

Agriculture and climate change

State of play in the UNFCCC – Decisions from the Durban climate conference

by Doreen Stabinsky

The overarching objective of the United Nations Framework Convention on Climate Change (UNFCCC) requires that greenhouse gas concentrations in the atmosphere be kept to a level and within a time frame to ensure that food production is not threatened. Yet food production is *already* threatened by the temperature rise of the last century and the committed warming due to greenhouse gas emissions of the last decades. Recent scientific analysis shows that during 1980-2008, due to rising global temperatures, global maize and wheat production have already decreased by 3.8% and 5.5% respectively.¹

These findings should imbue negotiators with a sense of urgency to both understand and, most importantly, address the impacts of climate change on agriculture. Yet for the most part they failed to do so at the recent Conference of the Parties to the UNFCCC held in Durban, South Africa in December 2011.

1 Lobell, D.B., W. Schlenker, and J. Costa-Roberts. 2011. Climate trends and global crop production since 1980. *Scienceexpress*, 5 May. DOI: 10.1126/science.1204531

INTRODUCTION: mitigation, adaptation, REDD+ and LULUCF – agriculture in the Durban outcomes

Agriculture, as a cross-cutting issue, was on the Durban agenda in several important locations. The most prominent location was under the work of the Ad hoc Working Group on Long-term Cooperative Action (AWG-LCA), as a mitigation element under 'Cooperative sectoral approaches and sector-specific actions' (or as it was called in the Bali Action Plan, paragraph 1(b)(iv)). The central outcome being debated was whether to open a work programme on agriculture under the Subsidiary Body for Scientific and Technological Advice (SBSTA) in the context of the Convention's Article 4.1(c).²

2 Article 4.1(c): All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall ... promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases ... [in the agriculture sector]

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Agriculture and food security also figured to one degree or another in negotiations on the various elements of the **Adaptation** Framework: National Adaptation Plans (NAPs), the Nairobi work programme, the work programme on loss and damage, and the Adaptation Committee. Although a demand for a work programme on agriculture under the Adaptation Framework was an element of the African Common Position, a stand-alone work programme did not materialise. Agriculture and food security likely will continue to be an important sector in ongoing work on adaptation, given the massive scale of impacts on agriculture and the need for both adaptation strategies and means of implementation (finance, technology transfer and capacity building) to address these impacts.

Agriculture was not explicitly mentioned in either of the **REDD (Reducing Emissions from Deforestation and Forest Degradation)-plus** decisions taken in Durban³, yet it is likely to have a prominent place in REDD-plus negotiations in 2012. Decision 1/CP.16 (paragraph 72 and Appendix II) directs Parties to address drivers of deforestation through an SBSTA work programme, and to report to the 18th Conference of the Parties (COP 18) on the findings. As agriculture is widely understood as one of the main drivers of deforestation, it will likely figure prominently in these discussions.

Indeed, in a conversation early in the Durban conference, a senior South African diplomat went so far as to say that there would be three work programmes on agriculture resulting from the meeting: one on mitigation of agricultural emissions under 1(b)(iv), one on adaptation under the Adaptation Framework, and one under REDD-plus, with regard to incentives for sustainable agricultural practices in the context of avoided deforestation. The first two did not actually materialise, and the third had really already been agreed in Cancún.

However, finally, and most significantly for those hoping to initiate work on agriculture in Durban, the **LULUCF (Land Use, Land-use Change and Forestry)** decision negotiated under the Ad hoc Working Group on Further

Commitments for Annex I Parties to the Kyoto Protocol (AWG-KP)⁴ opened four programmes of work that could have a bearing on agriculture. The four work programmes by the Ninth Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP 9) will:

- explore more comprehensive LULUCF accounting, including through land-based approaches;
- consider and possibly develop modalities and procedures for additional LULUCF activities to be included in the Clean Development Mechanism (CDM);
- consider and possibly develop alternative approaches to address the risk of non-permanence under the CDM; and
- develop and recommend modalities and procedures for applying the concept of additionality.

Indeed these last two arenas for negotiation related to agriculture – REDD-plus and LULUCF – provide openings for what has been a key objective of many Parties, particularly Annex I Parties: to expand existing (CDM) or develop new (REDD-plus) market-based mechanisms that can serve to bring the agriculture sector more fully into the carbon market.

The outcomes on 1(b)(iv), REDD-plus, LULUCF, and adaptation, as well as some considerations for future negotiations, are addressed in further detail below.

1. Cooperative sectoral approaches and sector-specific actions (Bali Action Plan 1(b)(iv))

The negotiations in Durban on cooperative sectoral approaches began more or less where Parties left off in Panama at the October negotiating session. Negotiators in Panama worked with a text that had three sections: general framework, agriculture, and international aviation and shipping.

At the beginning of the week in Panama, a like-minded group of developing countries (India, Brazil, China, South Africa, Argentina, Venezuela, Bolivia, Uruguay, Egypt, Thailand, Saudi Arabia, Ecuador and Nicaragua) had tabled text

³ But see FCCC/SBSTA/2011/L.25 (or SBSTA35 report once published) for SBSTA request for submission of views by 28 February 2012 on issues identified in 1/CP.16, paragraph 72 and Appendix II.

