing current national reduction pledges to their higher end of their range, by bringing more ambitious pledges to the table, and by adopting strict rules of accounting.

In any case, we now need to lay the groundwork for faster emission reduction rates after 2020: Emission pathways consistent with a 2°C temperature target are characterized by rapid rates of emission reduction post 2020. Such high reduction rates on a sustained time-scale would be challenging and unprecedented historically. Therefore it is critical to lay the groundwork now for faster post 2020 emission reductions, for example, by avoiding lock-in of high-carbon infrastructure with long lifespan, or by developing and demonstrating advanced clean technologies. Closing the gap will become more difficult with more time passing.

Acknowledgements

The authors wish to thank everyone who have initiated and supported the UNEP Emissions Gap reports, all its authors for the lively and fruitful discussions and all the modelling groups that provided data.

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Bridging the Political Barriers in Negotiating a Global Market-based Measure for Controlling International Aviation Emissions

Abstract

This paper explores key political issues in the International Civil Aviation Organization (ICAO) negotiations on market-based measures (MBMs) for controlling international aviation emissions. The focus is the application of the UNFCCC principle of “common but differentiated responsibilities and respective capabilities” (CBDR&RC) in the context of ICAO negotiations. The paper provides background on the current state of the negotiations for a global multilateral agreement on MBMs under ICAO, and presents options for an enhanced interpretation of CBDR&RC that could contribute to overcoming the longstanding deadlock. These options emerged from a multi-stakeholder process convened by the Worldwide Fund for Nature (WWF).

Introduction

Discussions on how to regulate greenhouse gas emissions from international aviation are currently taking place under the International Civil Aviation Organization (ICAO), including negotiations on market-based measures (MBMs) that can put a price on carbon emissions from aircraft on international routes. This ongoing debate has raised many political issues. If an agreement is to be reached on a global approach, it is essential that states overcome the longstanding impasse over the apparent conflict between treaty principles. On the one hand, the principle of “common but differentiated responsibilities and respective capabilities” (CBDR&RC) is a fundamental principle in the Rio Conventions of 1992, and has been central to climate negotiations under the

UN Framework Convention on Climate Change (UNFCCC). On the other hand, the principle of non-discrimination and uniformity of treatment between air carriers is fundamental to ICAO.

The authors take the view that CBDR&RC continues to be fundamental to global efforts to avoid dangerous climate change, but that our understanding and application of this principle must evolve. Whereas some developing countries prefer to emphasise the 'differentiated' part, and some developed countries prefer to emphasise the 'common' part, it should be clear that we are actually dealing with a careful balancing between differentiated responsibility for the past and common responsibility for the future. We also need to recognise that the world has changed in the two decades since the Rio Earth Summit, and, though the principle of CBDR&RC stands, an enhanced interpretation of the content may be required (Müller, 2012).

As emissions from international aviation are not included in national totals, ICAO has been addressing the issue at a sectoral level, setting aspirational goals that do not impose specific obligations on individual states. For this reason, some states at ICAO have argued that the CBDR&RC

The authors take the view that CBDR&RC continues to be fundamental to global efforts to avoid dangerous climate change, but that our understanding and application of this principle must evolve

of states are not directly applicable to a sectoral agreement. Others again take the view that the ultimate objective, principles and provisions of

the UNFCCC are paramount and that a balance should be struck between climate stabilization and sustainable development. Depending on its design, some measures could impose costs on carriers that could affect travel and trade in particular locations. Understanding and addressing such unintended consequences has been a priority for ICAO.

This policy brief focuses on possible ways to bridge the political divides in the ICAO negotiations by offering different possible narratives for an enhanced interpretation of CBDR&RC. Section 3 elaborates these creative options¹ in more detail, while Section 4 considers the vexing question of creating precedents in ICAO for the UNFCCC negotiations. But before doing so, Section 2 briefly explains the contextual environment for this policy debate, including the scientific case for action, the industry's response to date, and a brief history of the ICAO negotiations.

The contextual environment for the policy debate

The scientific case for action on aviation emissions

There is broad scientific, economic and political consensus about the urgency of transitioning to an emissions trajectory that will limit the average global temperature increase compared to pre-industrial levels to below 2 degrees Celsius (°C) during this century, thereby avoiding dangerous climate change. Aviation should contribute its fair share to these efforts, and, in particular, to a near-term peak-and-decline emissions trajectory. Unconstrained growth in aviation emissions will

¹ The options presented below are based on ideas that emerged from a multi-stakeholder process convened by WWF. These proposals should not be seen as consensus positions, but rather as 'straw person' proposals for further consideration. Although these ideas emerged from a multi-stakeholder brainstorm, the authors take responsibility for the information and views presented in this paper.

not be compatible with 2050 climate stabilisation goals.

Currently aviation is responsible for only two per cent of global carbon emissions, (when indirect effects are included, aviation could contribute around 4.9% of current total anthropogenic radiative forcing). However, the carbon footprint of aviation will increase significantly as it tracks the globalization of trade, the rise of the middle class in emerging markets, rapid urbanization and exponential growth of long haul tourism, to name but a few drivers. Up to 2050, aviation is expected to grow by an average of 4.5 per cent per annum. However, due to potential fuel efficiency gains estimated to be around of 1.5 per cent/annum, emissions currently increase at a slower rate (i.e. closer to a three per cent compound annual growth rate). Considering that fuel makes up 30 to 35 per cent of airline operating costs, there is a strong bottom-line incentive to reduce emissions through efficiency improvements. However, even with these improvements, global aviation emissions by 2050 will have increased three- to four-fold from 2010 levels. Given industry's targets for 2050, namely a 50% net reduction below 2005 levels², this leaves a mitigation gap of more than double today's total aviation emissions, or nearly 1 700 MtCO₂/annum, in 2050 (WEF, 2011).

Industry proposals to control aviation emissions

Because of aviation's significant contribution to the global economy and local livelihoods, and mindful that the sector's growing carbon footprint is unsustainable in the long run, the avia-

tion industry has committed drastically to step up its efforts to decarbonise aviation.

Unconstrained growth in aviation emissions will not be compatible with 2050 climate stabilisation goals

In 2007, IATA's commercial airline members adopted a so-called four-pillar strategy to address climate change. The four pillars are:

- i. Technological improvements: These interventions include (i) short-term improvements that enhance existing and new fleet efficiencies (for example retrofitting and production updates); (ii) medium-term innovations (for example new aircraft and engine design efficiencies in the pipeline), and (iii) long-term step changes (for example blended-wing design, the deployment of super-lightweight materials that emerge from the nanotechnology revolution, radical new technologies and airframe designs, and the drop-in of low-carbon aviation biofuels).
- ii. Operational improvements: These interventions are by and large aimed at fuel savings, and include the spread of best practices for fuel conservation, greater use of fixed electrical ground power at airport terminals,

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² IATA has committed the airline industry to a peak-plateau-and-decline emissions trajectory, reducing its "net carbon footprint to 50% below what it was in 2005" by 2050. The IATA trajectory provides for two mid-term milestones, namely "to continue to improve fleet fuel efficiency by 1.5% per year until 2020" and to "cap its net carbon emissions while continuing to grow", i.e. achieve carbon-neutral growth (CNG), from 2020 (ATAG, 2012:18; also see IATA, 2010).

centre-of-gravity optimisation, improved take-off and landing procedures (for example single-engine taxiing and the continuous-descent approach), and higher load factors (inter alia achieved through yield management).

- iii. Infrastructural improvements: These interventions are aimed at removing inefficiencies in the utilisation of airports and airspace, including the transition to more flexible airspace use, reorganising the airspace, shortening flight routes, and improving airport and ATM infrastructure and technology.
- iv. Economic measures: In IATA's lexicon, these are positive economic measures as part of a global, sectoral, market-based approach. In theory, MBM's could include direct offsetting, emissions trading, or other measures that put a price on emissions, such as carbon or bunker fuel levies or taxes.

Depending on the scale achievable for biofuels drop-in, the creation of a global MBM that allows for off-setting of aviation emissions internally and against other economic sectors would therefore seem intuitively logical, even in the period out to 2030

Beyond 2030, the aviation industry enters a period of great uncertainty in respect of ways and means to achieve climate mitigation targets. By all indications, save for radical technological breakthroughs, only the gradual replacement of kerosene jet fuel with lower-carbon second-generation biofuels currently presents a technological solution – but even this option is clouded by uncer-

tainty about feedstock production, its financial viability (given the prevailing subsidisation of kerosene jet fuels), and environmental sustainability considerations, such as life-cycle emissions and the impact of land-use change.

Depending on the scale achievable for biofuels drop-in, the creation of a global MBM that allows for off-setting of aviation emissions internally and against other economic sectors would therefore seem intuitively logical, even in the period out to 2030. The aviation supply chain consists of more than just airlines. The various public and private role players in the vertical supply chain often have conflicting interests, for example the oil companies often have different interests than the airframe or engine manufacturers, airlines or airports when it comes to R&D for second-generation low-carbon biofuels. Therefore, given the market failure, an MBM that puts a price on carbon will also provide a critical price incentive for investment in the development of a second-generation biofuels industry.

A recent analysis (Lee et al, 2013) of the range of measures proposed to control aviation emissions shows that MBMs will be necessary to meet ICAO and industry targets of carbon neutral growth from 2020, and a 50% reduction against a 2005 baseline by 2050. However, due to the complex aero-political and climate change negotiating dynamics, creating such an MBM is clouded by significant political uncertainty.

The politics of aviation emissions

Negotiations on a global MBM for aviation emissions under the ICAO have been at an impasse for nearly 15 years, and because aviation has been treated as a special case in the UN system, international aviation emissions have for all intents and purposes been excluded from UNFCCC negotiations (see Article 2.2 of the Kyoto Protocol

in UNFCCC, 1997). In the meantime, unilateral EU action on international aviation emissions for flights that land in the European aerodrome dominates the global policy environment, and causes deep divisions within Europe and between European governments and long-haul destinations.

In 2004, the ICAO Committee on Aviation Environmental Protection rejected “an aviation-specific emissions trading system based on a new legal instrument under ICAO auspices”. They expressed a preference for the inclusion of aviation in existing national and/or regional emissions trading schemes; although, by 2007, this had been caveated with a caution to states against the inclusion of aviation in an ETS without first obtaining the mutual agreement of other states whose carriers would be affected. By 2009, an ICAO high-level meeting on international aviation and climate change “noted the scientific view that the increase in global average temperature above pre-industrial levels ought not to exceed 2°C” (ICAO, 2010:34), which, in the context of climate change negotiations, represented a meaningful political signal. This led to the agreement on aspirational goals at its 37th General Assembly in 2010³. However, ICAO’s 190 parties could once again not reach agreement on global burden-sharing, a compliance regime or market-based mechanism to achieve this objective, although it did commit to exploring the feasibility of a global MBM and developing a framework for national MBMs by 2013, along with a global CO₂ standard for new aircraft and a long-term aspirational goal for 2050.

3 At its 37th Assembly in September 2010, ICAO’s members committed to a goal of a two per cent per annum improvement in fuel efficiency up to 2020 (i.e. a hard target); to an aspirational goal of extending this two per cent year-on-year efficiency improvement up to 2050 (i.e. a soft target); to ‘considering’ the objective of carbon-neutral growth beyond 2020, and to developing a framework for MBMs for international aviation emissions (IATA, 2011:28; ICAO, 2010:8)

Despite this incremental progress, ICAO’s slow progress in establishing a multilateral regime to control emissions in this transnational sector is cause for concern. At the most fundamental level, the deadlock centres on the conflict between the ICAO’s principle of equal treatment and the UNFCCC’s principle of ‘common but differentiated responsibilities and respective capabilities’

Despite this incremental progress, ICAO’s slow progress in establishing a multilateral regime to control emissions in this transnational sector is cause for concern. At the most fundamental level, the deadlock centres on the conflict between the ICAO’s principle of equal treatment and the UNFCCC’s principle of ‘common but differentiated responsibilities and respective capabilities’.

Current status of ICAO negotiations

Developing countries have continuously argued against a global MBM that would treat all carriers/states equally on the basis of the provisions and principles of the UNFCCC, most notably the principle of CBDR&RC. For developing countries it is about a fair and equitable deal that balances climate stabilization with sustainable growth and development.

Some developed countries have continuously advanced arguments related to competitive distortions as the imperative for a global MBM. They too frame this as a precondition for a fair and equitable deal.

Both developed and developing countries also fear that a sectoral agreement for transnational aviation could raise expectations regarding the balance of developed and developing country commitments under the UNFCCC. Therefore, in both UN specialized organizations for international transport, ICAO and the International Maritime Organisation (IMO), there is a fundamental collision between the principles of CBDR&RC and equal treatment.

Both developed and developing countries also fear that a sectoral agreement for transnational aviation could raise expectations regarding the balance of developed and developing country commitments under the UNFCCC

ICAO has always stressed that its global goals are sector-wide and do not imply any specific obligations for individual states. Furthermore, it has sought to reframe the language to decouple it from the UNFCCC, referring instead to the Special Circumstances and Respective Capabilities of Developing Countries (SCRDC). Others try to address CBDR&RC concerns by referring to no net incidence (NNI) of any revenue-raising measure on developing countries. These are all attempts to offer an enhanced interpretation of CBDR&RC that differ from historically polarised discussions within UNFCCC. Likewise, the 2010 ICAO Resolution also introduced a *de minimis* threshold for contributing to climate action. Under the *de minimis* approach, states with less than 1% of traffic (measured using Revenue Ton Kilometers, RTKs) do not have to submit action plans showing how they will contribute to the ICAO goals, while “commercial aircraft operators of States below the

threshold should qualify for exemption for application of MBMs that are established on national, regional and global levels”. Many states issued reservations against this clause questioning both the level of the threshold and the implications: only 26 States are above the threshold, exempting many developed countries while including some developing countries. A carrier-based exemption, it is often claimed, also has the potential to create competitive distortions where carriers from *de minimis* states compete directly on a given route with non-exempt carriers. As a consequence, the ICAO expert group on an MBM and large parts of the ICAO council no longer support this exemption.

At a multi-stakeholder workshop organized by WWF in October 2012, there was interest in exploring ideas addressing issues of equity and the application of CBDR&RC in the context of a global MBM under ICAO. A CBDR&RC Working Group was created and, over the course of several months and numerous conference calls and email exchanges, the following options were identified as deserving further exploration and elaboration. These are not consensus positions, but illustrative options worthwhile to be elaborated as ‘straw person’ proposals.

“Straw person” proposals for an enhanced interpretation of CBDR&RC

There are two broad indicative approaches: differential treatment of routes and channeling of revenues.

A) DIFFERENTIAL OBLIGATIONS BY ROUTE

Criteria could be established to differentiate between routes, e.g., routes with low levels of activity or emissions that may be particularly vulnerable to increased costs associated with mitigation meas-

ures. This could be achieved using metrics that reflect characteristics of (i) the departing state (for example, the development status measured in GDP or other economic activity criteria, or even in political terms such as LDC or non-Annex-1 – NAI – as per UNFCCC) or (ii) the aviation-specific characteristics of the route. Under the first approach, all routes departing from a state that qualifies for a specific type of differential treatment would be subject to the same rule. Under the second approach, strong competitive routes would be included but differentiation would not apply across the board by state, so different routes from a given country could be subject to different treatment (including potentially by exemption).

The two options of differentiation are described in more detail below:

1) Route-based differentiation based on national indicators

Under this approach, states would be allocated to one of three categories defined by economic and/or other development criteria (e.g. GDP per capita). For example: the threshold for Tier 3 could be set at a level that included all LDCs; Tier 2 could be broadly representative of other NAI developing countries, with all remaining states being allocated to Tier 1. At the basis of this approach are new categories, or graduation that breaks with the strict AI/NAI distinction in climate negotiations. It should be noted that a binary division as a matter of the legal form of an agreement is distinct from differentiating the commitments and actions contained within such an agreement. That is, an agreement might retain the legal form of categories of developed and developing countries, but apply a range of commitments. Another element of flexibility is timing. This approach to differentiation can be used to phase-in obligations, or to differentiate between them:

2) Route-based differentiation based on aviation characteristics of the route

Under this option, portions of the pool of allowable emissions would be differentially allocated to routes (e.g., city-pairs or region-pairs) on the basis of growth of aviation traffic on those routes. All routes would be covered from the outset, but flights on fast-growing routes would receive a greater share of the allowance pool than would those on slow-growing routes. This approach would not discriminate among carriers operating on a given route, i.e., those carriers would receive shares of the portion of the allowance pool allocated for that route irrespective of the nationality of the carrier. This approach also would not discriminate on the basis of state. However, since as a practical matter, traffic on routes between fast-growing developing countries and on routes between fast-growing developing countries and other countries is likely to increase more than traffic on routes between mature markets (principally in industrialized countries), this option provides a tool for addressing the concerns of some developing countries without breaching the Chicago Convention strictures against discrimination on the basis of country or carrier. It should be noted that the criteria of fast-growing traffic on a given route does not address the special circumstances of LDCs or small island developing states (SIDS), so it is unlikely this approach could be a stand-alone solution for differentiation in a global MBM.

Aside from the criteria for differentiation, the key question in designing a global MBM is what will be different between routes. Three options are presented below for how different routes could be given different treatment or obligations, appropriate to the nature of the respective routes or the countries. It should be noted that these are not necessarily mutually exclusive options – they could be combined in different ways.

1. Phase-in

By way of example, flights between Tier 1 states could be subject to the global measure as soon as it comes into effect. Flights on routes between Tier 3 states will be phased in after 10 years and flights on routes between Tier 2 states will be phased in after 5 years. Routes between tiers will be subject to the rules pertaining to the lowest tier. All carriers operating on a route will be subject to the same rules irrespective of the nationality of the carrier.

2. Differentiated target levels

By way of example, all routes could be covered from the outset but flights between Tier 1 states would be subject to a cap/baseline equivalent to 2005 levels minus 10%, flights on routes between Tier 2 states will be subject to a cap of no net increase in emissions after 2020, while flights on routes between Tier 3 states will be exempt. Routes between tiers will be subject to the rules pertaining to the lowest tier. All carriers operating on a route will be subject to the same rules irrespective of the nationality of the carrier. The thresholds will be fixed to take account of changes with time, and a periodic review (e.g., every 5 years) will determine whether states need to be reallocated to a different tier.

3. Differentiated compliance obligations relative to a common target level

Both an offsetting and trading scheme could require the submission of allowances and/or offset credits to meet each entities obligation. Such schemes assume that for each tonne of CO₂ emitted an allowance or project credit equivalent to one tonne of CO₂ must be surrendered. However, to take account of SCRCDC, an emissions factor could be used to either increase or decrease the compliance obligation required. The compliance obligations could be differentiated using the tiered state approach described above. This could

be implemented as an interim phase-in arrangement. If it were a permanent feature, the overall cap may have to be adjusted to ensure overall environmental integrity. Those routes representing states with greater capacity and responsibility, and/or more mature aviation markets, could have a greater compliance obligation, while others could have a lesser compliance obligation. So, on some routes, for example, for each tonne emitted, an entity would be required to surrender 0.5:1 or 0.3:1 allowances or project credits per tonne of emissions. Routes representing states with greater capability/responsibility could be required to surrender allowances at a ratio greater than 1:1. Such a system should be implemented in a manner that maintains the integrity of the emissions cap. Thus: globally, the system must ensure that, on average, each tonne of emissions is matched by at least one tonne of allowances.

B) CHANNELING OF REVENUES

Under this indicative approach all carriers would participate in the global measure and it would apply to all international routes. There could thus be common treatment at operator level. Differentiation would then occur during the distribution of revenues, for example to ensure no net incidence on developing countries.

Revenue could be generated through an auction under a global trading system or through a transaction levy on project credits in an offsetting scheme. In a WWF report undertaken by Vivid Economics/AET, the amount of revenue that could be generated was estimated at \$3.6 billion per annum in 2030 for offsetting and \$11.7 billion for an ETS with 50% auctioning (using a global carbon credit price of \$25 per tonne of CO₂ in 2020, rising to \$40 in 2030). A third option may be to impose an emissions levy that would cover all emissions (pricing all emissions and address-

ing the issuing of allowances that have been distributed freely or emissions under the baseline for offsetting in the other two options). Assuming it was levied at the same price, this option could raise \$26.3 billion per annum by 2030.

There is, however, a huge gap between (i) the notion of generating revenues for climate purposes and (ii) overcoming the CBDR&RC issue that lies at the heart of the current impasse in ICAO by ensuring no net incidence on developing countries by differentiating during the distribution of revenues.

Whereas the notion of revenue use and channelling under the heading of innovative climate finance instruments is not new, there has been strong opposition to generation of revenue in ICAO. To the degree that the notion of revenue is tolerated in aviation circles, there is strong resistance to using it for out of sector purposes. In the relevant negotiations the use of revenues has historically also not been very convincing to developing countries including the most vulnerable countries. The response typically centres on the financing obligations of developed countries, and concerns that global measures could shift the obligations to developing countries. Concerns have also been expressed that there may be unintended consequences, such as risks to national economies due to sector-wide applied obligations. Therefore, a combination of revenue-raising with a time limited exemption as in option A above might lead to greater political acceptability.

There are different potential ways to collect, administer and differentially distribute the revenue.

- Revenue collection would ideally be through a central, multilaterally governed entity on the basis of agreed rules (e.g., Green Climate Fund or another entity identified or created by

ICAO). It has also been argued that it could be collected by some national governments with clear obligations in terms of the use of the full amount of the funding for climate purposes or to ensure no net incidence on developing countries, but generally we know earmarking at national level is legally complex.

- Part of the revenue would be channelled to a developing countries (e.g., all non-Annex I countries or a sub-group of non-Annex I such as LDCs and/or SIDS, or countries below a given emissions and/or income threshold) to ensure they are subject to no net incidence.
- The remaining funds can be allocated both to in-sector measures, as well as to out-of-sector climate change mitigation and adaptation actions in developing countries, according to multilaterally agreed criteria and governance procedures.

An alternative to distribution of financial resources directly would be to distribute emissions allowances, with recipients having the right to monetize them

An alternative to distribution of financial resources directly would be to distribute emissions allowances, with recipients having the right to monetize them. Allowances could be distributed to specific countries – e.g., those in certain political categories such as NAI or those below a certain income and emissions threshold – which would then auction them and generate finance in order to support low carbon development and

investment in those countries. Allowances could also be channeled to funds, such as the Green Climate Fund, to generate revenue.

Precedents for unfccc climate negotiations?

One issue that is of concern to many developing countries and developed countries alike, is the potential precedents that an agreement on an MBM for the aviation sector could set for the broader negotiations under the UNFCCC for the post-2020 period. This question is intimately connected to the principle of CBDR&RC, because the primary concern is the perceived potential contradiction between global measures under

Developed countries would seemingly want to level the playing field and avoid competitive distortions in global aviation markets; whereas developing countries have long been concerned that these inherently international sectors, following the principles and customary practices of the ICAO and IMO, would not only lead to unfair and inequitable outcomes, but could also set unfavorable precedents for the broader UNFCCC negotiations

the ICAO (and IMO for maritime transport) that generally do not differentiate / distinguish between aircraft, airlines and countries, particularly on particular routes, and the recognition under the UNFCCC that distinctions should be made between different countries based on their common but different responsibilities for causing the problem, including historical responsibilities, and

respective capabilities in responding to climate change. Developed countries would seemingly want to level the playing field and avoid competitive distortions in global aviation markets; whereas developing countries have long been concerned that these inherently international sectors, following the principles and customary practices of the ICAO and IMO, would not only lead to unfair and inequitable outcomes, but could also set unfavorable precedents for the broader UNFCCC negotiations, including for other sectors where, unlike aviation and maritime transport, emissions take place on national territory and can in principle be adequately addressed by domestic policies.

There are some sound legal reasons why measures to address emissions from the international aviation sector would not serve as legal precedents for other sectors, or an overarching agreement under the UNFCCC. The ICAO is governed by the Chicago Convention, and contains specific provisions to address the unique characteristics of the aviation sector. These do not apply to other sectors. The Convention states that laws and regulations of member states “shall be applied to the aircraft of all contracting States without distinction as to nationality”, and one of the objectives of ICAO, set out in the Convention, is to “Avoid discrimination between contracting states”. At the same time, the Preamble states that the undersigned governments have agreed on certain principles and arrangements in order that international civil aviation “may be established on the basis of equality of opportunity”. The proponents of a Chicago Convention-based deal would argue that these provisions privileging uniform global treatment and the unique nature of the international aviation sector create a legal basis for avoiding the use of arrangements for aviation (or shipping) as a direct legal precedent for the climate regime applied to states or to other sectors. Of course this notion is challenged by developing countries that

prefer a deal based on the provisions and principles of the UNFCCC.

The proponents of a *sui generis* agreement covering international aviation emissions argue:

- The multilateral process continues to be effective, and the UN system is capable of delivering ambitious, rule-based global outcomes that adequately reflect fairness, equity, sustainable development and the urgent need for action to reduce greenhouse gas emissions.
- The UNFCCC is the only legitimate forum for broad multilateral coordination of action on climate change; yet actions in specific sectors or in respect of specific emission sources could also be taking place elsewhere. Action through other fora and organizations will be essential to stabilise emissions at sustainable levels – for aviation through ICAO. The UNFCCC might request more specialized bodies to undertake specific tasks, and / or such fora could define themselves as making a contribution to the overall effort to tackle climate change. Maintaining an overview of action by many actors at different scales is essential to ensure an adequate response.
- International transport – aviation and maritime transport – are uniquely global sectors that require coordinated international action, and measures to address emissions from these sectors does not prejudice outcomes of negotiations in other sectors.
- There are practical ways of applying the principles of CBDR&RC and Special Circumstances and Respective Capabilities to climate mitigation measures that ensure fairness, equity, sustainable development and environmental integrity. These enhanced interpretations may

be appropriate to certain sectors and contexts, and not universally in all contexts.

Potential precedents for which there is likely to be strong opposition from developing countries:

- Global emissions targets to be set, and measures implemented to address them, without addressing differences in national circumstances and CBDR&RC in the implementation of such measures. (Ultimately, a sustainable development approach still requires that emissions stabilization should allow development to proceed in a sustainable manner; we need to balance climate and development imperatives in a fair and equitable regime.)
- Deviating from the principles of the UNFCCC.
- Emissions from other economic sectors or activities in general (e.g., iron and steel, cement, agriculture, etc.) to be covered by uniform global measures that do not discriminate between countries and market actors.
- Sectoral approaches as the basis for future global climate agreements under the UNFCCC.
- Global market based approaches *a priori* as the primary basis for future global climate agreements under the UNFCCC. (Even under ICAO

International transport – aviation and maritime transport – are uniquely global sectors that require coordinated international action, and measures to address emissions from these sectors does not prejudice outcomes of negotiations in other sectors

the entire basket of measures should be considered and the work on non-market based measures must form part of a package deal.)

- Any transfer of resources from the south to the north, or any approach that has inequitable and unfair distributional impacts.

Potential precedents for which there is likely to be strong opposition from (some) developed countries:

- Agreeing to CBDR&RC as the basis for burden-sharing in controlling aviation emissions.
- Maintaining the existing AI/NAI political categories without provision for graduation.
- Recognition, implicit or otherwise, that the developmental challenges of large emerging economies justifies differential treatment from developed countries, either in terms of regulation of airlines or in the use of resources generated by carbon pricing. (Policies adopted for sectoral approaches in general should differentiate between the sectors in different countries based on the development conditions of the respective countries.)
- Any approach that explicitly recognizes that developing countries have the right to access to planetary resources on an equal per capita basis, or to achieve the development and consumption levels of developed countries without decarbonising.

Concern about setting the latter kinds of precedents is perhaps one key factor (but likely not the only) contributing to resistance to agreement on a global MBM for the aviation sector on the part of many countries. But that is only at the tactical level. At the most fundamental level this is about

fairness, equity and the right to sustainable development in all three of its dimensions.

If a way could be found to ensure that an acceptable (to developing and developed countries alike) enhanced interpretation of CBDR&RC specific to international aviation does not set legal or political precedents for the negotiations under the UNFCCC, a major barrier to progress would be removed. A solution in addition to its substantive dimensions could be to explicitly recognize and address the concern about creating precedents in the very unique transnational aviation sector. Solutions found for that sector do not necessarily apply to, and should in no way prejudice the broader climate negotiations – whether seen from the perspective of a developed or a developing country.

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The Role of Market Mechanisms in a Post-2020 Climate Change Agreement

Abstract

Markets have played an important role over the last ten years, having to a large degree captured the spotlight of the Climate Change (CC) debate. While from a market point of view they have functioned well mechanically, there is now a vigorous debate, driven by the current low prices, as to whether they have contributed to mitigation and adaptation efforts. With negotiations for a post-2020 agreement in full swing, a legitimate question is how markets can contribute to the objectives of the United Nations Framework Convention on Climate Change (UNFCCC). In parallel, an equally important question, as markets develop regionally and nationally outside the UNFCCC, is the role of the post-2020 agreement in the creation of a global carbon market. This paper points out that markets, if well regulated and with clear objectives, have a critical role to play in making a new climate change agreement possible. Equally importantly, if there is an international agreement, then the agreement must contain key elements that will be needed to make a global carbon market possible.

Table 1: GDP (in Billions of PPP USD)

Country	GPD 1997	Share worldwide GDP (1997), in %	GDP 2010	Share worldwide GDP (2011), in %
Australia	444.15	1.224	877.22	1.175
Brazil	1,125.57	3.012	2,186.54	2.928
Chili	133.49	0.368	276.80	0.371
China	2,285.33	6.297	10,128.40	13.562
Germany	1,914.29	5.275	2,957.38	3.960
India	1,251.59	3.449	4,051.36	5.425
Indonesia	523.76	1.443	4,051.36	1.385
Japan	3,105.05	8.556	4,384.48	5.871
Mexico	887.66	2.430	1,569.89	2.100
Russia	965.11	2.659	2,237.41	2.996
Saudi-Arabia	314.94	0.868	628.93	0.842
Singapore	112.40	0.310	293.69	0.390
South Africa	263.26	0.725	526.95	0.706
UK	1,273.62	3.510	2,223.25	2.977
USA	8,332.35	22.961	14,498.93	19.414
EU-27	9,124.47	25.143	15,283.06	20.464
World	36,246.70	100.000	74,683.81	100.000

Source: IMF World Economic outlook 2012

Background

Since the Montreal Conference of the Parties (COP) in 2005, we have been inexorably moving away from the “orderly” world of the Kyoto Protocol (KP) to a new climate change regime that is intended to be better adapted to today’s economic and political realities.

The world has changed in many ways since 1997 when the KP was adopted, and the world has changed along some critical axes. Economically, Gross Domestic Products (GDP) and GDP per capita look quite different (see Tables 1 and 2) now. Similarly, the greenhouse gas (GHG) emissions statistics have also changed (Table 3). Final-

ly, and this something that cannot be quantified, the appetite for global governance, especially for an agreement that has such far-reaching implications as a climate change agreement, has diminished considerably.

A climate change agreement is generally placed in the category of environmental agreements and negotiated by officials from the environmental departments of the Parties. In reality, the environmental component of a climate change agreement is only the core target that needs to be achieved. Most of the work belongs more in a trade and economic agreement with a focus on technology, border text measures, leakage, intellectual property rights, finance for mitigation and adaptation, etc.

Table 2: GDP per Capita (in PPP USD)

Country	GDP per Capita (1997)	GDP per Capita (2010)	Growth (percentage)
Australia	23,867.08	39,545.16	165.69
Brazil	6,872.47	11,314.41	164.63
Chili	9,021.85	16,192.75	179.48
China	1,848.59	7,553.38	408.60
Germany	23,330.32	36,172.68	155.05
India	1,291.97	3,403.00	263.40
Indonesia	2,628.27	4,352.65	165.61
Japan	24,634.41	34,240.98	139.00
Mexico	9,386.74	13,977.30	148.90
Russia	6,529.82	15,657.16	239.78
Saudi Arabia	16,543.75	22,818.04	137.93
Singapore	28,622.05	56,708.69	198.13
South Africa	6,182.12	10,540.87	170.51
UK	21,840.79	35,730.86	163.60
USA	30,541.33	4,6811.20	153.27
EU-27	19,159.04	30,604.20	159.74

Source: IMF World Economic outlook 2012

Since Rio in 1992, progress on climate change has been slow. Those not deeply involved in the climate change debate could easily divide the efforts to address climate change into two parts. One is the interminable UNFCCC negotiations, punctuated by the yearly drama of the COPs, which to the casual observer have not produced any visible progress over the last decade. This may be an unfair assessment given the complexity and the deep implications of the negotiations, as well as the progress made in starting a new round through the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) on a different footing. However, this could easily be a casual assessment.

The second part, and the most visible one, over the last decade has been activity in the carbon market that has put a price on pollution in Annex 1 countries and provided a financial signal for what a ton of reduction may be worth globally for project developers in non-Annex 1 countries.

In the last decade, markets in general, including commodity and equity markets, have gone through some traumatic times. The public at large, like some Parties, have always questioned the role of markets, especially in addressing environmental scarcity. While the performance of the SO₂ market in the US has provided a good legacy, the performance of the GHG markets has raised a number of questions about their ability to deliver,

Table 3: CO₂ emissions per Country (in thousands of metric tons)

Country	CO ₂ emissions (1997)	CO ₂ emissions (2009)	Growth (percentage)
Australia	333,624	400,194	19.9536
Brazil	300,547	367,147	22.1596
Chili	56,171	66,732	18.8015
China	3,469,510	7,687,114	221.5619
Germany	863,975	734,599	-14.9745
India	1,043,940	1,979,425	89.6110
Indonesia	278,659	451,782	62.1272
Japan	1,201,632	1,101,134	-8.3635
Mexico	358,383	446,237	24.5140
Russia	1,559,238	1,574,386	0.9715
Saudi Arabia	216,239	432,772	100.1360
Singapore	69,240	31,896	-53.9341
South Africa	371,328	499,016	34.3869
UK	553,673	474,579	-14.2853
USA	5,501,365	5,299,563	-3.6682
EU-27	4,009,329	3,617,579	-9.7710

Source: UN and CDIAC

and implicitly their relevance to any post-2020 climate change agreement.

This paper looks at the relevance of a post-2020 climate change agreement to the creation of a global carbon market. Does it have a role to play at all? What functions can it fulfill, based on the lessons learned over the last ten years, the current state of the world, direction of the carbon market and the possible shape of the agreement itself?

The paper will start by outlining the state of play in international negotiations and in the carbon market, including lessons learned from ten years of operating a carbon market. It will then provide a series of assumptions on the future architecture of a post-2020 climate change agreement, as

well as a vision of the carbon market to 2020 and beyond. Finally, it will answer two key questions. Does the carbon market have a role to play in a post-2020 agreement, *and* what is the role of a post-2020 agreement in the creation and operation of a carbon market?

State of play in UNFCCC negotiations

It is still unclear what role, if any, markets will have in the Agreement currently being negotiated under the ADP. However, the use of markets was very much part of the Bali Road Map (BRM) and was included under the rather complex and all-encompassing heading of “*Various approaches, including opportunities for using markets, to enhance the cost-effectiveness of, and to promote, mitigation*

actions, bearing in mind different circumstances of developed and developing countries". The title itself reflects the compromise that was necessary to include markets in the BRM.

Since Bali, work under the item that became known in the trade as "Various Approaches" has made little progress in what is a clear lack of desire by many Parties to move forward. The reasons vary, but the results speak for themselves. Over the last three COPs, whatever advances were achieved were the result of the final overall agreement in which the "markets" text was inserted involving a take-it-or-leave-it overall Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) text.

The "UNFCCC" text has evolved from COP to COP, from Cancun to Durban to Doha. A certain amount of confusion was introduced through the two terms that have become the buzzwords of this part of the negotiations: "New Market Mechanisms" and "Framework for Various Approaches". There is still a lack of clarity as to what is meant by these two terms. For some that lack of clarity is useful as it slows down the process. There is still significant disagreement whether the Parties have agreed to create these two elements, whether their existence is still being negotiated or whether what is being negotiated is the role/function, architecture and modalities and procedures. Given the outcome of the Durban and Doha COPs, we believe the COP has approved these two components.

However, it is important to note that there is no area under the ADP negotiations that is currently dedicated to the role of markets, and that further work on markets will be carried out under the Subsidiary Body for Scientific and Technological Advice (SBSTA). This points to continued ambivalence as to the role of markets in a post-2020 climate change agreement.

How the process will bring markets under the ADP is unclear, but the effort should be made sooner rather than later. Markets must become part of the ADP agenda.

... there is no area under the ADP negotiations that is currently dedicated to the role of markets, and that further work on markets will be carried out under the Subsidiary Body for Scientific and Technological Advice (SBSTA)

State of the carbon market

It must be noted that, over the last ten years, most activity in the carbon market was related to "domestic trading" for European Union Emissions Trading Scheme (EU ETS) compliance, with the Clean Development Mechanism (CDM) and Joint Implementation (JI) contributing to that activity. Some trading of Assigned Amount Units (AAU) under Article 17 of the KP has taken place, but it has not as yet played a major role. In addition, as there was no linking of domestic ETS, circulation of AAUs did not fulfill the role of shadowing units being transferred between different jurisdictions.

Broadly, the period leading to 2020 is expected to behave in a similar way, except that the elements of a new market architecture are starting to emerge.

Most market activity to 2020 is expected to be in the EU ETS, but the Australian system is coming online in 2015, the Californian one is operating, and more are expected to start in Korea, China,

and other national and maybe sub-national jurisdictions.

As such, by 2020 we will see domestic ETS operating within KP Parties, and some outside the KP. We see that Australia and EU are due to be fully linked 1 July 2018, which is likely to trigger the transfer of AAUs between these two jurisdictions to “shadow” the transfer of domestic units and keep KP accounting whole for these two countries as Parties to the KP. As long as AAUs are used as a backstop there is no concern, as both countries de facto guarantee the environmental integrity of their domestic units through the AAUs.

Linking is also taking place between Quebec and California, neither of which is part of the KP, and therefore with no obligations vertically, that is, to a higher-level international treaty. Therefore, they only have to worry about their own domestic commitments and can function with mutually recognized units, which they agree are good for compliance with their respective obligations

At the same time, the desire to link their systems is being expressed more and more by Australia, California, and others. This will raise issues, as a California unit received in Australia by an entity that has domestic obligations could use that unit for domestic compliance. However, Australia will not be able to use a California unit for compliance with KP obligations, as this is a unit that the Conference of the Parties, serving as the meeting of the Parties to the Kyoto Protocol (CMP), does not currently recognize. This would have the implication that the Australian Government would have to “make up” that unit through the purchase of an internationally recognized unit.

A strong debate is also emerging whether commitments taken by Parties that are not members of the KP under the Cancun agreements can be met

with units that have not been given any formal recognition by the UNFCCC. This is a political issue that needs to be decided and is currently reflected in a footnote in 19/CP.18: “Common tabular format for UNFCCC biennial reporting guidelines for developed country Parties”.

There are serious implications for the final outcome of this decision, as it would raise the issue of whether the body that recognizes or gave credence to the obligation, the COP, has anything to say about how that obligation is met.