⁴ Decision 2/CMP.7.

on general framework that: directly linked cooperative sectoral approaches with Article 4.1(c) of the Convention; emphasised provisions and principles such as the principles of equity and common but differentiated responsibilities; decided that cooperative sectoral approaches shall take fully into account differences in geographic, economic and social conditions and specific national development priorities and circumstances; and agreed that cooperative sectoral approaches shall not lead to new commitments for developing countries or create barriers and distortions in international trade.

The position of this like-minded group of countries was that nothing could be agreed on either agriculture or international aviation and shipping without an agreement on the overarching framework for cooperative sectoral approaches reflecting the general principles of the Convention and the agreement of all Parties in the Bali Action Plan to establish further negotiations to implement Article 4.1(c) of the Convention, which in turn seeks to promote technology transfer in 'all relevant sectors', not merely agriculture and international aviation and shipping.

At the end of the week in Panama, New Zealand tabled text ('Proposed option 3') for the subsection on agriculture, which condensed the draft decision by removing all the bracketed paragraphs from the text under negotiation, or option 1. Option 2, proposed by Bolivia earlier in the week, was 'No text'. The most important element of the draft decision for New Zealand and other Annex I countries was the call to establish an SBSTA work programme specifically on agriculture. The Annex I countries had been energetically communicating this desired outcome in a series of meetings with non-governmental organizations (NGOs), first in Bonn, then in Panama, chaired by the United States.

At the first negotiating session in Durban, the facilitator for this item presented to the Parties three documents that he termed 'guidance notes' – one guidance note for each of the three sections of the text on cooperative sectoral approaches: general framework, agriculture, and international aviation and shipping. For purposes of facilitating discussion, he had removed all the paragraphs containing brackets from the text he put forward for negotiation and instead

moved the bracketed paragraphs to his guidance notes, which were to serve as negotiating guides to resolving the contested issues. The guidance notes contained a series of headings to indicate how he thought the bracketed text might be reflected in the final negotiating text. For agriculture, these headings included food security, trade, and economic development and poverty eradication – that is, all contested text on these issues had been removed by the chair into his placeholder guidance note when he prepared his clean text.

During the multiple informal-informal sessions that took place in Durban, negotiations focused on the general framework and bunker fuels. Despite the elaborate guidance note he had prepared on the agriculture element of the draft decision, agriculture was only addressed for a few minutes during the second week of COP 17, as the facilitator communicated to this author. Knowledgeable observers concluded this to mean that the facilitator and the chair of the AWG-LCA had no intention to negotiate an outcome on agriculture in the formal-informal process, but rather to send draft language to ministers in the hopes of reaching a decision at the political level. It was widely reported that the South African government was keen to have a decision on agriculture and bringing the text to the ministers may have been identified as the only successful path towards such a decision.

The French environment minister, Nathalie Kosciusko-Morizet, was appointed facilitator for ministerial-level consultations on agriculture. The resulting text⁵ seems to reflect the wide division still existing between Parties regarding the need for a work programme on agriculture. The important operative paragraph is as follows:

Requests the Subsidiary Body for Scientific and Technological Advice to consider issues related to agriculture at its thirty-sixth session, with the aim of exchanging views and the Conference of the Parties adopting a decision on this matter at its eighteenth session.

Thus Durban ended, not with a work pro-

⁵ FCCC/AWGLCA/2011/L.4, paragraphs 69-71. The draft decision on the website still does not have a formal decision number assigned to it as of this date, but the paragraph numbers have been changed to 75-77.

gramme but with an exchange of views.

Why were Annex I Parties so keen to have a work programme under the mitigation framing of 'Cooperative sectoral approaches'?

It is hard to imagine that Annex I Parties were keen for a work programme in order to begin to address their own significant emissions of nitrous oxide and methane from industrial agricultural practices. Whilst Annex I agricultural emissions are high, the possibility of a work programme aimed at direct emission reductions in their agriculture sectors is unfortunately unlikely, given the overall reluctance of many Annex I to take on any reduction obligations in a second commitment period of the Kyoto Protocol. More likely is that the desire among certain developed countries for a work programme reflects a strong interest in developing market-based approaches to overall emission reductions – where they would compensate emission reduction or sequestration in developing countries instead of taking steps to cut their own emissions.

It is widely known that many Annex I Parties are keen to develop alternatives to the reduction of their own agricultural emissions. For countries such as New Zealand and the Netherlands, agricultural emissions make up a significant proportion of their total greenhouse gas emissions. These countries are important agricultural exporters and would like not to be bound to emission reductions in the agriculture sector, so that they might continue or even increase their global share of exports without taking responsibility for the associated emissions and/or costs of reducing them. One means to do this would be through some sort of sectoral crediting or trading mechanism whereby they might compensate emission reductions in the agriculture sector of another country in exchange for the ability to increase their own emissions.