In most jurisdictions, the authority that creates the obligation is the only one to affirm whether that obligation has been met and to decide the units or means whereby to prove that it has been met. In any jurisdiction, “What is Legal Tender”, with which carbon units are often compared, is decided by the respective authorities.

Markets under the KP: what was learned

Under the KP architecture, market mechanisms were part of the trio of basic building blocks that defined the agreement: caps, timetables and mechanisms. At the beginning of 2013, after the end of the First Compliance Period, we can reflect on what we learned from the role that markets have played in the KP and in the regional and national markets that were used to meet KP targets, as well as their operation since the prompt start of the CDM in 1998.

- All the significant market mechanisms were defined top-down, that is, defined by the CMP, operated under the authority of the CMP, and regulated by bodies whose authority had been delegated to them by the CMP. The only market approaches that were defined bottom-up were in the voluntary area

- Market infrastructure was part of KP, and it played a critical role in accounting and compliance for the CDM. Participation in mechanisms by the Parties on a voluntary basis was subject to compliance with conditions under the authority of the CMP. If a Party did not meet certain conditions, then it could not issue units, nor use units from market mechanisms. This was a very real situation that did affect Parties such as Romania and Ukraine. The International Transaction Log (ITL) played a critical role in ensuring that units were tracked and there was no double counting.
- Those who created the obligations for compliance had the authority to decide what units could be used for compliance. Compliance obligations for Parties with the KP were set under the CMP. All units that could be used for compliance with the KP were issued under the CMP's authority. That ensured, in a very simple way, that the CMP knew the "environmental value" of each unit used for compliance (1 ton). Through the fact that only CMP approved or issued units could be used for KP compliance, there was recognition that the "environmental value" of a compliance unit can only be set by those who set the constraints. This is a fundamental issue in any regulatory regime. However, an additional principle also needs to be recognized and accepted, namely *how* that recognition is provided, which is also something that the Regulator (CMP) also has the authority to decide upon. ERUs were issued through T1 and T2 either under international supervision or at the purely domestic level, with little international intervention by the CMP regulator, the JI Supervisory Board.
- A number of the controversies that emerged regarding the functioning and contribution of carbon markets to mitigation efforts were caused by the discontinuity resulting from the largely uncoordinated objectives and rules of these two market levels. This is in itself a critical issue that needs to be recognized and addressed in the new climate change architecture that will emerge from the ADP.
- A few very powerful examples can easily be identified. The so-called "recycle CERs" controversy was caused by the fact that, for some EU Economies in Transition Parties, they were a way to use their surplus AAUs resulting from the economic downturn in the post-Communist era (successfully demonized by some stakeholders as "hot air"). Similarly, the debate over the use in the EU ETS of CERs from industrial gas projects caused substantial damage to the KP, the KP mechanisms and the credibility of carbon markets in general. It was inevitable that having one regulator in Bonn (the CDM EB) decree, after a thorough investigation, that they it would continue to issue these credits, while a second regulator and legislative body in Brussels took a strong stance that they were unpalatable, would provide ammunition to those looking for an excuse to attack the whole concept of carbon markets.
- **Process Politicization.** The process of running and administering the KP mechanisms has been heavily politicized
- **Clear objectives.** The CDM was the flagship of the KP market mechanism, but its duality of objectives has led to strong debates on the contribution it has made to real reductions, as well as to sustainable development. The lesson that needs to be internalized in what is a pure regulatory market is that the lack of clarity in objectives will damage the credibility of the market, affect the social license to operate, and finally impact on its good market functioning. Exam-

ples are the dispute over the objectives of the EU ETS, namely compliance within the period cap or long-term de-carbonization. Similarly, when it did not meet the purity tests of some, the Sustainable Development (SD) objective of the CDM has been interpreted as casting a negative light over certain projects and technologies. However, adding the SD conditionality as a market constraint, a concept not quantified, muddies the waters in a way that markets cannot understand. *Whatever conditionality is introduced, it needs to be clearly spelled out for markets so they can quantify it and operate within it.*

The lesson that needs to be internalized in what is a pure regulatory market is that the lack of clarity in objectives will damage the credibility of the market, affect the social license to operate, and finally impact on its good market functioning

- **Competition and leakage.** The vision of the KP was one of a global price for carbon, which would drive reductions around the world in the most efficient way. However, that was in a “simpler” world, divided into Annex 1 and Non-Annex 1 income countries and emissions. However, as the world changed and the new economic and emissions realities have taken hold, it becomes apparent that, while paying for rapid development was OK, subsidizing competition in globally competitive industries, especially in a time of grave economic crisis, was not acceptable. Carbon leakage is becoming an increasing concern. All these matters need to be accounted for in any new climate change agreement.

- **Stability: acceptance of GHG markets and CC science.** Closely connected to the issues of competitiveness and leakage is acceptance of climate change science. The introduction of a carbon price through carbon markets imposes an additional cost on society. Public acceptance of climate change science is important to markets given their complete regulatory nature and the need for stability. A price of carbon in the economy, with the attached concerns surrounding competitiveness, can lead to an unstable regulatory environment. Investments driven by carbon prices cannot take place in an environment where the price of carbon is “here today, gone tomorrow” due to the political color of the government of the day.

Future of the Carbon Market

Given that in any post-2020 agreement it is expected that all Parties will contribute to mitigation efforts, it can also be expected that many will have wish to have a domestic carbon market as part of their tool box. Others will want to use carbon units in meeting their obligations, and as such may trade on the carbon market while having a domestic one in place.

The future carbon market is expected to have

- Domestic cap-and-trade systems and/or crediting systems. These systems may or may not be linked internationally. Given the lack of liquidity in most of these systems, it can be expected that most will end up being linked internationally.
- There is also an expectation that internationally (UNFCCC) developed and operated market mechanisms will emerge. They may only be available for use in certain jurisdictions, based on internationally agreed qualifying criteria (such as CDM for Least Developed Countries,

LDC, only). Alternatively they could be used by any Party, but accepted by Parties for use in their jurisdictions at their own discretion. As such, some Parties may only accept CERs originating from LDCs, even if they can be produced by any other Party under UNFCCC.

- Based on economically rational decisions, all Parties will use the most effective way to meet their obligations. This may not be evident to start with, as what are currently non-Annex I developing countries may be reluctant to purchase units from developed countries or to allow them to be used in their jurisdictions. As such, the purchase of EUAs by a developing country to meet a post-2020 obligation may not be the first choice of that country. Will it happen in time?

Assumptions for a post-2020 Climate Change regime

Based on past experience and the current discussions under the ADP, the climate change regime that is expected to emerge in 2015 will have many features that will differ from the KP, as well as many elements that will undergo transformation to meet the differences from the time when the KP was negotiated.

In order to discuss the role of markets, the new climate change regime needs to be described. At this stage, this analysis can only be based on a number of assumptions, namely:

1. There will be an international climate change regime under the authority of the COP.
2. It will have end-of-period compliance obligations where the units used for compliance will have to be accounted for with the Regulator, the COP.
3. There will be an end-of-compliance period inventory.
4. There will be no AAUs. The KP “budget” model where AAUs were allocated is not likely to be part of a post-2020 climate change agreement.
5. All countries will have to show a concrete contribution to addressing climate change, based on the Common But Differentiated Responsibility (CBDR) principle. Some countries will have economy-wide caps or targets. They could be developed countries, or developing countries that choose to present their efforts in this way. At the same time, such commitments, caps and targets could be made at a sub-national, sectoral, or multi-sectoral level, not only nationally. The UN climate change framework will give recognition to these commitments under certain conditions, which will need to be elaborated. However, this issue goes beyond the scope of this discussion.
6. Countries that transfer a unit of carbon reduction outside the country will add to their inventory that amount of CO₂ (e.g. +1). Countries that receive the unit transferred will see their

... as the world changed and the new economic and emissions realities have taken hold, it becomes apparent that, while paying for rapid development was OK, subsidizing competition in globally competitive industries, especially in a time of grave economic crisis, was not acceptable

inventory go down by the same amount (e.g. -1).

7. The COP will have the prerogative of providing recognition for the units that Parties can use to comply with UNFCCC obligations.

Implications

From a markets perspective, two important elements stand out in the future climate change regime. One is the lack of AAUs. Their importance may not be well understood, but once they are removed from the infrastructure, the complications become self-evident. There is no “international” unit that provides the backstop to ensure environmental integrity and common accounting. There are no AAUs shadowing EU Allowances (EUA) and Australian units flowing between systems, thus keeping the accounting and environmental integrity whole.

The second element is the fact that all Parties will be expected to contribute, in a concrete way, to the goals of the Convention and may use markets as a tool.

There is no “international” unit that provides the backstop to ensure environmental integrity and common accounting

Markets under the KP were essentially trading among, or within, developed countries. Developing countries were exporters of CERs.

In the new architecture, markets are also likely to occur within developing countries. Now, in addition to the exiting flows, the flow of permits could

expand from a *North to North* and *South to North* pattern to include *South to South* and maybe *North to South* flows.

Role of markets in the post-2020 climate change agreement

In considering the role of markets in a post-2020 climate change agreement, we need to consider two issues:

What is the role of markets in addressing climate change?

What is the role of carbon markets in a post-2020 climate change agreement?

Role of markets in addressing climate change

This discussion is not the main objective of this paper, but given the role and mandate of the UN, it is felt that that it needs, at a minimum, to be recognized and identified as an issue.

Carbon markets are not an objective in themselves, but are, and must be seen to be, a tool for price discovery, asset allocation and rational economic decision-making. Their role is to direct flows of investment into areas in which they might not otherwise go. It must be one of the elements of providing carbon finance.

Their role in technology Research and Development (R&D), piloting and deployment is not well understood. However, more and more research seems to indicate that markets cannot be everything to everyone, equally influential and determining at all stages of the technology cycle.

Treating markets, their impacts and functioning separately at the national and international or UN levels does not take into account what real-life experience tells us.

Carbon markets can play a pure national or regional role, but with a few exceptions, it is unlikely that they can function well if they are isolated. Small, illiquid markets are unlikely to produce good market functioning as defined through the ability to process a transfer without it causing significant price movements or loss of value of the asset being traded (ease of entry and exit, absence of monopoly power, widespread availability of information, absence of market externalities, achievement of public interest objectives, sufficient liquidity, lack of large fluctuations, enough actors within the market, etc.). As such, their international dimension becomes, while not an obligation, a necessity rather than a luxury.

A second observation is that experience with environmental markets in general, and carbon markets in particular, indicate that they can make a significant contribution to minimizing overall social costs in addressing climate change. However, carbon markets need clarity of objectives, as multiple objectives will make them less efficient and reduce trust in their performance.

A third observation is that their long-term environmental objectives must be recognized and their regulatory nature accepted. This is a hard lesson that the EU ETS is currently bringing home.

A regulator creates carbon markets, and regulators are rarely infallible. There is, at this stage of society, intervention in all markets, or the potential to intervene if necessary. What is needed is flexibility built into the regulatory framework that will permit predictable and transparent intervention under well-understood conditions.

As such, a strong and credible regulatory framework, with a competent and not politicized regu-

lator, is also an important element if markets are to be part of the toolbox.

Finally, carbon markets are not meant to be a silver bullet. They play a precise role and need to be part of a suite of measures. They do not act alone, but need to be surrounded by other policies and measures that complement them and that can address any side effects and interactions that emerge. This is also clearly emerging from the current debates surrounding the main carbon market, the EU ETS.

Carbon markets are not an objective in themselves, but are, and must be seen to be, a tool for price discovery, asset allocation and rational economic decision-making

Carbon markets and the post-2020 international agreement

“Markets and the post-2020 agreement” are issues that can be addressed from different angles.

A first approach is to analyse the potential place of carbon markets in a post-2020 agreement and the role they must play to ensure that any post-2020 agreement is successful. For that matter, are markets needed to make the next such agreement successful?

A second approach is to try and understand how a post-2020 agreement can contribute to the establishment of a successful global carbon market. These two issues are not disconnected, yet they represent different questions.

Whether markets have any role to play in a post-2020 agreement was to some degree addressed in the section above. Markets, or market incentives, do have a role to play as a tool to ensure that climate change finance is mobilized in an efficient and effective manner. Where appropriate, market analysis (though not always exclusively) should play a role in carbon finance, whether the source of money is public or private.

Markets need to be present in the post-2020 agreement both directly and indirectly: indirectly, through clear constraints that allow for the creation of stable and credible market incentives; directly, through a mandate to play an active role, defined by the Parties, in the development of a global carbon market

The role of market-based incentives should be to ensure that climate change constraints need to be internalized in the cost structure of society in general and in business in particular. They need to be part of series of tools, well regulated and seen to be so, but not promoted as the only approach.

While business operates globally, the constraints that business (and society in general) responds to are usually domestic and local in nature, even if they represent a transposition of constraints resulting from international agreements. As such, indirectly, for market incentives to be present, there must be clear constraints that market actors can recognize and believe in.

These constraints must also be supported by strong, long-term, stable recognition that they need to be observed. If business does not believe that the international constraints, cascaded to the national or local level, are there to stay, it is unlikely to act. That can be seen from the application of the KP and the translation of its commitments into national commitments, including cap-and-trade schemes.

For many years Australia was not part of the KP, and now there are certainly sectors of that society, and economy, that are awaiting the result of the next election to see if the carbon-pricing scheme will really be part of their future.

The same situation also exists in Canada, where the uncertainty over whether constraints will be imposed has resulted in the disappearance of the initially strong presence of Canadian companies in the nascent carbon market. This is all regulatory in nature, and a matter of confidence.

Secondly, the role of markets must be given clear and formal recognition as part of the agreement. This will allow it to contribute to the development of a carbon market, as well as other market approaches. If that recognition is not enshrined, it will always be a struggle to have the agreement operationalized through elements such as an ITL, unit tracking systems, etc.

As such, it can be concluded that markets need to be present in the post-2020 agreement both directly and indirectly: indirectly, through clear constraints that allow for the creation of stable and credible market incentives; directly, through a mandate to play an active role, defined by the Parties, in the development of a global carbon market.

It must be recognized that, at this point, the discussion under “1bv, Various Approaches, etc.” is not part of the ADP agenda. Markets are simply not part of the ADP, at least not formally.

Role of the post-2020 agreement in carbon markets

Given the assumptions made above, the post-2020 agreement can play a number of important roles in the development of a global carbon market.

The KP was “all in one”, creating the market, the market mechanisms and the infrastructure for a carbon market. *From a market functioning* point of view the arrangement was highly logical, and it all added up, but it proved ineffective in terms of getting the major Parties to join the global governance it implied. As a market it worked, but did not, and under the current realities cannot solve the environmental problem.

As such, the new agreement can help make the new realities work towards the creation of a carbon market by providing flexibility, without losing sight of the key issue of environmental integrity. A post-2020 climate change agreement can have a number of key roles, as outlined below.

International in nature. Provisions in a post-2020 agreement can only apply to those markets systems, and the units produced by them, that will cross international boundaries, and may be used for compliance in jurisdictions other than the ones in which they were created. If the market systems, and the units they create, are used for purely domestic compliance, there is no reason for the international regime to interfere with the creation, operation, or environmental value of such units. These will all be captured through an inventory system, in whatever format the international agreement will provide for.

It must be made clear, however, that one fundamental principle must be that the international agreement, and system, should only provide those functions that are better provided at the international level for a variety of reasons. This could be security, environmental integrity or cost. The default option must be that the function must be provided at the domestic level. In addition, in some cases the option could be available for the Party to make that choice and use an international or multilateral service or infrastructure, or else develop its own. An easy example would be whether it wants to develop its own registry or would want to use a facility already in existence.

Carbon markets need clarity of objectives, as multiple objectives will make them less efficient and reduce trust in their performance

Accession to an international framework.

A post-2020 international agreement can provide a framework under which domestic carbon markets can accede to the international system. “Accede” can be interpreted as becoming part of the international agreement, with the consequence that the units thus produced can be used for compliance with international/UNFCCC obligations by a jurisdiction other than the one where they were created. *How* that accession is accomplished will be an important part of a post-2020 international agreement. Most thinking currently sees two options, or a hybrid off the two, as being viable.

- One option is for the accession to be done through an “approval process”, whereby the COP “approves” a domestic system according to internationally agreed rules. Many Parties view

this approach with suspicion, as it is seen as interfering in their domestic carbon markets. The rigidity and micro-management of the CDM by the UNFCCC provides Parties with a good example not to follow. Some of them are more genuine than others in making this argument.

- Another approach has been called the “Transparency” or “Show and Tell” approach. Under this approach, the role of the international agreement is to provide a series of declaratory templates, possibly supplemented by a Peer Review system. In this case a domestic system may have to submit to the UNFCCC a declaration of its details under agreed templates, which *may* be peer reviewed, and the result *could* be put in the public domain. There is no *approval* at the end of this track, just the public availability of information. As an alternative, both tracks could be made available, with the Transparency Track being the default one.

It is believed that the power of the “regulatory market” may push most Parties to use the “Approval” track. Most Parties will be reluctant to explain why they do not submit their *own* systems to that track, as well as why they accept for compliance purposes units from *other* systems that have chosen not to go through an Approval track. The later may especially apply if they come from Parties that do not have an economy-wide cap. This is already observed in the case of JI Track 1 (national guidelines) and Track 2 (international guidelines), where Parties, or entities, have a preference for units emanating from T2 projects, which is seen as having stronger environmental credentials.

In addition, should this kind of market segmentation occur, with some units having better and broader access to markets for compliance, it is highly unlikely that this will not also translate

into increased market value (as opposed to environmental value, which only the regulator can confer).

International Compliance Unit (ICU) (the creation of an internationally recognized compliance unit). This is especially important given the assumed lack of AAUs in the post-2020 agreement as a “common currency”. While this is not an absolute necessity, it would simplify international accounting, the linking of domestic systems and international commercial transactions by creating a more liquid market. An ICU would be issued, on demand, for domestic units that have crossed international boundaries, that originate from domestic systems, and that had already acceded to the international framework.

Infrastructure. Infrastructure should be provided for a global carbon market to help

Parties meet their UNFCCC compliance obligations. All the roles mentioned in this paper require an infrastructure, which can best be provided through international agreement. Two components that would immediately be seen as benefiting from definition through an international agreement would be an ITL and a system of standardized National Registries (NR). An ITL would ensure the transfer and tracking of units that cross international borders. It would also allow Parties to provide “filtering” instructions for transfers to national registries. For illustrative purposes, a Party may wish to accept in its NR only CERs from LDCs, units from certain geographical areas, or units only from systems that acceded through an Approval track.

National registries already exist for Annex 1 Parties under the KP. The same is true for national registries at the beginning of the EU ETS, which has currently moved to a Community Registry. This migration from twenty-seven registries to a

single registry was to a large degree a hard lesson that the EU has learned. It was driven by the realities of cost, capacity and security concerns.

Options may be available in this case whereby the UNFCCC provides central registry services for those Parties that do not have the capacity, or do not wish to do it themselves. The same possibility could exist for other functions.

International Environmental Standards. The agreement can help ensure that the units used for compliance with UN obligations meet internationally agreed environmental standards. This is closely related to the ICU discussion above.

Under KPI this was less of an issue, as all the units used for compliance (CERs, AAU, ERUs) were issued under the authority of the COP, and we knew that “a ton was a ton”. Where this emerged as an issue was for the CDM, where units were issued outside a cap, leading to strong debates on the sustainability features of the units produced.