However for such a trading or crediting mechanism to work, there need to be standardised and sanctioned methodologies for the measurement, reporting and verification (MRV) of emission reduction or carbon sequestration. Methodology development is proceeding in the voluntary carbon market for projects that sequester carbon in soils, reduce nitrous oxide emissions with fertiliser management, or reduce methane

emissions with alternate water management strategies in rice production. However as these activities are not eligible under the CDM, there is no official process for developing such MRV methodologies under the UNFCCC. A work programme on agriculture under the SBSTA could have done exactly this sort of sanctioning of methodologies, similar to the ongoing work on REDD-plus under the SBSTA to estimate emissions and removals from REDD-plus activities and assess the potential contribution of these activities to the mitigation of climate change.⁶

A trade-related reason for a work programme would be to justify continued subsidies to the agriculture sector that might take the form of national-level programmes for carbon sequestration or carbon efficiency in agriculture. National-level carbon-efficiency standards in agriculture could also be used as a basis for protection of domestic commodity production from competition from developing countries, or indeed any country with less carbon-efficient agriculture.⁷

A final reason that Annex I countries seem keen on a mitigation-focused work programme in agriculture is that their own carbon developer and trading industries are eager for new, cheaper sources of carbon to develop, buy and sell. Agricultural soil carbon is seen as a potential new source of marketable carbon.

Even the United States is keen to see the market develop for agricultural and forest carbon. In a show of confidence for the future of the soil carbon market, the US government recently provided a \$40 million loan guarantee to TerraGlobal Capital, a US-based land-use carbon project developer, as well as \$900,000 in political risk insurance for a single REDD project developed by TerraGlobal in Cambodia.

The World Bank, as one of the most important international carbon brokers, has also lobbied strongly for the work programme. The Bank heavily promoted its flagship soil carbon

⁶ Decision 1/CP.16, Appendix II.

⁷ See for example the discussion by New Zealand's Minister of Trade and International Climate Change Negotiations, and former chair of agricultural negotiations in the Doha Round, Tim Groser. <http://www.beehive.govt.nz/speech/adapting-international-trade-regime-new-challenges-climate-change>

project in Kenya, the Kenya Agricultural Carbon Project, in the run-up to Durban, and sponsored a series of meetings designed to manufacture at least the appearance of a political and scientific consensus on the work programme.⁸ The Bank has been working through the African Union, the New Partnership for Africa's Development (NEPAD), and the Common Market for Eastern and Southern Africa (COMESA) to convince African governments to invest in the development of institutions at the national level to facilitate more soil carbon projects.

When questioned about their strong motivation for an agriculture work programme under 1(b)(iv), delegates representing Annex I Parties were quick to point out that in fact what they really preferred was a framing whereby adaptation and mitigation aspects of agriculture could be considered simultaneously – so that trade-offs could be minimised and synergies maximised between mitigation and adaptation efforts. A number of developing country delegates, as well as a number of civil society and farmers groups from Africa and elsewhere, however, continue to express concerns about the work programme and the development of soil carbon markets.⁹ They argue that developing countries are being led to take on the mitigation burdens of developed countries, while being consoled that those mitigation practices would actually be beneficial for adaptation to the climatic changes caused in part by the significant emissions from developed country agriculture.

The inconvenient fact is that although carbon market proponents look to the extensive land area of developing countries as *terra nullis* to be developed for its sequestration potential, on the whole developing countries' agriculture is not the source of the sector's significant emissions. For example, developed countries produce

two-fold greater emissions in their agriculture sector than the entire continent of Africa, and three-fold greater in the animal sector.¹⁰ Those who are not the source of the problem are being urged to become the solution, with significant implications for smallholder farmers and food security.¹¹

What next in the absence of the work programme?

As noted in the introduction, although there was no work programme on agriculture initiated under 1(b)(iv), two streams of work – LULUCF and REDD – will move forward over the next two years that could accomplish much of what might have been the results of an SBSTA work programme as demanded by many Annex I Parties and specifically devoted to agriculture:

- Bringing agriculture into the compliance carbon market;
- Developing offsets or sectoral approaches to avoid Annex I Parties' emission reduction obligations in the agriculture sector;
- Putting a focus on developing country agriculture to divert attention from significant Annex I Party agricultural emissions.

If further work on REDD-plus leads to a market-based mechanism that includes compensation for avoided deforestation, or if further LULUCF activities, including cropland and grassland management, are brought into the CDM, these could accomplish the objective of bringing agriculture into the carbon market, as discussed in the following sections.

2. REDD: bringing agriculture into the forest carbon market

Ever since the original LULUCF and CDM

8 The World Bank sponsored a meeting of nine African agricultural ministers in Johannesburg in September 2011, co-sponsored a scientific meeting on climate-smart agriculture in Wageningen, the Netherlands, in October 2011, and supported a small meeting of BRICs scientists in November 2011 in Beijing. Each meeting curiously issued a final statement calling for an SBSTA work programme on agriculture.