A post-climate change agreement will need to put in place standards to preserve the environmental integrity of the international system. Such an environmental standard will be developed under the authority of the COP and will be used, through a process to be defined, to determine if a domestic mechanism can accede to the international system. Such a standard may include, among others:

- a. Additionality, where appropriate
- b. Baseline methodologies and crediting threshold
- c. A monitoring, reporting and verification approach
- d. Third-party verification

It should be emphasised that, while this standard will be defined and approved at the international level, many elements will be defined and deter-

mined in cooperation with the national level etc. As such, some interaction is necessary between the national and international levels.

Environmental integrity is one of the trio of ideas that defines sustainability. A word of caution is needed here. Ensuring that “a ton is a ton” is not to be confused with producing a global definition of sustainability. While in many ways this is a goal that we should aspire to, at this stage such an approach would break a strong principle – that sustainability is the prerogative of each individual Party.

A push in this direction, we believe, will damage the sustainability concept, as it will be seen by the developing world as an attempt to impose standards and pathways for development on them.

Provide information for accounting. Markets, by their very nature, will see a lot of transfers taking place between different Parties. An international agreement will need to provide support for the commercial aspect of markets by tracking and avoiding double accounting for all units, be they national or international.

It must be emphasized that double counting can take place in a number of ways and that tracking must take place for

- Tracking units circulating internationally
- Avoiding double environmental counting
- Avoiding double counting of financial commitments

Double counting will be checked by the NR at the national level, upon issuance of domestic units. A national registry will have all necessary data to identify projects and installations that are in that jurisdiction.

A national registry will also have data on any UN mechanism, such as CDM, as it will need to issue a Letter of Approval. To have double counting checked internationally would imply that the regulatory body and/or the ITL would have to track all domestic mechanisms in every country. This would be inefficient, not in keeping with the fundamental principle of doing things at the national level wherever possible.

... an international agreement can be a facilitator for the creation of a carbon market, contributing the coherence, and environmental integrity, needed for domestic systems to link together

Environmental Exchange Mechanism. This aspect ties into the discussions above on the ICU and on environmental integrity: “a ton is a ton”. Any environmental permit has two “values” associated with it: an Environmental Value and a Financial Value.

The Financial value is defined by the market, being a function of supply and demand, liquidity, etc.

The only entity that can define Environmental Value is the regulator accepting a permit for compliance with an obligation it had imposed. As such it can determine that a unit for a domestic system is equal to a CO₂ ton, and equal to an ICU.

Alternatively, it could be decided that a multiplication factor needs to be applied and that a certain unit is, for illustration purposes, only valued at 0.7ton=0.7 ICU.

A second case may emerge where units stemming from a domestic system that wishes to accede internationally may be expressed in units other than CO₂, such as in terms of energy savings. An exchange rate from energy saving units to CO₂ may need to be set, and any post-2020 Agreement may wish to set up a mechanism that determines the resulting Environmental Conversion Factor.

Proving internationally developed and operated market mechanisms for those Parties that do not have the capacity to develop their own systems, or choose not to do so.

The CDM continues to be a prime example of a UNFCCC developed and operated mechanism, where the CDM EB sets very detailed standards and procedures for the creation of CERs, which are reductions from a baseline.

What are currently generically called New Market Mechanisms (NMM), which are mechanisms being developed under the Subsidiary Bodies and which are most likely Sectoral Trading and Sectoral Crediting mechanisms, can also be seen as options for Parties that wish to use an “international rulebook” instead of developing their own domestic mechanisms.

In this category we could also put a REDD+ mechanism, developed by the COP.

Coherence between international and national regulators of the carbon markets. The lack of coordination has led to substantial damage to the functioning and reputation of the GHG market. Cases in point are industrial gas credits and “recycled CERs”, both perfectly all right for the international regulator, but totally rejected by the EU.

Conclusions

The process of ensuring linking and a level playing field, strongly related to environmental integrity and competitiveness, will emerge as the next “big thing”. The international agreement can play a pivotal role without being heavy-handed.

Current provisions under KP’s Article 17 allow the linking of domestic systems in countries that have adhered to the Protocol. Many of the provisions under this section ensure that a post-2020 agreement can also play the same role.

Is this role necessary? If there is an international climate change agreement, with compliance provisions – the assumptions made for the purposes of this paper – then the answer is yes. The current preoccupation of the EU-Australia linking paper with ensuring treatment of AAUs is the best case that can be made. This does not mean a post-2020 agreement that mimics the KP. It means retaining that part of the KP agreement that facilitates the creation of a global carbon market, but allows a separate pathway for deciding the contribution that Parties make to addressing climate change.

As such, an international agreement can be a facilitator for the creation of a carbon market, contributing the coherence, and environmental integrity, needed for domestic systems to link together.

It could also be an operator for infrastructure, and certain type of markets mechanisms, used by Parties on a voluntary basis. The ITL, CDM and NMM are the best examples in this case.

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Addressing the Emissions Gap through Green Growth

Abstract

Striking a balance between the development needs of countries and the need to reduce global emissions has proved challenging. Green growth offers a potential solution, namely approaching environmental sustainability as a vital and valuable asset for economic growth. Green growth views economic growth and environmental sustainability as mutually compatible objectives and makes limiting emissions an integral part of development plans. The potential for green growth has been recognized by several countries with varying natural resources and income levels, demonstrating that environmental sustainability does not need to be sacrificed to achieve economic development.

Introduction

Despite continuous mitigation efforts at the global level, one of the most pressing environmental challenges we face today is the rising level of global greenhouse gas emissions (GHG). According to the recent United Nations Environment Programme report (UNEP, 2012), which examines current global emissions, they are already considerably higher than the emissions level consistent with achieving the 2°C target in 2020 and are still growing. Especially as the economy is slowly picking up after the global downturn, and as the world prepares itself for a new climate agreement by 2015, the need to achieve the dual goals of economic growth and environmental sustainability is becoming an important one, especially for developing and emerging economies.

This is where green growth can play a role. Green growth is not a new concept. For the past 25 years, sustainable development and Agenda 21 have provided a helpful normative framework and a common general policy direction. However, the

international community has struggled to operationalize the framework and find a practical formula for integrating its economic, social and, especially, environmental dimensions into its overall development aspirations (Samans, 2013). Green growth aims to address this challenge. It is a paradigm that simultaneously targets key aspects of

... green growth means fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies

both economic performance, such as poverty reduction, job creation and social inclusion, and of environmental sustainability, such as mitigation of climate change (GGGI, 2012). Nevertheless, few governments or businesses have taken truly decisive steps to shift to a green growth path. Many developing countries in particular see injustice in any proposal hindering their ability to follow the development paths already taken by today's economically advanced countries. At the same time, how to share the burden among countries has been a continuing obstacle to achieving any significant progress in emission reductions (Zak and Lee, 2012).

This article therefore aims to identify how implementing green growth at the national level can bridge the emission gap by addressing the political, financial, capacity and governance challenges that we face, particularly by developing and emerging economies.

Framing green growth

More than twenty years after the first Rio Summit in 1992, the world continues to face a twin

challenge: expanding economic opportunities for all in the context of a growing global population and middle class; and addressing environmental pressures that, if left unaddressed, could undermine our ability to seize these opportunities. Green growth is where these two challenges meet (OECD, 2012): it is about decoupling economic growth from negative environmental impacts.

In other words, green growth means fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. To do this it must catalyze investment and innovation, which will underpin sustained growth and give rise to new economic opportunities (OECD, 2011).

Green growth also provides a practical and flexible approach for achieving concrete, measurable progress across its economic and environmental pillars while taking account of the social consequences of greening the growth dynamic of economies (OECD, 2011).

However, integrating economic and environmental goals is easy to say, but harder to implement. It takes real leadership to instill change, demonstrate a common vision of the future and bring about solid co-operation across ministries and various levels of government. It also involves understanding how in the short term trade-offs need to be managed and reconciled with the desired long-term benefits (OECD, 2013).

It is therefore important to have real cases where the green growth model has been implemented by countries and lessons learnt have been shared with interested countries. Successful cases can become an example to guide the further development and dissemination of green-growth strategies both regionally and globally.

Green growth as a means to addressing the emissions gap

The UNEP Report (2011) concludes that policy-makers could narrow or close the emissions gap by 2020 by:

- Agreeing to implement their more ambitious emissions reduction pledges with stricter rules for complying with these pledges
- Deciding to target their energy systems, using more non-fossil-fuel and renewable energy sources, and improving energy efficiency
- Putting in place strong, long-term, sector-specific policies to achieve the full emissions potential of the different economic sectors

However, countries, and particularly developing countries, are faced with political, financial, capacity and governance challenges to put in place meaningful measures to address the emissions gap at the national level.

This may especially be the case if reducing emissions is a separate goal from a country's economic development objectives. The green-growth model, however, addresses precisely this challenge by pursuing growth and development plans that directly incorporate zero-emissions growth or emission-reduction goals.

Political challenge

There are varying and often competing priorities that need to be considered when developing policies associated with the governance of a country. Reducing a nation's emissions which have direct link to its industrial development and economic growth can be politically challenging, all the more so when the political focus is on short-term gains

and results. Developing countries have not shied away from expressing their reservations to curb their emissions when the top priorities in their political agenda are growth and poverty alleviation.

With this in mind, the green-growth concept begins from the premise that few if any political leaders will be prepared to sacrifice growth in employment and incomes in order to achieve environmental objectives. Despite the efforts made by the international community to mainstream environmental considerations into the development goals of developing countries, the 25-year-old operational tension between the economic and environmental pillars of sustainable development has yet to be resolved. Only when countries themselves decide to reengineer their growth models to produce strong economic and environmental performances simultaneously are these seemingly conflicting priorities likely to be resolved (Samans, 2013).

The green-growth concept begins from the premise that few if any political leaders will be prepared to sacrifice growth in employment and incomes in order to achieve environmental objectives

Accordingly, green growth is concerned first with integrating environmental security and resource efficiency at the heart of a country's economic development planning and implementation, accepting a country's growth targets as a given, rather than trying to adapt or subordinate them to a particular environmental agenda. A green-growth approach analyzes the policy options that could yield significant co-benefits for growth, environmental protection and resource security within the economy or its significant sectors (Samans, 2013).

Green growth is thus a practical attempt to use economic policy to operationalize the normative frameworks represented by sustainable development. It seeks to fuse sustainable development's three pillars into a single intellectual and policy-planning process, thereby recasting the very essence of the development model so that it is capable of realizing sustained economic growth while safeguarding or improving the environment (Samans, 2013).

It is therefore anticipated that developing countries implementing a green-growth strategy will be able to overcome some of the political challenges of conflicting priorities, as environmental impact, such as greenhouse gas emissions, and economic growth will be decoupled from the outset.

Some countries that have taken up the green-growth agenda, such as Ethiopia and Cambodia, have set up a central coordinating body strongly supported by the highest level of government to develop their national green-growth strategies and implementation plans

Financial challenge

Even with the requisite political will, moving to a low-carbon economy can be an expensive undertaking. For example, changing a nation's energy systems, using more non-fossil fuel and renewable energy sources, and improving energy efficiency require substantial upfront investment.

Climate finance has been a key topic in recent international climate negotiations. Understanding

how much and what type of finance is available to promote low-carbon growth and combat climate change at a global level is critical to scaling up finance and ensuring that resources are used effectively (Buchner et al., 2012).

Over the past decade, there has been considerable experimentation with and piloting of public-private partnerships related to addressing climate change. The crucial challenge is to move this activity to scale.

The green growth model seeks to spur progress in this regard at two levels:

- Facilitate countries' access to the domestic and international capital needed to implement the key sectoral priorities of their green growth plans; and
- Catalyze and provide institutional support for the creation of standards and other incentive frameworks that have the potential to mainstream resource efficiency considerations in corporate capital allocation and management practices more generally.

Through this effort, a country implementing its green-growth strategy could streamline financing mechanisms and channel funds that address investment priorities that would result in both economic growth and climate-change proofing.

Capacity and governance challenge

Lack of capacity has been one of the limiting factors faced by developing countries when trying to address the climate challenge. Numerous international initiatives have focused on building capacity in countries to help them better address the issue. However, capacity-building efforts have been piecemeal at best and often overlapping.

Building capacity is a long-term endeavor, much like the development, planning and implementation process for a green-growth strategy. By developing national green-growth strategies and plans, the process will itself help build capacity and ownership in the countries through “learning by doing” in a more coherent and structured manner.

Strengthening the capacity for learning and sound decision-making in order to monitor, implement and enforce green-growth policies effectively will include developing capacity and human resources in technical and managerial areas and assessment and monitoring at multiple levels of government (OECD, 2013).

Moreover, the climate challenge cannot be properly addressed if it is put into disciplinary silos. Better coordination and linkages between different but inter-connected issues and actors, including between various levels of government, are necessary.

Green growth can address all of these challenges if it is centrally and holistically integrated into national development plans, which requires inter-ministerial level cooperation and coordination among different levels of government. This may require reforms and innovation in governance at the local and national levels that can simultaneously tackle economic, social and environmental issues.

Some countries that have taken up the green-growth agenda, such as Ethiopia and Cambodia, have set up a central coordinating body strongly supported by the highest level of government to develop their national green-growth strategies and implementation plans. Re-aligning the governance structure to facilitate communication and coordination between the different minis-

tries and actors enables countries to prioritize their economic development and environmental objectives in an integrated and holistic manner, thereby reducing inefficiencies and enhancing benefits across different policies.

Elements for developing a new approach

Elements of a green-growth strategy for bridging the emissions gap

One of the bottlenecks in pushing forward the post-Kyoto regime has been the fact that developing countries also have a sovereign right to economic development, which, given the fossil fuel-based development paradigm, can only be fulfilled by increasing their greenhouse gas emissions (Aldy and Stavins, 2011).

However, there are practical elements in developing countries adopting a green-growth strategy that can allow them to contribute meaningfully to bridging the global emissions gap.

Reducing emissions need not be at the cost of economic growth and development

Developing countries face domestic imperatives for economic growth. The good news is that green growth is essentially about economic growth – long-term and sustained economic growth. It is about developing a strategy and road map to achieve a desired level of national income, job creation and wealth, but with due consideration to environmental challenges and opportunities. Green growth recognizes the symbiotic relationship that the economic system has with other systems, in particular the natural system.

Therefore, using green growth to address the emissions challenge can be considered more politically palatable and practical in incentivizing

developing countries to participate in the next phase of global efforts to address climate change.

Increasing financial flows are targeting both development and low-carbon initiatives

It is estimated that annual climate-finance flows reached an average of USD 364 billion in 2010/2011 (Buchner et al., 2012), with more than 60 per cent coming from private finance.

When climate finance is a component of a larger national green-growth strategy and implementation plan, financial sources for development and for addressing climate change can be combined and managed in a more coordinated and effective way. This configuration may also facilitate the leveraging of public investment to draw in private capital for low-carbon and climate-resilient economic growth in developing countries.

As low-carbon measures are embedded in the national green-growth strategy and implementation plan, countries will be able to contribute to addressing the climate challenge while pursuing their development goals

Countries take ownership of their development agenda and embed measures for addressing the climate challenge

As a green-growth plan begins on the basis of a country's domestic economic development agenda, there is increased ownership and interest in building internal capacity and appropriate governance structures to operationalize it. It is a bottom-up, action-oriented, economic policy agen-

da led for all practical purposes by developing countries, rather than a top-down, norm-driven, environmental policy agenda led by international public and civil-society institutions.

Moreover, as low-carbon measures are embedded in the national green-growth strategy and implementation plan, countries will be able to contribute to addressing the climate challenge while pursuing their development goals.

Ethiopia's Climate-Resilient Green Economy Strategy

Background

Ethiopia seeks to become a middle-income country by 2025. Under a BAU scenario, annual emissions in Ethiopia are expected to increase from 150 MtCO₂e to approximately 400 MtCO₂e between 2008 and 2030 (Federal Democratic Republic of Ethiopia, 2011). This will be due to various factors and will be amplified as Ethiopia works to maintain its speed of economic growth, which will require increased agricultural productivity, strengthening of its industrial base and stronger export-led growth. This will not only lead to increased levels of CO₂e emissions, it also runs the risk of locking Ethiopia into outdated technologies and will place significant burdens on Ethiopia's resources, both natural and financial, as Ethiopia is forced to spend increasing levels of its GDP on fuel imports to keep up with growing demand. Further, over USD 50 billion (Federal Democratic Republic of Ethiopia, 2011) is estimated to be required over the next five years for infrastructure development, resulting in a significant financing gap between what is required and the projected funds available to finance these projects.

Climate-Resilient Green-Economy (CRGE) Strategy

The Ethiopian government has taken the initiative in pursuing a green and sustainable growth path, culminating in the creation and adoption of the Climate Resilient Green Economy (CRGE) strategy. The CRGE strategy prioritizes sectors of Ethiopia's economy and identifies pathways to green development in these sectors. The GGGI has worked with the Ethiopian government to create a series of recommendations based on an analysis of the potential for sustainable economic growth and projected GHG emissions levels, evaluating and prioritizing initiatives based on their economic growth potential combined with their abatement costs. These projections were done in line with the objectives of Ethiopia's Growth and Transformation Plan. Further, these recommendations are projected to reduce Ethiopia's CO₂ emissions by up to 30 per cent from 2030 BAU levels while maintaining economic growth. The sector-level strategies identified also have a potential reduction of approximately 230 MtCO₂e by 2030 (GGGI, 2011).

The CRGE strategy includes over sixty initiatives that enable Ethiopia to remain on course to reach middle-income status while limiting its GHG emissions in 2030 to today's levels. Further, abatement costs are less than USD 15 per ton CO₂e for over 80 per cent of the abatement potential, with numerous initiatives offering positive returns on investments (Federal Democratic Republic of Ethiopia, 2011). A green-growth path would enable Ethiopia to keep emissions at today's levels while creating jobs and fostering economic growth.

The green-growth path laid out by the CRGE strategy approaches development from a holistic standpoint, fostering the linkages between various goals and sectors, and is based on four

main pillars. The first is improving crop and live-stock production practices, aimed at increasing food security and farmer income while reducing emissions. This is significant given Ethiopia's agriculture-based society and the high quantities

The CRGE strategy includes over sixty initiatives that enable Ethiopia to remain on course to reach middle-income status while limiting its GHG emissions in 2030 to today's levels

of emissions that are the result of agricultural practices. The second pillar involves protecting and re-establishing forests for both their economic and ecosystem services, including their value as carbon stocks. Third, the CRGE strategy seeks to expand electricity generation from renewable sources of energy for domestic and regional markets. The fourth pillar involves utilizing improvements in technology to leapfrog to modern and energy-efficient technologies in the transportation, building and industrial sectors.

However, such a green development path will require approximately USD 150 billion over the next twenty years (Federal Democratic Republic of Ethiopia, 2011). Clearly, funding will need to come from multiple sources, both foreign and domestic, and will need to be utilized efficiently and effectively to maximize results. To facilitate financing, a CRGE facility to streamline the funding process has been established.

Climate Resilient Green Economy (CRGE) Facility

An issue that Ethiopia has faced in its development funding is fragmentation, meaning that multiple donors agree to finance particular areas of

Ethiopia's development but on a piecemeal and bilateral basis. This raises the issue of donor overlap in projects and increases the amount of time and resources devoted to reporting, measurement and verification of what can be small amounts of financing. The CRGE Facility addresses this by allowing the Ethiopian government to channel funds into a central "account" and then disburse those funds in accordance with its development priorities and needs. This allows development projects and funding to be centralized and ensures that the Ethiopian government is aware of all agreements.

A second issue addressed through the CRGE Facility is fragmentation among government ministries. The CRGE Facility is to be administered by a CRGE Management Committee, composed of representatives from relevant and appropriate line ministries. This ensures coordination at the highest levels of government and facilitates communication and information sharing between ministries while mainstreaming climate action into national policy, as the Ministries of Environment, Land, Transport, Finance and others come together as one body to create national development and growth plans.

The CRGE Facility addresses this by allowing the Ethiopian government to channel funds into a central "account" and then disburse those funds in accordance with its development priorities and needs

The CRGE Facility receives international, national, public and private financing. This money is then pooled, and a technical committee deter-

mines how the money should be spent based on economic and development analyses.

The CRGE Facility concept has been favorably received by donor nations involved in Ethiopia, demonstrating that such a concept can be supported by donors and that a mechanism for establishing trust in the use of funds can be developed.

Cambodia's Green-Growth Master Plan

Background

Since the end of several decades of conflict, Cambodia has sprung from a state of near total destruction and achieved remarkable progress in a number of areas significant to human development. Economically, Cambodia recorded high growth rates of around 10 per cent during the first half of the past decade through the support of foreign direct investment in the mining and construction sectors and strong exports in textile and garments. The global financial crisis in 2008-2009, however, inevitably affected the inflow of foreign capital into Cambodia and brought down the export demand from major trading partners. In 2010, Cambodia's economy began recovering from the global financial crisis and recorded a growth rate of 5.8 per cent, with substantial recovery in many major industries.

Even with the rapid economic growth achieved, poverty remains high and the country's ranking in human development terms reflects the difficult living conditions of Cambodians. Among the population of 14.1 million in 2010, 25% lives below the total poverty line. Especially in rural areas, the vast majority of people live and work at a subsistence level.

Moreover, the economic activities that Cambodia has undertaken to rebuild its economy have had a huge impact on its environmental system and are

creating imbalances that can put its development at risk. In order to sustain growth in a situation of vulnerability to climate change, Cambodia realized the need to follow a new paradigm of economic growth while at the same time adapting itself to the impacts of climate change. Therefore, putting green growth at the heart of Cambodia's development goals was a natural choice to make, and has led to the formulation of Cambodia's National Green Growth Roadmap (NGGR).

NGGR and National Green Growth Master Plan

The NGGR explains Cambodia's challenges, needs, status, and opportunities for green growth. Its goal is to facilitate sustainable economic growth by promoting sustainable consumption and production, greening markets and businesses, and creating a favorable climate for the establishment of sustainable infrastructure (GGGI, 2013).

NGGR has also been the key element in developing Cambodia's National Green Growth Master Plan (GGMP). The GGMP has been prepared in line with the Cambodian government's efforts and strategies to achieve poverty reduction and sustainable development, although there is no specific emission reduction target at this stage. The vision of the GGMP is to lead Cambodia towards green growth. Its major objectives are to:

1. assess Cambodia's green growth potential;
2. create institutional and legal systems to implement and monitor green-growth policy efficiently and effectively;
3. identify priority sectors for Cambodia's green growth; and
4. establish a holistic approach presenting strategic guidelines and action plans consistent with Cambodia's current national development plan and the NGGR.

Figure 1: Policy scheme of Cambodia's GGMP

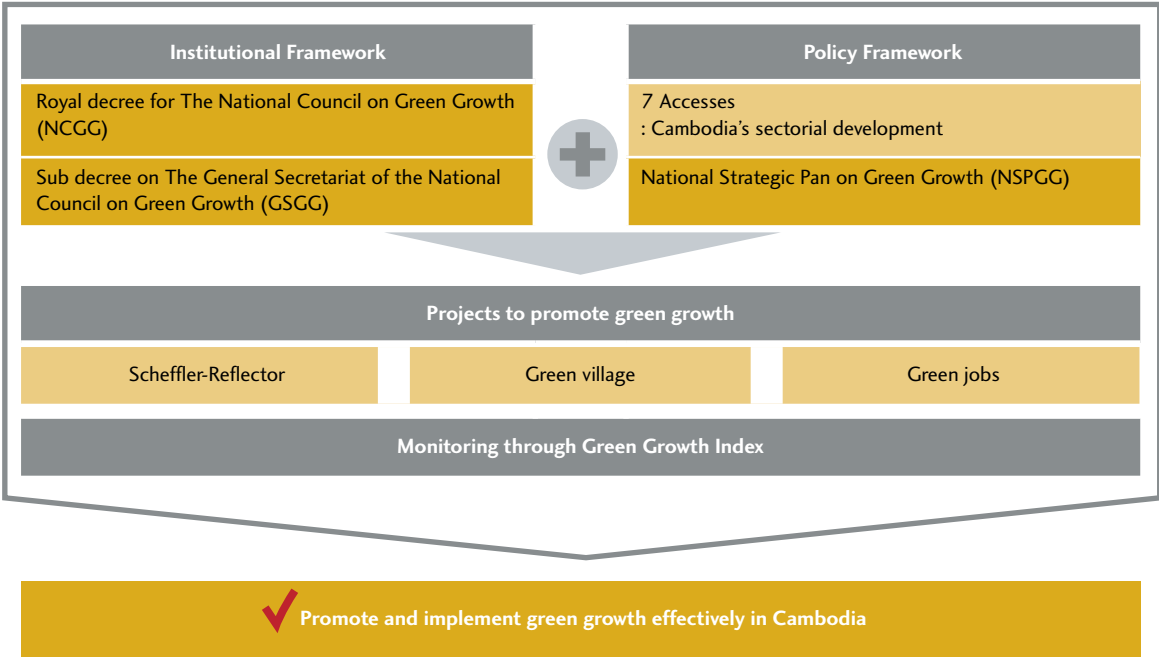


Figure 1 depicts the broad framework that the GGMP envisions, consisting of two major frameworks which are institutional and policy-oriented. With the establishment of the National Council on Green Growth (NCGG) and the General Secretariat of the Council on Green Growth (GSGG), these institutions will provide direction for green-growth policy and formulate strategies at the government level, thereby enabling GGMP to offer firm governing mechanisms to promote green growth. This has been expressed in the vision statement from the National Policy on Green Growth prepared by the Cambodian National Council on Green Growth (NCGG, 2013), which states that *“The national policy is envisaged to strike a balance of economic development with environment, society, culture and sustainable use of natural resources through integration, matching and adaptation, as well as harmonization between the green growth principle and national policy”*.

Moreover, with the policy framework suggesting increased access to seven major sectors for Cambodia’s green growth, the country’s development could be supported by specific implementation plans. Cambodia’s sectoral development through the seven Accesses is further expanded in the National Strategic Plan on Green Growth (NSPGG). The functionality of both institutional and policy frameworks is tested through demonstration projects and monitored through the Green Growth Index, which can be fed back into updating the GGMP (GGGI, 2013).

An important element of the GGMP involves embedding local-level initiatives into the plan in order to spread the seeds of green growth. Some of the first initiatives inspired through the GGMP include the construction of a Scheffler Reflector and the creation of a green village, fostering green employment in the process. The next step in carrying out the GGMP at the local level

is to enhance local capacity by promoting small businesses that capitalize on the demonstration projects, national policies and frameworks that promote green growth.

United Arab Emirates’ National Strategy for Green Growth

Background

The United Arab Emirates (UAE), with a population of over eight million and a GDP per capita of USD 48,000, is one of the wealthiest nations in the world. Possessing the world’s seventh largest oil reserves and fifth largest natural gas reserves, the UAE has benefited economically from its natural resources.

However, the UAE is highly vulnerable to the effects of climate change and is particularly vulnerable to sea level rise and changes in annual temperatures, which would have an impact on its dry-land ecosystem and water resources. Energy-related activities account for the majority of the UAE’s total emissions, and a rapidly growing population means increasing needs for energy and water resources.

Recognizing this, the UAE has taken the lead in pursuing green growth and has recognized the potential benefits, both economically and environmentally, of committing itself to such a development strategy. The UAE government aims to have 30 per cent of the electrical power in Abu Dhabi coming from low carbon and renewable sources by 2020, and it will be able to utilize its potential, particularly in solar energy, to achieve this.

National Strategy for Green Growth (NSGG)

In January 2013, the UAE launched its National Strategy for Green Growth (NSGG) at the World

Future Energy Summit. The NSGG integrates existing national policies and measures for climate change mitigation and adaptation and aligns them with the economic development objectives of the UAE. It involves a range of key sectors such as agriculture, energy, investment and sustainable transport and supports the UAE's goal of becoming a key center for the export of green products and technologies while fostering long-term economic growth in a sustainable manner.

The NSGG has its roots in the UAE Green Growth Initiative, drawn up in partnership with the GGGI beginning in March 2011. Formally launched in January 2012 as the UAE Strategy for Green Development, this is a nine-year initiative dedicated to the development of a sustainable economy led by the Ministry of Environment and Water and involving the collaboration of both the Prime Minister's Office and the Ministry of Foreign Affairs. This initiative includes the creation of a business plan setting out integrated, synergistic programs for green-growth planning, including the establishment of a GHG inventory system and intensive capacity-building programs and spanning all seven emirates of the UAE. It involves four main areas of focus: policy and governance, data management, capacity-building and renewable energy-based micro-grids.

The UAE Strategy for Green Development also involves partners across sectors and boundaries, including the aforementioned ministries and technical taskforces across seven major sectors. This strategy involves cooperation across the UAE emirates, across ministries and between the public and private sector, both domestically and internationally, and has high-level political support, demonstrating what can be accomplished when development policy planning is done holistically.

Two initial studies for the UAE in support of its Green Growth Initiative have been carried out: a situation analysis looking at the existing institutional mandates and capacities at both the federal and ministerial levels, as well as policy approaches, reports and available data; and a benchmark study detailing green growth best practices at the global level, with objectives and policy options developed from this.

Formally launched in January 2012 as the UAE Strategy for Green Development, this is a nine-year initiative dedicated to the development of a sustainable economy led by the Ministry of Environment and Water and involving the collaboration of both the Prime Minister's Office and the Ministry of Foreign Affairs

The NSGG builds on key federal initiatives, such as the UAE Vision 2021, announced in February 2010. This initiative lays out a unified approach towards sustainable development involving both the public and private sectors. The NSGG will continue to be developed throughout 2013, ultimately identifying low-carbon green-growth opportunities in key sectors of the UAE economy, including oil and gas, water, transport, construction, waste, land use and biodiversity. It will contain various specific policy objectives, recommendations and measures tailored to the UAE's situation and needs while taking into account both the strengths and weaknesses of implementing a green-growth policy. This allows the UAE to engage in pragmatic, realistic projections that enable it to maintain desired levels of economic

growth while pursuing the realization of its environmental and international emissions goals.

Another component of the UAE's commitment to green and sustainable practices is the Masdar City Initiative, a USD 15 billion program to build Masdar City outside Abu Dhabi. Designed to be the world's first zero-carbon sustainable city, Masdar City is designed to incorporate best practices in sustainable urban planning, design, development and cooperation, with the aim of capturing up to five million tons of CO₂ per year from power plants (Zero Emission Resource Organization, 2012).

Economic growth and environmental sustainability are approached from the perspective of mutually compatible objectives rather than opposing forces

The UAE's commitment to and investment in renewable energies and technologies is the result of high-level coordination between government bodies and strong political leadership. Through this process, various actors have been involved, and green and sustainable growth has been directly and centrally integrated into national development plans. The UAE has realized that it does not have to choose between economic growth and environmental sustainability—it can have both.

Conclusion

Green growth offers a new pathway for development, one that integrates environmental sustainability and low-carbon development directly into economic growth plans, thereby ensuring that environmental factors are given adequate priority. Economic growth and environmental sustainabil-

ity are approached from the perspective of mutually compatible objectives rather than opposing forces, with the understanding that preserving the sustainability of natural resources will yield significant benefits without sacrificing economic prosperity.

Ethiopia, Cambodia and the UAE offer three separate cases of states in various regions and with differing economies that have recognized the potential benefits of transitioning to a green-growth development plan. In all three cases, there is high level of political commitment across multiple key ministries, ensuring the long-term commitment of the government and the coordination of vital players, and the integration of emissions-reducing mechanisms into development plans, or, in the case of Cambodia, a basic framework where emission reduction mechanisms can be developed. These plans also take into account the need for the development of financial mechanisms that will attract and facilitate private financing.

Green-growth strategies and plans offer the potential to help both developing and developed countries reach their domestic growth goals while facilitating commitments to lower emissions at the international level. They allow states to value natural resources, thus improving the economic livelihood and living environment for the people. They represent a balance between domestic ambitions and the need of the international community to limit and lower emissions to ensure that natural assets continue to provide the resources and environmental services on which the well-being of the global community relies.

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**HARMONIZATION AND PROMPT START:**

The Keys to Achieving Scale and Effectiveness with REDD+

Abstract

The next three years will be pivotal for the international response to the crisis of global deforestation. Despite the progress made to date, there are still challenges facing REDD+ as we embark on the process of defining the architectural framework for a global deal. This article recommends that the Conference of the Parties designs such a framework to attract long-term, sustained investment from both public and private sources and encourage early investment. It should do this by establishing a formal prompt start programme for REDD+ activities through collaboration on harmonized MRV and safeguards, with the best practices being developed now in the national, sub-national and voluntary regimes to ensure the highest degree of integrity for REDD+ at all levels.

Introduction

Forests play an integral role in the global carbon cycle and in maintaining healthy ecosystems, both of which are vital to humanity's immediate and long-term economic security. But the prevailing economic model of forest management has been based almost entirely upon the extraction of saleable resources such as timber and the conversion of land to other uses. The international community has attempted to address the crisis of tropical deforestation through numerous measures, but forests are still being destroyed at an alarming rate.¹

¹ For an overview of the decades-long history of tropical forest management under international legal mechanisms, see O'Sullivan et al. 2009.

In light of this, there is now strong momentum supporting the view that lasting and workable solutions for climate change mitigation and adaptation, human well-being and specifically North-South equality all rely heavily on intact forests and functioning natural ecosystems. There are high expectations that a mechanism addressing global emissions reductions and national non-carbon development benefits linked to forests will constitute an important part of the global climate

Lasting and workable solutions for climate change mitigation and adaptation, human well-being and specifically North-South equality all rely heavily on intact forests and functioning natural ecosystems.

agreement envisaged for 2015 under the UN Framework Convention on Climate Change (UNFCCC). The REDD+ mechanism currently being shaped within the UNFCCC carries with it great responsibility as well as promise. Concluding a successful REDD+ mechanism as part of a 2015 agreement offers hope that the current market failures can be corrected, marking the beginning of a new economic paradigm that strikes the right balance between the critical need to preserve our forests and the need to meet the growing demands of an increasing global population for food, fuel and resources. Progress on REDD+ has been made over the past several years, including its status as a stand-alone mechanism, as well as the adoption of REDD activities as part of many developing countries' Nationally Appropriate Mitigation Measures (NAMAs) submissions to the UNFCCC. However, work on REDD+ has slowed recently, as the focus of the Conference of Parties (CoP) has been con-

sumed by the broader issues of mitigation targets and the make-up of the post-Kyoto regime. At the latest meeting in Doha, the CoP decided to undertake a work programme in 2013 with the aim of contributing to the on-going efforts to scale up and improve the effectiveness of finance for REDD+ activities, focussing on: (1) ways to transfer payments for results-based actions; (2) ways to incentivize non-carbon benefits; and (3) ways to improve the coordination of results-based finance (Doha COP decision, para 29). The results of this work programme will be critical to the development of the REDD+ mechanism under the UNFCCC and will inform non-UNFCCC REDD+ activities.

In this article, we examine the current state of REDD+ as it is emerging within the UNFCCC negotiations and provide several recommendations to the CoP as it considers its 2013 work programme. This includes the need for the CoP: 1) to design the REDD+ programme to include a financing approach that will attract scaled, sustained private participation in order to attract the requisite level of financing, given the shrinking capacity of governments to fund REDD+ activities alone; 2) to collaborate with non-UNFCCC actors in the development of system-wide, credible and transparent monitoring, reporting and verification (MRV) procedures, as well as environmental and social safeguards for REDD+ activities, and to encourage the adoption of similar standards at all jurisdictional levels; and 3) to encourage REDD+ investment now, in advance of 2020, by establishing a formal prompt start programme for credible REDD+ activities.

With a thoughtful, ambitious and integrated approach, a REDD+ mechanism as part of a 2015 agreement can serve to shore up early support for REDD+ and lead the way towards a comprehensive REDD+ response that matches the level

of the global crisis and rises to the challenge of history that is now before us.

Setting the stage

Since CoP13 in Bali, collective efforts to agree on the scope and design of REDD+ have made important progress. The parties have agreed that REDD+ includes not only activities that reduce emissions from deforestation and forest degradation, but also the sustainable management of natural forests and the restoration of degraded forests, as well as environmentally appropriate afforestation and reforestation. The need for scaled financing from multiple sources, both public and private, has been agreed, while the specific means by which to attract and channel such financing remain undecided.

A brief review of the UNFCCC negotiating history for REDD+ is instructive in helping to fashion the final critical pieces. REDD+ was first introduced as a concept by Costa Rica and Papua New Guinea at CoP11 in Montreal. As part of the Bali Action Plan drawn up at CoP13 in Bali, the parties formalized an effort to promote policy approaches and positive incentives for REDD+ (1/CP.13, para 1(b)(iii)). At CoP 15, the Copenhagen Accord recognised the crucial role of REDD+ in achieving climate goals and stated the “need to provide positive incentives...through the immediate establishment of a (REDD+) mechanism...to enable the mobilization of financial resources from developed countries”. While not ultimately included in the Copenhagen Accord, there was also high-level agreement on the need for environmental and social safeguards to be a main component of the envisaged REDD+ mechanism.

At CoP16 in Cancun, REDD+ emerged as one of the unifying elements to help the parties advance on a number of important fronts. There were sev-

eral notable REDD+ decisions, which continue to frame the negotiations, including in respect of environmental and social safeguards, MRV at the national and sub-national levels, and consideration of financing from both market and non-market sources. (1/CP.16). The Cancun Agreements also guided “Fast Start” funding from developed countries, which was intended to focus approximately twenty per cent of the estimated USD 30 billion pledged between 2010 and 2012 on REDD+ activities, such as assisting countries with national inventories, capacity-building and the development of demonstration projects to pave the way for results-based finance.

REDD+ held its ground at CoP17 in Durban but did not materially advance from the Cancun Agreements. At CoP17, the parties “considered” that both market-based and non-market-based approaches could be developed by the CoP to support results-based actions, consistent with the REDD+ decisions embodied within the Cancun Agreements (2/CP.17, paragraphs 66 and 67). More broadly, Durban was significant in that the parties committed to agree, by 2015, “a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties” to take effect in 2020 (1/CP.17, paragraph 2). Durban also “defined” a single new

REDD+ was first introduced as a concept by Costa Rica and Papua New Guinea at CoP11 in Montreal.

market-based mechanism that will operate under the UNFCCC along with other market- and non-market-based approaches known as the “framework for various approaches” (NMM/FVA)(1/CP.17, paragraph 83).

At CoP18 in Doha, the majority of negotiating bandwidth was consumed by the expiry of the first commitment period of the Kyoto Protocol. As for REDD+, Doha similarly made only marginal progress. Donor countries led by Norway pushed for an independent, international verification process overseen by experts, but Brazil and some other host countries were unwilling to commit to such external verification requirements. MRV discussions became tied up with finance, leading to the deferring of any substantive decisions (or progress) for REDD+. Instead, a work programme was established to make recommendations to the CoP in Warsaw on these and other remaining technical issues being addressed under SBSTA and the financing discussions that had been covered under the AWG-LCA (4/CP.18, paragraph 25). The CoP decided that the aim of the work programme is to contribute to the on-going efforts to scale up and improve the effectiveness of finance for REDD+ activities, taking into account: (1) ways to transfer payments for results-based actions; (2) ways to incentivize non-carbon benefits; and (3) how to improve the coordination of results-based finance (4/CP.18, paragraph 29).