9 Over 100 civil society organisations, many from Africa, sent a letter of concern to African agriculture and environment ministers in advance of the Durban COP warning of the dangers of soil carbon markets. <http://nosoilcarbonmarkets.wordpress.com/2011/11/23/letter-to-african-agriculture-and-environment-ministers-no-soil-carbon-markets/>

10 Stabinsky, D. 2011. Climate change impacts on agriculture in Africa and the UNFCCC negotiations: policy implications of recent scientific findings. Working paper, November. United Nations Economic Commission for Africa and African Climate Policy Centre.

11 For a concise description of some of the most significant problems with soil carbon markets, see Action Aid International. 2011. Say no to soil carbon markets! Six reasons why soil carbon markets won't work for smallholders. September. http://www.actionaid.org/sites/files/actionaid/say_no_to_soil_carbon_markets-actionaids_policy_briefing_september_2011_final_0.pdf

negotiations leading to the Marrakech agreements, some countries have sought to develop a market-based mechanism that would reward 'avoided deforestation'. Decisions in Cancún and Durban move the Parties several steps closer to that mechanism with the development of work on REDD-plus. One element of the agreed work programme on REDD-plus seeks to integrate agriculture into that mechanism, through development of MRV methodologies that measure the contribution of agricultural technologies to increasing yields, which according to some can be correlated with 'avoided deforestation'.

The history of 'avoided deforestation' in UNFCCC LULUCF debates. Agriculture is a latecomer to an older debate over the inclusion of avoided deforestation in carbon markets.¹² During the Marrakech negotiations over LULUCF rules, avoided deforestation was strongly advocated for inclusion as an eligible activity in the CDM by several Parties, most notably Papua New Guinea. Its inclusion was opposed by many other Parties, most notably Brazil, China and the AOSIS (Alliance of Small Island States) countries. A central argument against the inclusion was that activities supported by the CDM should lead to real and permanent emission reductions or increases in stocks of carbon, providing a real benefit to the climate to offset growth in Annex I emissions. Opponents wanted the CDM to support projects that would permanently eliminate emissions, such as renewable energy projects, rather than merely preventing emissions now through preventing deforestation, with the possibility that in the future those trees might still be cut down. Decision 16/CMP.1 reflects clearly the thinking at the time of the Marrakech accords: among the principles that govern the treatment of land use, land-use change and forestry activities is the requirement 'that the mere presence of carbon stocks be excluded from accounting'.¹³ That is, merely

¹² For a detailed negotiating history and analysis of LULUCF and REDD issues see: Fry, I. 2002. Twists and turns in the jungle: exploring the evolution of LULUCF decisions within the Kyoto Protocol. *RECIEL* 11(2): 159-168; Fry, I. 2007. More twists, turns and stumbles in the jungle: a further exploration of LULUCF decisions within the Kyoto Protocol. *RECIEL* 16(3): 341-355; and Fry, I. 2008. Reducing emissions from deforestation and forest degradation: opportunities and pitfalls in developing a new legal regime. *RECIEL* 17(2): 166-182.

¹³ Decision 16/CMP.1, paragraph 1(d).

maintaining trees in the ground (the mere presence of carbon stocks) should not be the subject of LULUCF accounting, but rather attention and accounting should focus on the increase or decrease over time in forest carbon.

However a number of countries, unsatisfied that avoided deforestation was not included in LULUCF accounting and CDM rules, have kept the issue on the table, where it now appears as a key element of REDD-plus thinking.

Identifying the drivers of deforestation. In Cancún, Parties agreed to an SBSTA work programme to begin to address methodological and other issues related to REDD-plus (decision 1/CP.16, paragraph 75 and appendix II). As a component of this work programme, at the conclusion of SBSTA 35 in Durban, Parties and accredited observers were invited to submit views on how to address drivers of deforestation and forest degradation, as mentioned in decision 1/CP.16, paragraph 72 and appendix II of the same decision quoted below:

Appendix II: Work programme of the Subsidiary Body for Scientific and Technological Advice on policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

In the development of its work programme, the Subsidiary Body for Scientific and Technological Advice is requested to:

(a) Identify land use, land-use change and forestry activities in developing countries, in particular those that are linked to the drivers of deforestation and forest degradation, identify the associated methodological issues to estimate emissions and removals resulting from these activities, and assess the potential contribution of these activities to the mitigation of climate change ...

Restated, the paragraph above seeks to define a work programme that: 1) identifies LULUCF activities responsible – proximally or indirectly – for deforestation; 2) determines how emissions

and sinks related to these activities might be measured; and 3) determines if there is a climate change contribution to be made, presumably with a view to identifying 'policy approaches and positive incentives' that could be undertaken based on measuring that contribution. The work programme does not explicitly assume a market,¹⁴ but develops the basic data requirements for a market in 'avoided deforestation'. The clearing of land for agriculture, whether for industrial or small-scale subsistence production, is one of the principal drivers of deforestation globally, although there are significant regional differences found.¹⁵ The SBSTA work programme could include agriculture by attempting to measure both the emissions from agriculture-related deforestation as well as the contribution of particular agricultural practices to avoided deforestation. To the extent that REDD-plus negotiations lead to a market mechanism, as clearly desired by some Parties, avoided deforestation and hence activities in the agriculture sector that might address drivers of deforestation could be included in such a mechanism.