The funding gap aside, it should then be evident that there can be no effective solution that does not have as its central focus the sector of the world economy that is serving as the 'engine' of the problem (Hulse et al. 2013)

While the present article does not attempt to answer all of the outstanding issues related to a REDD+ agreement, its recommendations on private finance, harmonized MRV and safeguards,

and a prompt start mechanism may provide helpful perspectives to “Durbin Platform for Enhanced Action” Parties and SBSTA for the 2013 work programme and beyond.

Harnessing Finance for REDD+

One of the biggest challenges for the CoP is to determine how best to attract adequate and sustained investment in REDD+ activities. The imperative for ensuring that the financial component of REDD+ is fit for purpose is increased when one considers that improved land-use management will represent one-third of the overall global abatement potential by 2030 and that it is in large part achievable at relatively low estimated costs² and with readily-available technologies (Coren et al. 2011, Kindermann et al. 2008, White 2010). Any discussion of REDD+ finance must also acknowledge at the outset the estimated annual spending required to achieve the level of reductions in terrestrial emissions deemed necessary by the IPCC to meet the mitigation targets specified in the Cancun Agreements and reiterated in the Durban Platform. Metrics vary, but prominent and often cited analyses put the annual cost of reducing deforestation by at least fifty per cent in 2020 at between 15 and 45 billion dollars (Eliasch 2007, Meridian Institute 2009). Contrasted to the seven billion dollars in aggregate public ‘fast-start’ finance dedicated to forests in the 2010-12 period, the majority view now is that this significant ‘funding gap’ will require private-sector involvement if reduction goals are to be met. Despite the power of such cost estimates to illustrate a sense of urgency, they are in many ways unhelpful, becoming something of a lightning rod in the (increasingly ideological) debate

² Relative to nuclear energy, some renewables, carbon capture and storage and a large portion of the abatement potential across industrial sectors.

over finance sourcing and channels (particularly where markets are concerned).

Some, however, continue to question *a priori* the 'if, how and why' of private-sector involvement in REDD+ (FERN 2011, Munden Project 2011). As a necessary step towards addressing these questions, it might be helpful to assess in a practical way if, and to what degree, it is appropriate that private-sector finance *should* be engaged as a source to fund REDD+ (rather than simply asking if private-sector finance is *needed* to fill an obvious gap). If we first consider this question alongside the dual facts (a) that global trade in forest products will be worth an estimated \$450 billion annually by 2020³ and (b) that the 'private sector' (large and small, local and international) controls or participates in approximately three-quarters of overall global financial flows, it becomes clear that deforestation is occurring on such a large scale because it is profitable for those making decisions on land use and because market economies⁴ are benefitting from it (at least perceptibly) in the short term (PoW 2012, Grantham 2011). The funding gap aside, it should then be evident that there can be no effective solution that does not have as its central focus the sector of the world economy that is serving as the 'engine' of the problem (Hulse et al. 2013).

With populations growing dramatically in developing countries, and given their justifiable aspiration to enjoy the fruits of economic development that until now have largely been the privilege of

the industrialised world, food and resource security are headline priorities and will become bigger still. Globally, the FAO estimates that over \$80 billion in agricultural investment will be required annually to feed nine billion-plus people in 2050⁵ (PWC, 2012). At the moment, price premiums for sustainably produced commodities are limited, and the capital barriers to environmentally efficient production are high in most producer countries. The opportunity is there for REDD+ to build transformational linkages with the agricultural sector, combining increased productivity with incentives for reduced environmental footprints (Walker et al 2013). A failure to do so could mean that our forest conservation, climate change mitigation (and adaptation) and food security goals all fall short.

Today, private-sector involvement in the conservation of forests in developing countries (whether approached from the angle of REDD+, or sustainable commodities, or payments for ecosystem services) stands in stark contrast to the scale of their business-as-usual activities, and is in most cases defined by a relatively small handful of committed firms (or in some cases, individuals) that have taken the time to understand and build a business case or related corporate social responsibility strategy. These 'voluntary' private-sector actors have teamed up with NGOs, forest communities and government agencies to make relevant progress at the "project level" on complex issues such as land tenure, benefits-sharing arrangements, environmental and social safeguards, leakage, permanence, nested MRV and accounting standards (Peters-Stanley and Hamilton, 2012). To avoid the loss of patience, fatigue and exit by early-stage private financiers, intermediaries and forward-thinking forest communities that will be

3 The trade in products and commodities sourced from forests and identified as chief drivers in deforestation, including timber, pulp and paper, beef, soya and palm, is projected to rise from \$257 billion in 2005. Similar increases are expected for gold, coal, aluminium and rare metals. Compounding these trends is the fact that the market incentives for many key commodities that is driving deforestation currently encourage the extension of land use, rather than the intensification of production.

4 Subsistence activities comprise no more than an estimated 15-20% of global deforestation today, but as rural communities become increasingly connected with cash economies and as populations rise, the lines between traditional and cash-driven economies will continue to blur.

5 Today in the developing world, approximately two-thirds of the \$189 billion invested in agriculture is private, and the majority of this domestically sourced.

vital to the successful achievement of REDD+ at the jurisdictional level, strong policy signals are needed now to provide some certainty that private participants will have a role to play in a future UNFCCC REDD+ mechanism.

Public and private investment could collaborate in any one or more of the following vehicles: a UNFCCC-led global REDD+ market as part of the NMM/FVA; one or more REDD+ bonds; a dedicated REDD+ window under the Green Climate Fund; and/or domestically defined elements of REDD+ achievements

Assuming the best case outcomes for an agreement in 2015, an effective date of 2020 also presents challenges for forest countries whose ministers have begun to make progress toward improving the essential capacity to administer domestic REDD+ programmes, and who have even welcomed pilot projects and embraced the possibility of REDD+ financing from the private sector, but who now see no immediate pathway towards receiving the value promised for preserving their natural capital.

In the recognition of private finance as a necessary component of a global REDD+ mechanism, we can still achieve a policy breakthrough, providing a strong signal to governments, civil society and the private sector that will drive scaled investment in REDD+. Similarly, the future REDD+ regime requires a holistic approach to address the drivers of deforestation that will necessarily take the form of multiple, nationally appropriate, comple-

mentary actions, of which a REDD+ credit trading programme may be only one. How complementary measures work together with market-based approaches to yield the greatest social, economic and environmental benefits at the lowest social and economic costs remains a challenging equation to solve precisely in a prescriptive fashion at the outset. Public and private investment could collaborate in any one or more of the following vehicles: a UNFCCC-led global REDD+ market as part of the NMM/FVA; one or more REDD+ bonds; a dedicated REDD+ window under the Green Climate Fund; and/or domestically defined elements of REDD+ achievements (for instance, many developing countries have included REDD activities as NAMAs in their submissions to the UNFCCC), as well as other interim measures set up bilaterally or multilaterally⁶ (PWC, 2011). Under each of these possible vehicles, proven successes on the ground will still be essential in order to draw in capital markets at scale. It is important to recognize and embrace the possibility that the REDD+ mechanism may evolve into a multifaceted approach, one element of which could be a REDD+ credit trading system giving value to demonstrated performance on the ground and, together with other measures, achieving the scale of terrestrial emissions reductions mandated by the IPCC and accepted by the CoP (Streck, 2011). A REDD+ component within the global climate agreement that effectively builds linkages (market-based and otherwise) between the public and private sectors can be the key to unlocking or re-directing capital away from environmentally and socially damaging business-as-usual practices and towards climate- and forest-friendly investment, ultimately transforming frontier economics by providing gov-

⁶ For instance, underwriting mechanisms such as feed-in tariffs or advanced-market commitments ("AMCs") are increasingly seen as efficient ways to catalyse private investment in REDD+ in the run-up to a global agreement. See Work Stream 7 of the Report of the Secretary-General's High-level Advisory Group on Climate Change Financing.

ernance frameworks and economic signals that prioritise sustainability right down to the lowest unit of economic production, and in so doing also set the stage for other environmental and social benefits such as protection of flagship species and betterment of community livelihoods to accrue (Dinerstein et al 2013).

Robust MRV and Environmental and Social Safeguards

The encouragement of sustained and stable financing (both private and public) for REDD+ will depend on the credibility of the technical underpinnings, namely the development of robust MRV and the strong environmental and social safeguards that will inform its integrity as an asset class. There is agreement that a REDD+ mechanism will only succeed if it is sustained over time and represents a viable pathway to economic improvement for forest countries and their local communities. Social and environmental 'deliverables' that would be incorporated into safeguards include:

- Transparent and effective national forest governance structures;
- Effective participation by relevant stakeholders;
- Respect for the knowledge and rights of indigenous peoples and local communities;
- The conservation of natural forests and their ecosystem services and biological diversity.

The encouraging news is that, along with the progress made by the CoP, a number of actions are being taken now (see Case Studies text box) through multilateral, national, subnational and early voluntary measures that are beginning to address the challenge of developing appropriate safeguards with a sense of urgency. For instance, the Verified Carbon Standard developed a Juris-

dictional and Nested REDD+ Initiative (JNR)⁷ that includes an accounting and crediting framework for use by governmental entities and projects that are integrated through a process known as "nesting" within the jurisdictional programme. The World Resources Institute is developing a forest initiative that will allow meaningful, real-time tracking of forestry activities around the world. As described in further detail below, California is also considering MRV and safeguards issues related to the inclusion of REDD+ in its compliance cap-and-trade programme.

These measures and others can serve as valuable tools, as they are being developed and implemented now in advance of the global REDD+ mechanism. With a carefully coordinated REDD+ mechanism that recognizes such early action, they can be further scaled up prior to 2020. This would provide a critical proving ground for the future REDD+ mechanism and help to discern practical lessons that can be applied at scale under the post-2020 regime. A mutual recognition of global best practices on MRV and safeguards being developed within the UNFCCC and outside the UNFCCC is critical to arriving at a broadly agreed set of standards that is recognized by UNFCCC, even if not created solely by it.

California is also considering MRV and safeguards issues related to the inclusion of REDD+ in its compliance cap-and-trade programme

7 The JNR Framework (<http://v-c-s.org/JNRI>) provides detailed guidance for the development of national and subnational REDD+ programmes, including how activities at multiple scales can be effectively integrated, advancing readiness for participation in any forthcoming UNFCCC framework. Applying the JNR Requirements may serve to inform countries about operationalizing results-based REDD+ under voluntary, bi- or multi-lateral REDD+ efforts, the UNFCCC or another regulatory programme.

GOVERNANCE AND DECISION-MAKING AS A DETERMINANT OF REDD+ “ASSET INTEGRITY”

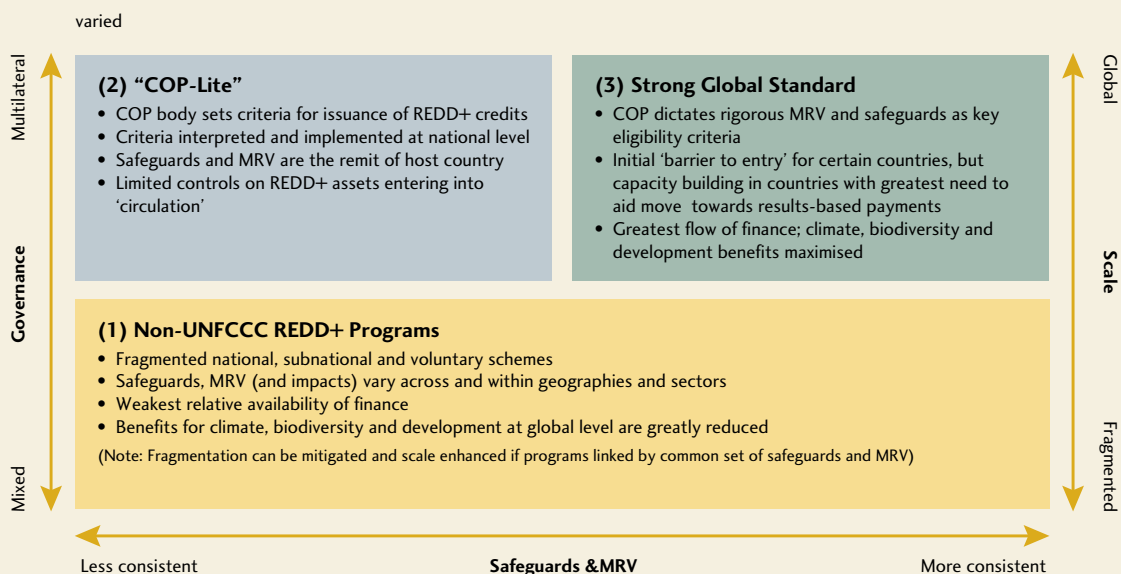
If REDD+ is to deliver the outcomes envisaged by the “Durbin Platform for Enhanced Action” and previous CoP decisions, it is vital that the REDD+ component of a global climate agreement is underpinned by governance and decision-making that are ‘fit for purpose’. Ensuring the efficacy of this apparatus will have direct impacts on the rigour of MRV and carbon accounting (and thus leakage avoidance), as well as the degree to which non-carbon elements of forest management and conservation are made explicit and enhanced. The method and rigour associated with governance directly inform the level of integrity of assets generated by REDD+. In other words, will it be possible to have reasonable confidence that a tonne of REDD+ physically equals the actual avoidance of a tonne of greenhouse gas emitted into the atmosphere through deforestation or degradation?⁸ Similarly, will it also be explicit that that same tonne carries with it imbedded ‘deliverables’ associated with biodiversity conservation and social improvement in host countries?

Such confidence in the integrity of REDD+ has obvious significance for all stakeholders involved: government policy-makers, investors and the private sector in forest communities and the global society generally. Therefore the next question is how best to structure and launch a REDD+ mechanism that will ensure the highest possible degree of integrity whilst at the same time remaining inclusive and having relevance for as much of the global forest estate⁹ as possible. The diagram below depicts a simple typology assuming three scenarios defined as: (1) Non-UNFCCC

REDD+ programmes; (2) CoP ‘Lite’; and (3) ‘Strong Global Standard’. In Scenario 1, REDD+ mechanisms continue to develop on the voluntary and subnational levels (e.g., VCS Jurisdictional Nested REDD approach and California cap-and-trade programme). Local impacts can be significantly positive, and MRV and safeguards may be as protective as a UNFCCC-created REDD+ mechanism. If subnational programmes are appropriately linked and MRV and safeguards harmonized, significant scale can be achieved. However, the stringency of MRV and safeguards and harmonization across jurisdictions and programmes is not guaranteed, as there is no overarching, global framework. In Scenario 2, a REDD Mechanism launched by the CoP with weaker centralized control over such vitally important aspects like MRV and safeguards for non-carbon benefits leads to a ‘balkanized’ REDD+ world and ultimately a lower level of confidence that one ‘unit’ of REDD+ (or a given national REDD+ programme) is as efficacious as another. In Scenario 3, while there is necessarily the drawback that REDD+ countries will ‘come online’ only when they are ready to meet CoP-defined and -governed parameters, REDD+ will be an asset with the benefit of the highest possible integrity, and with internationally accepted stringency on carbon accounting and non-carbon benefits and safeguards pertaining to biodiversity and forest people. A design based upon Scenario 3 should still allow for significant decision-making at the national level (e.g. related to finance sources, reference levels and implementation activities) but the criteria for their eligibility under the REDD+ mechanism will be managed and reviewed by the CoP and its appointed bodies.

⁸ Or the sequestration of a tonne of CO₂ from the atmosphere in the case of regeneration, reforestation or afforestation activities.

⁹ And ultimately other land use and ecosystem-types. REDD+ will be an important template for approaches to conserving and improving the management of marine (e.g. mangrove) systems, savannahs and agricultural production systems.



Greater collaboration and information-sharing of best practices among the UNFCCC process, multi-lateral institutions, voluntary standards, national and sub-national efforts and the private sector is essential to leverage the best ideas, encourage the best actions and define those measures that can be acceptable within the context of a UNFCCC REDD+ mechanism. Clearly, not all early actions can or should be recognized under a future REDD+ mechanism. There are certain early measures that will not withstand the appropriate scrutiny required by the global REDD+ mechanism. But a process that seeks to define those boundaries now and that sends a positive signal to early actors can help guide actions on the ground today that will serve to bridge the policy gap until 2020.

The development of robust MRV and safeguards is important for the UNFCCC REDD+ mechanism, as well as other programmes under consideration that may not be capable of developing their own MRV and safeguard standards. For instance, the International Civil Aviation Organization (ICAO) – the UN body that regulates aviation – is considering global market-based measures (MBMs) as a potential means by which to reduce greenhouse gas emissions from the aviation sector. The EC’s decision in 2012 to delay the inclusion of aviation in the European Union Emissions Trading Scheme to provide ICAO additional time to propose an alternative means to address aviation emissions under a global agreement has forced the issue within ICAO. MBMs under consideration include a global offsetting system, emissions-related charges and a global cap-and-trade programme. Thus far, there has been little formal mention of REDD+ within these discussions, but ICAO, which lacks its own internal technical expertise on forestry MRV and safeguards, could incorporate the UNFCCC MRV and safeguards approach in a fashion similar to the recommendations of the REDD Offsets Work-

ing Group (ROW) for CA to enable REDD+ credits from eligible activities to be acceptable offsets by ICAO. Similarly, a number of national-level cap-and-trade and climate-change programmes and approaches are emerging, including in China, South Korea, Mexico, Australia, Japan and other ‘PMR countries’.¹⁰ These “bottom-up” approaches will have profound influences on a 2015 Agreement, and they highlight the need for the CoP to collaborate in the development of standards for MRV and safeguards that could be incorporated within these regimes to create both an aggregated scale of demand for private investment in REDD+ and consistency across regimes to ensure environmental and market integrity.

The Need for a Prompt Start

The CoP has already achieved notable successes in establishing “prompt start” mechanisms to encourage early private-sector involvement in policy markets prior to their formally effective dates. The CDM prompt start mechanism is perhaps the best example. With defined MRV and safeguards, the CoP could formally recognize, prior to 2020, credible REDD+ activities that adhere to such MRV and safeguard standards. With approximately 13 million hectares lost each year on a net basis, the world’s forests cannot wait until 2020, and transforming the global economic relationship with our forests will take time to ramp up. Today, at a time when most land-use models plainly do not

¹⁰ The Partnership for Market Readiness (PMR) is a grant-based, capacity-building trust fund that provides funding and technical assistance for the collective innovation and piloting of market-based instruments for greenhouse gas emissions reductions. The Partnership brings together developed and developing countries, as well as other key experts and stakeholders, in order to provide a platform for technical discussions on market instruments, foster South-South exchange, facilitate collective innovation for pilot efforts, and harness financial flows for implementation and scale-up. In 2012, the International Emissions Trading Association (IETA) launched a new “Business Partnership for Market Readiness” – or “B- PMR” – to meet these new challenges, aiming to enhance the potential for workable international climate-focussed trading models to emerge around the world. IETA will work in concert with host governments, the World Bank and PMR donor countries on this initiative.

CASE STUDIES

Seeds of Demand: California's Pre-Compliance REDD+ Activities

California is generally at the cutting edge of environmental policy, and its consideration of REDD+ in its compliance cap-and-trade programme is no exception. Sector-based credits from REDD+ activities are authorized in the California cap-and-trade programme regulations, but no sectoral programmes have yet been approved. California is the largest North American carbon market and the second largest market in the world to date. The significance of the California sectoral REDD+ programme is that the California regulators are currently in the process of considering how such a programme will work, and it may become the first such programme designed in the context of a compliance regime. The level of demand created by the California programme will not be sufficient to move the needle on the challenge of attracting scaled finance, but it can serve as an important template for other emerging domestic regimes, especially in the area of safeguards. To the extent a 2015 Agreement takes the form of a flexible approach that encourages ambitious domestic actions, the California programme could be a very important catalyst for driving similar domestic actions, the aggregated effect of which could yield meaningful scale.

The REDD+ Offset Working Group (ROW), comprised of a group of technical REDD+ experts, has convened to develop recommendations to inform the use of REDD+ credits in the California cap-and-trade programme. The ROW was established in 2011 as a result of a November 2010 Memorandum of Understanding between the Governors of California, Chiapas and Acre to collaborate on a REDD+ policy. In January 2013, the ROW released its long-awaited recommendations on how to incorporate REDD+ activities in the California market. Among other recommendations, the ROW advocated the use of high-quality safeguards to generate additional social and environmental benefits from REDD+ projects and policies along with greenhouse gas reductions. The ROW recognized the usefulness of the UNFCCC's work on safeguards in particular. It also recommended that the UNFCCC REDD+ safeguards set forth in the Cancun CoP decision Annex 1 (including the enhanced benefit approach), the guidance on safeguard information systems in UNFCCC 12/CP.17 and future safeguards developments under the UNFCCC should be a condition of any jurisdictional REDD+ programme that California links up to and approves. The recognition of the UNFCCC work on safeguards highlights the credibility of the UNFCCC process in subnational programmes.

California's actions relating to REDD+ sector-based credits generated from REDD+ activities in Acre and Chiapas promise to be precedent-setting. ROW recommendations and the consideration of REDD+ credits on the regulatory front are likely to be influenced by the UNFCCC progress on MRV and safeguards, and the international process is likely to be informed by California as one of

the first uses of REDD+ credits in a compliance regime. This model of two-way information-sharing and potential mutual recognition may have some valuable lessons for part of the ultimate UNFCCC REDD+ mechanism.

Progression on REDD+ MRV and non-carbon benefits at the jurisdictional level

Developments outside the formal scope of the UNFCCC are providing exciting and relevant illustrations of what a global REDD+ mechanism makes possible. These 'bottom-up' subnational and national initiatives have much to offer to the international process, including local credibility, momentum and technical proficiency. The state of Acre in Brazil is moving to become the first jurisdiction-wide programme to deliver compliance-grade REDD+ credits. Germany (via KfW) recently agreed to performance-based payments worth USD \$25 million, which Acre plans to deliver via the JNR Framework. Acre is actively working with local and international private-sector specialists and finance sources, and also has an MoU with the State of California to provide a pathway for its early participation in California's cap-and-trade system. The 'signal' provided by this MoU has provided much of the momentum necessary to drive the developments inside Acre. In June 2012, VCS signed an agreement with Acre's Institute of Climate Change and Regulation of Environmental Services (IMC) to outline JNR pilot activities. IMC has established a working group where VCS is partnering the Amazon Environmental Research Institute (IPAM) and other organizations to provide technical guidance to the development of Acre's jurisdictional REDD+ programme, in line with the JNR Requirements. Acre is also member of the Governors' Climate and Forest Taskforce. Elsewhere, last year Costa Rica, through its National Fund for Financing Forestry (FONAFIFO), became the latest national government to move toward piloting JNR guidelines, and VCS also signed or has pending similar agreements with Chile and other jurisdictions (see- <http://v-c-s.org/news-events/news/costa-rica-joins-growing-list-nations-pilot-jnr-program>).

Jurisdictional developments for non-carbon deliverables and safeguards are also advancing rapidly, led by NGOs, host countries and the private sector. The REDD+ Social and Environmental Standards initiative aims to define and build support for a higher level of social and environmental performance from REDD+ programmes, is designed for government-led policies and measures implemented at national, state, provincial or other level, and is relevant for all forms of financing. The Standards were developed through extensive consultations to define the high social and environmental performance of jurisdictional programmes and provide a comprehensive framework of key issues and elements of quality that can be used consistently across countries while enabling specific tailoring to the country context.

CASE STUDIES

The host-country governments, ministries and departments that have to date elected to include subnational initiatives such as those described above would derive benefit from explicit signals from the CoP that these programmes will have the potential to be integrated into a future UNFCCC REDD+ mechanism as part of nationally appropriate measures and actions.

Capturing and scaling-up project-level achievements: Cordillera Azul National Park REDD+ Project Example: Robust MRV and Safeguards in Action

The Cordillera Azul National Park REDD+ project completed validation and verification against the Verified Carbon Standard (VCS) and gold validation against the Climate, Community and Biodiversity Standard in February 2013. The project is registered on the VCS database, with 5.7 million credits spanning 2008–2012 ready to be issued. The range of climate, social and local benefits that are accruing provides a helpful illustration of the power of the technical developments and lessons learned at the project level which have great relevance to the deployment of REDD+ at the jurisdictional level.

The project avoids deforestation in a magnificent expanse of lowland and montane forests in four departments in central Peru. Approximately 180,000 people in more than 200 communities – immigrant and indigenous – neighbour the park. The forests harbours an astounding diversity of plants and animals, including many rare, endangered and range-restricted species. The natural resources in Cordillera Azul are crucial to the well-being of nearby villagers. The project area protects the entire watersheds of the two main tributaries in the Peruvian Amazon – the Huallaga and Ucayali – as well as large systems of wetlands that include vast palm swamps and an unusual highland swamp.

The project avoids deforestation in Cordillera Azul by strengthening the park's protection infrastructure, engaging local communities and other stakeholders in land-use management compatible with conservation, and improving the quality of life of neighbouring villagers. These efforts reduce the pressures caused by the primary drivers of deforestation in the area: an advancing agricultural frontier, new roads, large-scale agriculture, and mineral and oil exploration. Collaborations with the park's neighbours and local governments are resulting in land-use stabilization, ecological and economic zoning, and conservation-compatible activities spearheaded by the local communities to improve their quality of life, from the sale of handicrafts to water sanitation. The project's environmental education in the buffer zone reaches thousands of schoolchildren and trains hundreds of teachers and volunteers.

Indigenous communities neighbouring the park are developing quality-of-life plans that empower them to identify priorities based on their own cultural values and traditions. This assets-based conservation model is strongly supported by local governments and is gaining momentum in the region.

In Peru, where the government is committed to meeting a goal of zero net emissions in the land-use sector by 2021 (partly through the conservation of 54 million hectares of primary forest), this project is highly relevant to the national strategy. Many regions in Peru are in the initial phases of preparing REDD+ programmes. The departments of San Martin and Madre de Dios are developing jurisdiction-wide baselines and working alongside several NGOs in the regions to coordinate participatory processes. VCS is working with both national and regional governments, and partnering to help apply the flexible, phased approach of JNR to the development and eventual validation and registration of cohesive and transparent jurisdictional REDD+ baselines and programmes.

factor in REDD+, and the 'serious capital' driving resource utilisation at scale is often unaware even of its existence, the need for a prompt start mechanism could not be more acute. Concerns over permanence and leakage in the context of a

The development of robust MRV and safeguards is important for the UNFCCC REDD+ mechanism, as well as other programmes under consideration that may not be capable of developing their own MRV and safeguard standards

REDD+ prompt start mechanism are legitimate, but, as demonstrated by VCS JNR, they are entirely surmountable. As countries develop and/or private actors implement adequate MRV and safeguards in connection with their pre-2020 REDD+ activities, those actions should be rewarded. To do otherwise would send a perverse policy signal that early positive actions are discouraged, and sovereigns and the private sector should continue the status quo of unsustainable destruction of our forests.

Recommendations

In the context of the above, we offer the following recommendations to the COP in its consideration of its REDD+ work programme for the development of a REDD+ mechanism:

- Recognize the Role of Private Finance to Scale Up the Necessary Financing

On a global basis, both market-based and non-market-based approaches to REDD+ are needed, and neither need be threatened or superseded

by the other. The framework must allow for sovereign decisions taken locally to determine the appropriate blend that is required at the given national or subnational level. To foster the greatest possible range of funding, a REDD+ mechanism should leverage scarce public-sector finance to attract greater private-sector finance while both respecting national sovereignty and maintaining a "race to the top" in terms of best practices. With a combined approach, the market-based component can be robust and rigorous, while the non-market based approach can help to advance country readiness for those who wish to participate in such markets (which would be an "opt in" provided certain basis conditions were met, not mandated participation).

- Collaborate with non-UNFCCC actors on the Development of Robust MRV and Safeguards

While any operational global REDD+ programme under the UNFCCC process is years away, there is an opportunity in the interim for the UNFCCC to develop a set of harmonized rules to provide a consistent approach to measuring and verifying reductions related to REDD+. A UNFCCC-approved set of MRV and safeguards (definition and reporting) standards would provide a common "language" that REDD+ projects in any jurisdiction or industry-based regime, such as ICAO, could use. If and when an international REDD+ market is established, a common standard would ease the transition to a global regime. In the development of robust MRV and safeguards, we recommend that UNFCCC policy-makers embrace collaboration with non-UNFCCC actors to emerge with a truly informed global set of best practices that allow for mutual recognition.

- Create a Formal Prompt Start Mechanism for Approved REDD+ Actions

The CoP should encourage the role of private finance in REDD+ activities to date by recognizing existing REDD+ efforts as “early action” projects in any future global REDD+ mechanism. To lose the accumulated knowledge and skill of early REDD+ investors and project participants would hinder the success of any global mechanism, as these actors have real on-the-ground experience with REDD+ activities. Recognition of early REDD+ efforts would ensure continued interest by national governments and private (and public entities) in forest conservation and sustainable utilisation while a global REDD+ programme is under development.

Success in these three areas is vital to ensure that the integrity of REDD+ as an asset is sufficient to attract sustainable financing over the long term, as well as achieving the needed outcomes for climate, rural development and biodiversity conservation.

Conclusion

There remains great potential for a UNFCCC-created REDD+ mechanism to attract the scale of long-term investment from public and private sources necessary to address the deforestation crisis. We encourage the COP to establish a formal prompt start programme for REDD+ activities to encourage early investments in REDD+ and also to collaborate with national, sub-national and voluntary regimes on harmonized MRV and safeguards in order to ensure the highest degree of integrity for REDD+ at all levels.

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Implementing NAMAs under a New Climate Agreement that Supports Development in Southern Africa

Abstract

The UNFCCC places responsibility for the reduction of historical emissions on Annex 1 Parties, but there is a shared appreciation of the role of non-Annex 1 Parties in changing local policies to limit future emissions while addressing issues of climate change adaptation. In addition the bringing together of global economies through trade reduces the possibility of Africa being immune from the responsibility for reducing emissions. Carbon emission reduction is now an economic issue which is important for all technology and development decisions. Nationally Appropriate Mitigation Actions could link local and global priorities and help bridge the commitments gap in the climate change debate. Defining and implementing NAMAs can help mobilize public- and private-sector resources to achieve local development goals whilst addressing current and future greenhouse gas emissions. This paper will indicate areas of development priority in Southern Africa and show how a new climate agreement can incorporate policies to respond to the impacts of climate change while being more sensitive to the needs of Southern Africa.

Introduction

Africa presents a unique scenario regarding climate change mitigation. Emission avoidance is a more reasonable approach than emission reduction since current emission levels are relatively low. Low consumption levels are limiting human security, especially where food production is still of subsistence type and industrial production is too low to build a buffer against climate change. The usual approaches to climate change mitigation have mostly failed to meet the political need to address climate change, and financing instruments have performed poorly in Africa.

The current debate on Nationally Appropriate Mitigation Actions or NAMAs offers a possible approach for Africa in addressing climate change mitigation and adaptation. NAMAs need to be assessed in a more regionally specific approach that captures the Africa's unique demands. The first commitment period emphasized project-based mechanisms that emphasized quantified emission reductions without an emphasis on accelerating market penetration of the applied technologies. The issue in Africa is future emissions coming from a very unclear baseline.

The issue in Africa is future emissions coming from a very unclear baseline.

This paper reviews development priorities in Southern Africa and examines how climate change mitigation initiatives have so far failed to align with development objectives. The gap between local and global objectives is mostly due to approaches to technical project appraisal that have missed out on the opportunities to integrate climate change mitigation and development. The

paper suggests ways to evaluate NAMAs using a less burdensome approach that ensures accelerated migration to cleaner technologies whilst accommodating a region with limited capacity to monitor and evaluate small and diffuse projects.

The paper starts by discussing regional climate change and the development context. It then reviews the regional experience with climate change interventions with reference to the Global Environment Facility and the Clean Development Mechanism. The paper then makes recommendations for implementing NAMAs with pointers to how a future climate agreement can define commitments.

The Climate Change Context in Southern Africa

In the context of this paper Southern Africa is defined as the region covered by the Southern Africa Development Community, or SADC. There are linkages with neighbouring countries in East Africa that allow for use of some of their experiences in this regional context.

Southern Africa is highly dependent on agriculture, hence the impact of frequent droughts is often used to define climate change. Southern Africa is also dependent on hydroelectricity, hence the energy sector is sensitive to reduced precipitation. The regional economy is dominated by the exploitation of natural resources in the forms of minerals, soils and water for agriculture, and also various forms of tourism. The wide range of minerals and the focus placed by regional governments on food security and poverty reduction all require awareness of the potential for climate change as a major hazard.

Emissions and Drivers

According to a UNFCCC report (UNFCCC SBI, 2005), total greenhouse gas emissions in Southern Africa are 1202 Tg per year (1990 baseline). The IEA estimates emissions from energy combustion in Southern Africa to have been 393.9 Gg per year in 2010 (IEA, 2010). Most countries have yet to submit their official estimates for 2000. According to the UNFCCC 1990 data, the distribution of emissions is energy use 37%, agriculture 14.53%, land use 56.96% and industry 3.75%. Southern Africa is responsible for 80.02% of greenhouse gas emissions in Africa and is therefore a natural target for interventions to reduce emissions. Even though most of the emissions are from fuel combustion, key drivers lie in industrial technologies being outdated. The policies that are applied are reluctant to impose sufficient pressure for the adoption of more up to date technologies, among the reasons being poor awareness and perceived market risk. Carbon emissions per unit of production are therefore high compared to developed countries, and destruction of the natural environment exposes the regional economies to the threats of climate change. When faced by economic threats, rural communities tend to turn to the unsustainable harvesting of natural resources as a way to meet the challenges. Charcoal production, the poaching of wild life and the use of fire in accessing honey are some of the methods used.

Climate Impacts

The majority of the population in Southern Africa lives in the rural areas, but migration to urban areas continues to pose the challenge of increased urban poverty, as urban economies have not grown sufficiently to support large-scale formal urban employment. With high poverty levels food security is dependent on sustaining subsistence systems that are simple and vulnerable to climate change as much as they themselves drive the climate to change.

Disease vectors like mosquitoes and house flies are tending to increase with the expected climate regime in Southern Africa (IPCC TAR, 2001). Clean water is expected to become scarce, and ground water which would otherwise be cleaner

Even though most of the emissions are from fuel combustion, key drivers lie in industrial technologies being outdated

is affected by poor agriculture, mining and other production practices or is not accessible due to a lack of appropriate energy. Recent cases of cholera in Zimbabwe, Zambia and Mozambique are linked to poor urban water supplies. Other potential threats such as Rift Valley fever and meningitis are also set to worsen with a changing climate.

The impacts of climate change in Southern Africa provide a positive feedback to greenhouse gas emissions. The definition of climate change mitigation is therefore broader than the reduction of emissions through project-based interventions and needs to include livelihood security. This is more apparent when the responses of rural communities to impacts of climate change include the unsustainable exploitation of natural resources.

The Development Context in Southern Africa

Government has traditionally been the major force behind development in Southern Africa but there is now a growing understanding of the need for large-scale industry to play a role in development, as this would secure markets and provide the local skills necessary for their competitiveness.

MDGs

Southern African countries embraced the Millennium Development Goals and have set national targets to achieve them. Priority is placed on poverty reduction, health, education and gender equality, as these issues are motivated by historical experiences in the region. All MDG goals are, however, interrelated, and achieving one directly influences achieving the others. Evaluations show that most countries will not meet their MDG targets by the agreed dates. The major reasons for

The definition of climate change mitigation is therefore broader than the reduction of emissions through project-based interventions and needs to include livelihood security

this are a lack of resources and fundamentally the poor economic base with which to achieve these ambitious goals. Development assistance has a role to play in building the basis for achieving the development targets.

The Private Sector in Development

The private sector recognises the role it needs to play in social development, even though leadership is still being left to government. Corporate social responsibility, the reduction of environmental footprints, continuous quality improvements and energy management are all concepts that are voluntarily applied by the private sector to reduce costs and improve its image. Experience has shown that industry in Southern Africa has implemented some creative solutions to development problems, but there is still room for incentives to encourage market penetration of these solutions to achieve cost reductions and build

confidence in the opportunities on offer. As an example, off-grid electricity has been produced by sugar mills and some small hydro-installations, while ethanol has been used for transport. Large-scale renewable energy has not received sufficient policy attention to enable greater market penetration.

Mitigation and Adaptation Co-Benefits

Adapting to climate change creates co-benefits in climate change mitigation. The ability to adapt is dependent on how communities apply new methods for livelihoods and how they establish and respond to early warning systems. In the absence of requisite skills and resources for preparedness, first responses are typically by emergency systems where the loss has already occurred. Even private companies that are present in remote areas end up offering emergency services at a higher cost to them than would be the case if they offered early warning support services. In eastern Zimbabwe some timber companies have integrated rural communities into the fire detection system. They do this on a fee for service basis, but the prevention of fires has a benefit for both the timber companies and the rural communities. Such a response system can form the nucleus for development projects that include communities that benefit from sustainable non-timber forest products. Climate change impacts are naturally going to lead to increased conflict as communities move out of their areas in search of resources and ecosystem productivity falls below demand level. The early establishment of mechanisms for cooperation will help build lessons for minimizing such conflicts.

Climate Change Mitigation Priorities in Southern Africa

Southern African economies are based on natural resource extraction and use. Awareness of the

impact of the climate on the economy is therefore an essential part of regional security. Rainfall decreases as one moves away from the equator or the Indian Ocean, hence countries in the south are characterised by dry, sandy and desert conditions. The Kalahari and Namib deserts are the dominant features of Botswana and Namibia. Increased awareness of the impact of fossil fuel use on climate has also raised concerns about the future of economic development in Southern Africa as the bulk of energy comes from coal and petroleum fuels. Renewable energy has long been viewed as an option to replace imported fuels, but the available technologies do not offer a competitive option to meet the needs for mining, agriculture and agro-processing, which are the mainstays of these economies. The emphasis has therefore been placed on the adoption of renewable energy technologies to meet the energy needs of lower income groups or small-scale energy users. That in itself carries the huge burden of market development that most renewable energy technology suppliers are not equipped to deliver. The traditional money market perceives the small-scale energy market as high risk. Public-sector funding, which is applied as policy incentives as well as development assistance, brings with it market distortions and a huge administrative burden. In addition, small-scale energy-users in the form of small-scale agriculture, rural trading and community organisations are often operating on the margins of the mainstream economy. These energy-users are vulnerable to every disturbance in the mainstream economy and are fully exposed to climate variability. They rely on a weak subsistence market with seasonal revenues and are highly dependent on remittances from those working outside their communities. There is therefore a great variety of failed renewable energy interventions. Lessons learnt from these interventions form a good basis for current and future projects, mostly due to competition from

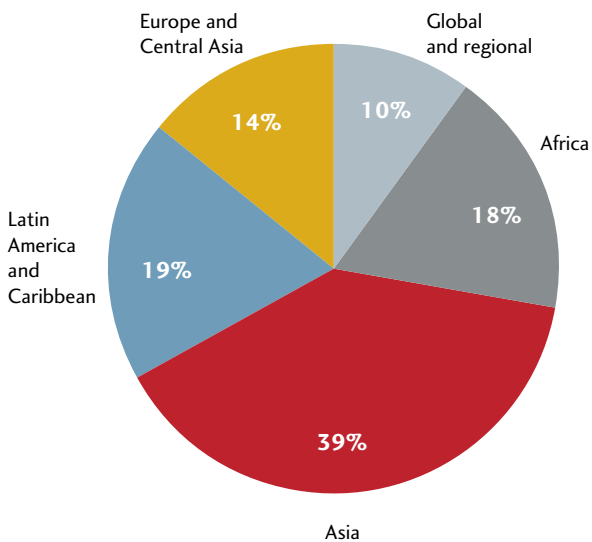
other needs at the community level. An example is the GEF PV pilot project being implemented in Zimbabwe. The objective of installing 9000 solar home systems was largely met, but the market distortions imbedded in the project such as duty exemptions for project equipment, financing users and not suppliers, and the large number of suppliers and installers with no future market and a disproportionately large administrative budget destroyed the underlying market.