'Sustainable intensification' and the Borlaug hypothesis. Proponents of linking support for particular agricultural practices to avoided deforestation promote a concept they call 'sustainable intensification', a euphemism for chemical-intensive and industrial monoculture practices that increase per-hectare yields. They point to what is often called 'the Borlaug hypothesis', the argument that if agricultural production can be increased in areas already under production, there will be a decline in new land clearing for agriculture. Those proponents argue then that REDD-plus funds should be available to fund agricultural projects that increase productivity. The logic is that if agriculture is a driver of deforestation, and particular agricultural practices will reduce that driver, then those practices

14 Although the final AWG-LCA decision on financing results-based actions under REDD-plus opens the door to market-based approaches to support results-based actions (draft decision -/CP.17, paragraph 66. Final unedited version available at unfccc.int).

15 Geist, H.J. and E.F. Lambin. 2002. Proximate causes and underlying driving forces of tropical deforestation, *Bioscience* 52(2): 143. See also Union of Concerned Scientists. 2011. The root of the problem: what's driving tropical deforestation today? http://www.ucsusa.org/assets/documents/global_warming/UCS_RootoftheProblem_DriversofDeforestation_FullReport.pdf

should be rewarded in a payment-for-results scheme.

This 'Borlaug hypothesis', and the related policy recommendations for 'sustainable intensification' are challenged by actual data from many parts of the world. Studies in fact show that as productivity increases, profits to be made from agriculture increase, thereby providing a strong incentive to clear even more land.¹⁶ The same result of increased land clearing can occur as prices of global commodities rise on the world market. Of course efforts to increase agricultural productivity globally are important, but there is no verifiable direct link to avoided deforestation that would merit inclusion of agriculture in a REDD-plus scheme.

The role of developed country consumption in deforestation. One important idea that was raised during the Marrakech negotiations, and that is likely to resurface during these debates over drivers of deforestation, is the role of demand and consumption in countries that are importers of products linked to deforestation. In the case of agricultural products, forest-destroying export crops include palm oil, beef, and soy – all responsible for large amounts of land clearing in Latin America and Asia.

Tuvalu, in 2008, proposed the idea of a carbon-deficit levy, to take into consideration consumption in developed countries leading to deforestation, if those developed countries were also benefiting from carbon-offset credits for avoiding deforestation in other locations. Such a proposal could be revived in this context. Particularly if a carbon-offset market is developed for REDD-plus activities, carbon deficits for deforestation related to agricultural production of imported products should be included in calculation of emissions.

Two conclusions that can be made with regard to the inclusion of agriculture within whatever results-based financing mechanisms may be developed under REDD-plus are:

- REDD and REDD-plus are not forestry agreements, with an objective of forest conserva-

16 Pirard, R. and S. Treyer. 2009. Agriculture and deforestation: what role should REDD+ and public support policies play? Institute for Sustainable Development and International Relations (IDDRI). www.iddri.org

tion, but provisions under the UNFCCC guided by its overarching objective, to protect the climate. Therefore, in keeping with the objective of the Convention, any actions to address REDD should provide 'a real benefit for addressing the climate'.¹⁷ Principles that govern results-based financing under REDD-plus should include the principle from decision 16/CMP.1 that '*the mere presence of carbon stocks be excluded from accounting*'.¹⁸

- Some of the proximal drivers of deforestation, such as land clearing for agriculture, may actually be more effectively and appropriately addressed by addressing the consumption and demand in developed countries that drive deforestation in developing countries.

3. The making of LULUCF markets: more comprehensive accounting, opening up the CDM, and addressing the market risk of non-permanence all contribute to integrating agriculture into the carbon market

In the final days of the negotiations, four bracketed paragraphs in the Kyoto Protocol (KP) negotiating text on LULUCF suddenly appeared unbracketed in the final LULUCF decision. The removal of the brackets was not negotiated, but rather unilaterally decided by the AWG-KP chair in his crafting of the final package of decisions that he handed to the CMP in his own capacity. Each of the paragraphs established a work programme that could contribute to expansion of activities accounted for in the LULUCF sector and LULUCF activities eligible for inclusion in the CDM. Agricultural activities are among the most important targets of these efforts.

Relevant excerpts from the paragraphs establishing these four work programmes, as well as those indicating the use of the results of the

¹⁷ Fry, I. 2008. Reducing emissions from deforestation and forest degradation: opportunities and pitfalls in developing a new legal regime. *RECIEL* 17(2): 166-182.

¹⁸ See also the LCA outcome on markets, paragraph 79: *Emphasizes* that 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, *must meet standards that deliver real, permanent, additional and verified mitigation outcomes*, avoid double counting of effort, and achieve a net decrease and/or avoidance of greenhouse gas emissions.

work programmes in the second commitment period, are as follows:

*5. Requests the Subsidiary Body for Scientific and Technological Advice to initiate a work programme to explore **more comprehensive accounting of anthropogenic emissions by sources and removals by sinks** from land use, land-use change and forestry, including through a more inclusive activity-based approach or a land-based approach ...*

*6. Requests the Subsidiary Body for Scientific and Technological Advice to initiate a work programme to consider and, as appropriate, develop and recommend modalities and procedures for **possible additional land use, land-use change and forestry activities under the clean development mechanism** ...*

and 17. ... Activities additional to afforestation and reforestation will be eligible if agreed by any future decision of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol.

*7. Further requests the Subsidiary Body for Scientific and Technological Advice to initiate a work programme to consider and, as appropriate, develop and recommend modalities and procedures for **alternative approaches to addressing the risk of non-permanence under the clean development mechanism** ...*

and 18. ... Alternative approaches to addressing the risk of non-permanence may apply in accordance with any future decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol.

*10. Requests the Subsidiary Body for Scientific and Technological Advice to develop and recommend modalities and procedures for **applying the concept of additionality** ...*

The SBSTA is requested under each of the work programmes to deliver draft decisions to CMP 9, in 2013.

The discussion below will consider the subject of each of the work programmes in turn, and its relevance to agriculture, after a brief consideration of possible intentions for undertaking such a large amount of work under the clearly faltering Kyoto Protocol.

Why all these work programmes now? Considering the tenuous position and, indeed, uncertain lifespan of the Kyoto Protocol after Durban, particularly after the announcement by Canada of its withdrawal from the Protocol, and the foreshadowing by other Parties of their intention not to continue,¹⁹ the initiation of four new work programmes under the KP might be considered irrelevant and curious.

But clearly there is no effective firewall between the KP and any other instruments or mechanisms that might be negotiated under the AWG-LCA or the newly established AWG on the Durban Platform for Enhanced Action. Three possible intentions for the establishment of these work programmes are: to secure new sources of CDM credits for KP Parties; to feed results and ideas now into other negotiations; and/or to establish rules that could be folded later into any new agreement.

Agriculture, LULUCF and the carbon market.

One might reasonably wonder if these new work programmes under the SBSTA could effectively substitute for the failed work programme on agriculture under AWG-LCA paragraph 1(b) (iv), in particular, to bring agriculture into the compliance carbon market.

To begin to answer that question, it is first necessary to locate agriculture within LULUCF. While forestry takes up the bulk of LULUCF, both cropland management and grassland management for pasture are LULUCF activities that may be accounted for voluntarily under Kyoto Article 3.4.

Agricultural soils – both cultivated and grasslands – can possibly sequester carbon with the adoption of certain practices, in particular practices that integrate carbon back into soils,

¹⁹ Both Australia and New Zealand inserted footnotes to the draft amended Annex B of the Kyoto Protocol indicating that they are only 'prepared to consider' submitting information on a QELRO for a second commitment period. Decision -/CMP.7 (advance unedited version available at unfccc.int).

such as the addition of compost or manures; it is that sequestration potential that countries are looking to capitalise on in LULUCF accounting of agricultural lands. Countries such as Canada, with huge land areas that can be claimed as a sink for carbon sequestration, are likely to benefit most from inclusion of agricultural lands in their LULUCF accounting.

Croplands and grasslands have been accounted for voluntarily in the first commitment period, and will remain a voluntary activity in the second commitment period. The reasons for only requiring voluntary accounting of these LULUCF activities are several, including difficulties in measuring carbon, uncertainties associated with measurement, and substantial risks of reversals.

Yet one of the work programmes to be established (paragraph 5) would explore *more comprehensive accounting in the land-use sector* – with the aim of complete accounting of sources and sinks across entire landscapes. While it might seem beneficial for the climate to account for more emissions and sinks, inclusion of more LULUCF activities and land is likely to favour large emitters with large land areas looking for more loopholes. More comprehensive accounting is likely to favour those looking to increase accounting of sinks, rather than sources. This has been the history since the beginning of LULUCF within the KP, with more and more elaborate accounting methods facilitating the creation of greater loopholes.

Moreover, more comprehensive accounting will certainly be of stocks that are inherently more difficult to count, such as soil carbon. The significant uncertainty associated with such measurement is favourable to those wishing to creatively increase carbon accounting in sinks, thereby avoiding emission reductions and hence providing minimal or even negative impact on actually addressing climate change.

Another work programme (paragraph 6) would explore possible *additional LULUCF activities eligible for inclusion in the CDM*.²⁰ The debates

²⁰ Negotiating documents from early 2010 (e.g., FCCC/KP/AWG/2010/6/Add.2) list as the range of new activities to be considered under the work programme: revegetation, forest management, cropland management, grazing land management, wetland management, soil carbon management in agriculture and other sustainable land management activities.

over which activities to include in the CDM in the first commitment period were difficult, with AOSIS, the European Union, China and Brazil looking to limit LULUCF activities in the CDM, as noted above in the discussion on REDD-plus. Only afforestation and reforestation activities have been allowed in the first commitment period, and their use is limited to offsetting 1% of a Party's annual emissions.