Renewable energy has long been viewed as an option to replace imported fuels, but the available technologies do not offer a competitive option to meet the needs for mining, agriculture and agro-processing, which are the mainstays of these economies

The UNDP FINESSE, Financing Energy for Small Scale Energy Users, was implemented in Southern Africa as a follow on to the implementation of similar activities in Asia. The main objective of the project was to identify business opportunities for small-scale renewable-energy and energy-efficiency businesses and assist with the development of business plans. The project systematically failed the challenge to develop business plans essentially because the expected sponsors did not have a high enough credit rating and because financial institutions have limited experience with small-scale energy projects.

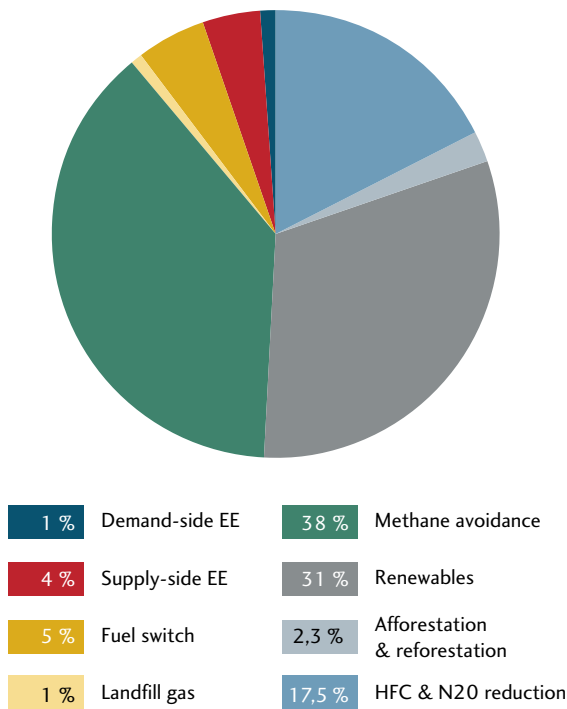
Similarly energy interventions have failed to sustain themselves because of low incomes and competition from higher return short-term options. Even in industry, energy efficiency or cleaner production interventions fail to reach the desired

Fig 1: Regional Experience with Climate Change Projects.



Source: GEF, OPS4 Learning Product, 2009.

Fig 2: Regional Experience with CDM Projects Volumes of CERs until 2012 in each category in Africa



Source: UNEP Risoe, Capacity Development for the CDM, June 2012

market penetration because policies are tilted towards job creation, and the economic environment is not easily predictable.

A lesson learnt from energy and climate change interventions in the region is that linking energy to production is essential for project sustainability. As a result, the involvement of the private sector in such projects is increasingly being given a higher priority. The Global Environment Facility has provided support to climate change projects in the region. There is increasing appreciation of the value of the GEF programs, especially where private-sector collaboration with communities is prioritized. The GEF Small Grants Program offers valuable support in this area as the program can manage small-scale projects that interface with larger commercial activities. The challenge with the larger GEF interventions continues to be limited resources when compared to the target sectors and insufficient capacity to manage the transaction costs related to the identification and establishment of the GEF component. Mainstream private-sector investments tend to move quietly during conception and once past feasibility stage move very quickly to investment, whilst the GEF component requires the feasibility stage to be revisited to establish incremental benefits and a long uncertain commitment period with processes that are mostly foreign to private investors in the region. Regional experience with the Clean Development Mechanism is similar. The majority of CDM projects that are identified are on a small scale with minimal commercial production, while the larger, more successful projects are linked to the commercialisation of research, as with the landfill gas projects in South Africa. Even though some public-sector projects were mostly successful, the level of transaction costs or perceived risks would not have been amenable to private-sector investment. The monitoring and

validation of numerous small-scale CDM projects increases the costs of delivering carbon credits.

Since inception the GEF has faced challenges in achieving the desired levels of awareness for projects to flow from the private sector in southern Africa. Most GEF project proposals originate in the public sector and non-governmental development agencies. The shortcomings of such projects include low levels of underlying finance and unclear project baselines. The sustainability of projects once the development phase has been completed has also been a challenge. Despite the implementation of a revised approach to resource allocation, the quantity of GEF projects in Africa continues to be low. The volume of resources is too low to match the more attractive conventional power-sector investments such as power generation technology upgrades and capacity-building for technology innovation and management. Implementing agents tend to lean towards social development projects where social development objectives provide the justification for the incremental cost of climate change mitigation. This is attributable to the preference on the part of the National GEF Focal Points to support otherwise poorly resourced interventions with high poverty-reduction co-benefits. These are also the areas for which the capacity is available in government and non-governmental agencies to develop such projects through the GEF cycle. The Coping with Drought and climate change project recently implemented in Zimbabwe and Mozambique has achieved some good results for both climate change adaptation and mitigation. Increased appreciation of the key issues and building the confidence of communities in improving and expanding their traditional coping strategies have also enabled much lower cost interventions encouraging community participation.

Mainstreaming NAMAS into Public- and Private-Sector Investment

In its fifth cycle the GEF has introduced the concept of National Portfolio Formulation, where countries develop a priority list of projects or project areas for funding. Even though the document would be valuable for other investors and should indeed be focussed at more than GEF, the countries tend to address this as a fulfilment of the requirements for GEF support. Climate change issues are still treated as environmental issues with weak participation by the major players in economic development. Both ministries for economic development and the private sector are trailing behind in terms of information and leadership in integrating climate change issues into mainstream development planning. The World Business Council for Sustainable Development, WBCSD, has network partners in South Africa, Mozambique and Zimbabwe and has an interest in progressing climate change mitigation. In South Africa members of the National Business Initiative or NBI have implemented measures that include water recycling at corporate offices, the replacement of incandescent lamps in mines with more efficient compact fluorescent lamps and the installation of variable speed drives for industrial and commercial machines. Local industry also supplies the devices and systems that are used to mitigate climate change, hence they have an interest in developing the technology market. At the global level the WBCSD has funded development of the Carbon Footprint Protocol in collaboration with the World Resources Institute or WRI. The protocol provides a popular reference for those entities that are embarking on greenhouse gas emissions. The involvement of the private sector in developing and implementing interventions not only leverages additional resources but helps in crafting methods that use analytical “language” that is familiar to private business. WBCSD is actively participating in the debate on the imple-

Table 1. Potential NAMAs for Regional Countries

Intervention	Description	Evidence
Efficient transport	Use of cleaner fuels and development of more efficient modes to suit road and rail networks.	Traffic congestion is common and unsafe passenger transport is a scourge for all countries.
Renewable energy	Adoption of energy solutions for urban and rural areas. Grid extension is not a viable option for all.	Even with grid-based rural electrification there are households and other entities whose energy needs cannot be met by a power line a few kilometres away. Standby diesel power is commonly used against grid-connected hydro.
Management of forest fires	Savannah fires are common. Land use management and early warning can help reduce fires.	In most countries fires are increasing, and potential conflict between landowners is always a risk. Some commercial forests are applying community management practices with reasonable success.

mentation of NAMAs, which can be viewed as a way to bridge the differences in the political negotiations on mitigation. Historically mitigation actions have carried some developmental co-benefits apart from earning carbon credits. NAMAs would include projects where there are knowledge barriers, a lack of capital and short lead times but which are not readily recognised as competing alternatives when plans are made to invest in new plant or to carry out major maintenance. “Low hanging fruit”, that is, those projects where low-cost decisions are all that is needed, can achieve mitigation benefits if incremental funding is made available at the same time. The challenge appears to be little or no coordination between government and the private sector in planning technology improvements. Large companies tend to plan and implement projects, especially where no permits are required, without checking on national preferences for technologies except where the options have been publicised. Utilities and other service providers who are public-sector entities involved in implementation of the projects tend to be isolated from the climate change debate that environmental ministries are mostly

involved in. Examples are companies investing in commercial buildings where passive cooling or other such options are not included in the design despite their potential benefits. If local building codes or standards included energy efficiency and emission reduction criteria, there would be increased opportunities to include interventions in the investment stage. If technology suppliers could receive climate change mitigation financing as a rebate, there could be an easier process in terms of project identification. An industrial company buying energy equipment would automatically receive an invitation to access climate change funding upon being requested for quotations, thereby eliminating the need for a separate climate change mitigation initiative having to identify projects separately. A regional technology greenhouse gas emission baseline would support this type of initiative.

Emission reductions in Africa are mostly based on the avoidance of future emissions since current levels are low. It is widely accepted that reductions in poverty or improvements in economic standing give rise to increased consumption.

Some small-scale interventions may not lead to a reduction in emissions as the beneficiaries may end up emitting more through the consumption of other goods and services. However, the same beneficiaries would stand a better chance of managing extreme events. A bigger market for cleaner technologies will also advance market penetration in all sectors and bring forward the date of the next intervention. This is the role that the GEF PV pilot project in Zimbabwe played successfully. The increased awareness brought into play a new type of solar PV systems user with small and non-standard but working installations. The expected market of private finance and formal technology suppliers did not sustain itself but was replaced by a stronger market of informal traders despite their lack of standardisation and business efficiency. The more formal solar PV market continues to exist, its target being institutions and high-income households.

Insights for a New Climate Agreement

The early days of the United Nations Framework Convention on Climate Change were focussed on understanding the science and the potential impacts of climate change. The major gap in Africa at this stage of assessing the response measures was the limited involvement of the private sector in the planning process. The political debate on responsibility and equity overshadowed the need to identify synergies between climate change mitigation, adaptation and the development of economies in marginal nations. The pressure imposed by the deadlines of the first commitment period was essential to generate momentum and increase the benefits of early action. However, there was still a void in terms of steps to address the slower pace of actions by developing countries which may not have had the capacity or need to implement mitigation actions, but which will definitely need to commence building the capacity and

skills to match the new trend in global technology that seeks to achieve lower carbon emissions in the business as usual development scenario.

Considering Analytical Methods

The definition of the incremental costs of emission reductions needs to change to accommodate the situation in Africa. In simple terms incremental global benefits result from additional activities

Climate change issues are still treated as environmental issues with weak participation by the major players in economic development

added to a project for the achievement of emission reductions. In a developing country successful interventions are likely to lead to increased emissions from the increased consumption of goods and services, but technology penetration will make for a cleaner future economy. While the baseline for large emitters is historical emissions, the baseline for developing countries is future emissions, which, when analysed through current methodologies, have inherent uncertainties that discourage the valuation of credits by potential investors. Given the political interest in renewable energy technologies, political leaders are likely to consider commitments to technology adoption as opposed to measured emissions.

Development Planning and Climate Change

The national development and climate change planning processes need to be integrated. This calls for integration at the institutional level, where climate change focal points need to lean on the economic development ministries. Mechanisms such as the GEF (Trust Fund, SCCF, LDCF etc), and CDM need to influence the mainstream

investment and development interventions directly without building separate and parallel processes, as appears to be the case at present. Addressing climate change is now a mainstream economic issue, and national economic planning institutions need to take a leading role in implementing measures. The climate change structures need to be based on an economic planning focus with an inclusive investment structure and sector representation. It is otherwise difficult to identify the true incremental activities that need incentives to achieve the climate change mitigation objectives. Monitoring broader indicators such

Addressing climate change is now a mainstream economic issue, and national economic planning institutions need to take a leading role in implementing measures

as average technology vintages and the growth of cleaner fuels in the energy sector would serve as simpler indicators of success in climate change mitigation. Current project-based methods tend to underestimate leakage where lower costs or substandard alternatives may exhibit stronger market growth. An example is compact fluorescent lamps, where the cheaper models with shorter life spans and lower energy efficiency tend to dominate the market.

The GEF5 Strategy recognises the need to base interventions on national priorities, but leadership at the national level still comes from an environmental background without the required participation of development planners for strategic economic planning.

Southern Africa, like Africa in general, has failed to benefit from the resources made available for climate change mitigation due to the limited flows of investment finance into the continent. The bulk of the investment goes into infrastructure through public-sector channels where innovation is limited. Climate change finance would leverage higher incremental benefits if it were guided by explicit climate-sensitive policies and planners and designers with respective skills. Power utilities and project developers, amongst others, need to take leadership roles in implementing climate change interventions. These entities have experience in dealing with venture capital and financing institutions. Climate change finance would best be channelled through such routes, where relationships already exist and there are mechanisms for project monitoring and evaluation. Experience so far has shown that a parallel climate change finance process faces prohibitive barriers in matching the pace and administrative processes of mainstream investment finance. Projects originate out of the range of influence of climate change planners and only appear when technology and financing decisions have been made. If climate change mitigation planners are to catch investments early, they need to link up with financiers, including venture capital and technology suppliers.

Committing to Cleaner Development

Carbon intensity of production is directly related to production efficiency and competitiveness, hence it is a natural parameter for measuring continuous improvement. NAMAs were proposed as a way to reduce the political differences related to the mechanisms existing before the Bali Action Plan. NAMAs seek to develop a more sustainable development baseline by avoiding poor technology 'lock in', especially in the infrastructure sectors. Since NAMAs are meant not to add to the investment burden of developing countries, they are

best implemented as part of existing investment flows where additionality in terms of finance and emission avoidance can be measured. This implies the development of national strategies by identifying investment programs in both the public and private sectors and imbedding actions to reduce climate impacts within those programs. This is not to imply the absence of implementation barriers since any push on technology upgrading faces challenges in skills, finance and support services.

Regional governments are likely to prefer actions that involve direct poverty-reduction benefits. Most infrastructure investments have indirect poverty-reduction benefits as the target communities would need to raise additional finance to implement productive measures that benefit from the infrastructure investment. There is valuable experience within the various development agencies operating in Africa that can be mobilised to achieve such investments. Stand-alone climate change funding has not been successful in finding partner investment finance in Africa. Opportunities have missed each other mostly due to low levels of awareness and coordination. The regional banks have an ongoing task to identify investment opportunities in both the private and public sectors. They are also in continuing dialogue with the authorities. It would therefore be logical that climate change funds be channelled through these institutions where co-funding would originate in the form of low-cost finance. Needless to say, the administrative processes of climate change mitigation funding would have to match those of much higher volume co-funding.

Measuring the Benefits

The high burden of new administrative procedures that have defined climate change mechanisms to date have served to create a new network of project development and management experts with a culture of combining UNFCCC modalities

in technical project appraisal and viability analysis. As a result of the poor integration of such skills in baseline project development, climate change interventions in Africa have appeared more as stand-alone actions, sometimes with poorly defined linkages to the baseline investments. There is a need to close the cultural gap between the traditional investment agencies and the new climate change and development project experts by matching the project requirements and fusing the knowledge base. NAMAs would exhibit their intended benefits if linkages with baseline investments were closer and climate change benefits were accounted for side by side with the local project benefits. An example is if countries with natural gas resources like Mozambique and Tanzania chose to use the natural gas for electricity production instead of coal. The gas would therefore not be exported and the coal would remain in the ground. Given the absence of demand for heating, the natural gas would be used at low conversion efficiency, and the benefits of a coal industry that could help improve the local economy would also be lost. What appears as a plausible mitigation option may have inherent local losses that would, on the global level, justify the baseline as a better

Regional governments are likely to prefer actions that involve direct poverty-reduction benefits

option for climate change mitigation and adaptation. Historically climate change benefits have been reported separately, hence some poorly performing projects have carried what appeared to be good climate change benefits when measured alone. Biogas digesters for household use continue to be considered a good mitigation option despite a very poor penetration and sustainability

profile over a long period of promotion. Rural biogas digesters compete for water especially at initial filling and present technical challenges that are more than those experienced when searching for firewood, especially where wood is still available. Where wood is no longer available, livestock tends to be scarce as well.

There is a need to close the cultural gap between the traditional investment agencies and the new climate change and development project experts by matching the project requirements and fusing the knowledge base

Climate change is a permanent threat to development. There is no doubt that economic strength is a precondition for capacity to respond to climate change. As confirmed by the positions adopted at the COP since Marrakesh and Delhi, it is not possible to separate climate change responses from sustainable development. Recent extreme weather experiences show that development cannot be called thus if it cannot stand up to or mitigate climate impacts. Africa should therefore adopt a strategic position in which action to mitigate climate change is imbedded in all development activities. At the implementation level there is a very small gap between climate change mitigation and adapting to climate change impacts.

Conclusions

1. Southern Africa offers an opportunity to avoid future greenhouse gas emissions through the adoption of cleaner technologies as an integral part of development planning. If Southern Africa is to develop on the basis of cleaner tech-

nology, there need to be development targets that complement the objectives of global environment needs without necessarily expressing those targets in terms of greenhouse gas emissions. It is essential that the perceived conflict between the politics of global climate change mitigation not be viewed as an appropriate reference point for addressing future greenhouse gas emissions where autonomous and future technology improvement may achieve such reductions.

2. Climate change is an economic issue. The early part of the global debate has laid out the political and administrative framework. It is now important that implementation be shifted to the same forum as skills and resources for investment. The roles of the private sector and development banks need to be elevated together with the role of government financial and economic institutions. Key national economic sectors continually adopt strategies to sustain themselves against the threats of climate change. These strategies and any global initiatives need to be integrated so as to improve efficiency and eliminate the perceived additional burden from global agreements.

3. Sometimes separation of climate change mitigation from climate change adaptation creates an illusion for the allocation of resources and the evaluation of climate change benefits. The co-benefits of the two types of intervention need to be recognised as the bridge on which cleaner development commitments can be built. Projects tend to address both issues, and it would be more efficient if cases of global assistance were coordinated and evaluated together so as to eliminate the current discreet mitigation and adaptation criteria that make assistance like GEF complex and sometimes difficult to access.

4. Analytical methods are recognised to be one of the barriers to African experience with climate change mitigation. The application of uniform methods for large-scale projects with clear boundaries and small and diffuse projects mostly with future emissions serves to magnify the perceived risk that discourages investors. The emphasis on technology diffusion and the forecasting of future cleaner production would be a more appropriate approach for Africa.

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This year's *Perspectives from UNEP and its UNEP Risø Centre in collaboration with the Global Green Growth Institute (GGGI)* focuses on the elements of a new climate agreement by 2015 that will contribute to achieve the 2°C limit for global warming. The first paper frames the global mitigation challenge based on the UNEP Emissions Gap Report 2012. The five other articles address key elements of a new climate agreement; emissions from international aviation, a vision for carbon markets up to 2020 and beyond, how green growth strategies can address the emissions gap, redesign of a REDD+ mechanism in response to the crisis of global deforestation and how NAMAs in Southern Africa can reconcile the gap between local and global objectives for development and climate change mitigation.

The *Perspectives* series seeks to inspire policy- and decision makers by communicating the diverse insights and visions of leading actors in the arena of low carbon development in developing countries.