One of the key arguments against inclusion of LULUCF activities in the CDM was the problem of non-permanence. Most Parties wanted the flexibility mechanisms of the Kyoto Protocol to have environmental integrity, with real and permanent emission reductions as the result of any offset projects to actually address the problem of climate change.²¹ LULUCF activities are problematic in this regard, as carbon sequestered in trees or soils can easily return to the atmosphere with harvesting of trees or tilling of soil.

Non-permanence is also a problem for the carbon market. Traders of carbon offsets need a commodity with some measurable value. If the carbon sequestered cannot be guaranteed for the life of the carbon credit, its value is uncertain and suspect. Players in the market have come up with a range of fixes for non-permanence, including buffers and other insurance schemes, which will be considered in the third LULUCF work programme (paragraph 7) on *alternative approaches to the risk of non-permanence under the clean development mechanism*.²² While such schemes may solve the carbon credit value problem, they unfortunately do not address the environmental integrity problem of non-permanence. Once carbon returns back to the atmosphere, climate change continues apace. There is no possibility to create an artificial risk buffer that can stop the impacts.

Kyoto Protocol Article 12 on the Clean Development Mechanism establishes basic criteria for

21 Kyoto Protocol Article 12 (Clean Development Mechanism), paragraph 5(b) establishes the criterion that emission reductions from CDM projects provide 'real, measurable, and long-term benefits related to the mitigation of climate change'.

22 Negotiating documents from early 2010 (e.g., FCCC/KP/AWG/2010/6/Add.2) list the following as alternative approaches to non-permanence to be considered under the work programme: how to take responsibility for reversals, insurance, buffers and/or credit reserves, exceptions for low-risk activities, and applying a discount factor to the total emission reductions achieved.

the emission reductions that are to be certified by the CDM operational entity, including the criterion of additionality found in paragraph 5(c): 'reductions in emissions that are additional to any that would occur in the absence of the certified project activity'. The establishment of a work programme on *additionality* (paragraph 8) in the context of LULUCF accounting was proposed by Tuvalu during negotiations in Cancún in 2010.²³

4. Where else could/should agriculture have figured in the Durban outcomes? The importance of adaptation

Given the immensity of the threats to agriculture from climate change, it is of great concern that agriculture is not more prominent in the main mitigation and adaptation elements of the negotiations, both as a significant and compelling reason for more drastic reductions in emissions from Annex I Parties under the KP, and as a specific sector considered under the Adaptation Framework.

The significance of agriculture and the seriousness of the imminent threats to food security is enough of a reason to take a holistic approach towards the sector in the negotiations, rather than demoting agriculture to a mere technical issue to be handled by the SBSTA. Given that adaptation is a priority of developing countries, a reasonable approach would be to consider agriculture in the context of adaptation negotiations. Agriculture and adaptation did figure prominently in the negotiating position of the African Group, with a demand for a specific work programme on agriculture under the Adaptation Framework.²⁴ This demand did not find enough traction in Durban, however, given the

23 The proposal specifically addressed additionality with regard to removals resulting from human-induced afforestation and reforestation activities and Article 3.4 activities (revegetation, forest management, cropland management, and grazing land management were the activities included in the negotiating text at that time).

24 The relevant paragraph of the Bamako Declaration reads: 'To note the Johannesburg Communiqué of the African Ministerial Conference on Climate-Smart Agriculture and, in recognition of the importance of agriculture to Africa, to recommend that a comprehensive work programme on agriculture in non-Annex I Parties be established under the Cancún Adaptation Framework and further recommend that agriculture be addressed as a matter of priority in relation to the mitigation commitments of Annex I Parties.'

competition among sectors often seen in the adaptation context.

The strengthening of the Adaptation Framework at Durban, however, is a step in the right direction. The Adaptation Committee was made operational in Durban and can serve as the coordinating and focusing body for the current elements of the Adaptation Framework: the Nairobi work programme, the work programme on loss and damage, and the National Adaptation Plans process. A next step would be for Parties to direct the Adaptation Committee to coordinate specific sectoral workstreams with work undertaken under each of the elements of the Adaptation Framework. As the Adaptation Committee develops its workplan over the course of the coming year, agriculture should be one of the sectoral areas identified for such a workstream.

National Adaptation Plans. At the national level, agriculture is certain to feature strongly in many countries' national adaptation plans, given the heavy dependence of many economies on agriculture, both for domestic consumption and for generating of revenue from exports. Developing countries could benefit greatly from guidelines and other mechanisms to support vulnerable sectors, particularly as agriculture employs a significant proportion of the population of developing countries. Work on National Adaptation Plans at the UNFCCC could provide a platform for discussion on methods and tools to support adaptation in the agriculture sector, including, *inter alia*, via the mainstreaming of climate risk for the agriculture sector in national and rural development plans.

Nairobi Work Programme. The Nairobi work programme will continue work in the next cycle on water and on ecosystem-based adaptation, both themes that have significant bearing on agriculture. SBSTA 34 had discussed a list of potential activities under the NWP, including 'strengthening sector-specific and cross-sectoral activities to address impacts, vulnerability and adaptation issues relating to, *inter alia*:' water, food security, ecosystems, and infrastructure and human settlements.²⁵ Only two activities – technical workshops on water (water and climate change impacts and adaptation strategies)

and ecosystem-based approaches for adaptation to climate change – were prioritised by SBSTA 35 and the COP for this next two-year cycle of work, with both workshops to be held before SBSTA 38.

The Parties and the Secretariat should ensure that agriculture and food security figure prominently in the content of both workshops, and in particular the upcoming technical workshop on water, as the sector does in the technical paper on water and climate change prepared for SBSTA 35.²⁶ Many of the poorest and most vulnerable to climate change are small farmers in rainfed agricultural systems, whose livelihoods will be seriously threatened by changes in rainfall patterns and loss of soil moisture from increasing temperatures. A sectoral focus will provide information in a way that is most useful and relevant to policymakers, and agriculture and food security should be one of the main sectors addressed during the workshop on water.

At Durban, the relationship of the Nairobi work programme to other elements of the Adaptation Framework was further clarified; Parties are viewing the NWP under the SBSTA as supporting the scientific and technical work of the Adaptation Framework. Parties have been asked to submit their views on potential future areas of work under the Nairobi work programme, to be considered by SBSTA 38, by 17 September 2012.

Work Programme on Loss and Damage. The element of the Adaptation Framework currently most important for further work on agriculture is the work programme on loss and damage under the SBI. Where the Nairobi work programme has provided the scientific and technical understanding of impacts on agriculture, the work programme on loss and damage will provide direction on implementation of action, including with the potential development of an international mechanism to address loss and damage.

Impacts on agriculture will clearly be multiple, with measurable losses from extreme events such as floods, droughts, hurricanes and typhoons. But over the long term a more significant threat to agricultural production, and one

²⁵ FCCC/SBSTA/2011/2.

²⁶ FCCC/TP/2011/5.

that will be difficult or impossible to measure, are the impacts of slow onset temperature rise. Already, as noted in the introduction, scientists have concluded that crop yields of maize and wheat globally have dropped 3.8-5.5% due to warming temperatures.²⁷

As temperatures rise, they will eventually exceed the tolerance levels of plants, including the most sensitive parts such as pollen. Also as temperatures rise, soil moisture levels will fall, even if rainfall remains constant. Rain-fed lands in warmer regions will slowly become less and less suitable for crop production. Similar to the threats posed by sea level rise and salinisation, slow onset temperature rise will slowly and inexorably take away the ability of farmers to produce food in tropical and sub-tropical rain-fed regions.

As raised by a number of Parties in their submissions, and in the expert workshop held prior to COP 17, the effects of slow onset events such as temperature rise, salinisation, or sea level rise pose some of the most significant challenges and gaps in the implementation of risk management approaches. The loss of arable land and livelihoods due to temperature rise or other slow onset events is a permanent loss not amenable to the market-based mechanisms currently being contemplated, such as weather-indexed insurance.²⁸ An international mechanism that can address slow and permanent losses, such as losses in cropland and agricultural productivity due to climate change, is necessary.

Work in 2012 under the work programme will include a series of regional expert meetings to address issues related to the range of approaches to address loss and damage.²⁹ Subsequent to the regional meetings, the Secretariat is to develop a technical paper on slow onset events, taking into consideration the outcomes of the meet-

ings. Submissions are requested by 17 September with views on the possible elements to be included in the recommendations on loss and damage from the SBI to COP 18.

5. Conclusions

The bulk of the attention on agriculture in Durban was on the work programme that never materialised, under 'Cooperative sectoral approaches and sector-specific actions' on mitigation under the AWG-LCA. And while the serious threats to agriculture should have taken the spotlight in Africa, where the worst climate-change-related drought to date is still threatening the lives of millions in the Horn of Africa, there was little mention of agriculture in the context of either mitigation under the AWG-KP or adaptation under the elements of the Adaptation Framework, despite demands by African and other countries.

Instead, most of the work moving forward on agriculture relates to the possible inclusion of agriculture in existing or new market-based mechanisms, either in the CDM or in REDD-plus.

However, despite the intense interest of many Annex I Parties and some developing country Parties for new mechanisms, arguably the most important work programme underway in 2012 relevant to agriculture is the work programme on loss and damage. The work programme, and a possible new international mechanism on loss and damage, has the potential to enable Parties to reframe the priorities on agriculture towards addressing the substantial impacts on food production, food security and agricultural livelihoods that will be felt in the coming years and decades as a result of both extreme events and the more insidious and ultimately more life-threatening impacts of slow onset events such as temperature rise on agricultural yields.

²⁷ Lobell et al. 2011, op. cit.

²⁸ FCCC/SBI/2011/INF.11. From the report: 'Another key challenging issue that warrants further discussion in the context of adaptation is how to collectively address asset or livelihood losses arising from new emerging risks due to climate change, which cannot be addressed through market-related mechanisms. ... There is a significant gap in available knowledge, tools and approaches to manage risks related to slow onset events. Some participants drew attention to the pressing need for further discussion on how to address permanent losses, including on whether existing mechanisms can evolve to handle these.'

²⁹ FCCC/SBI/2011/L.35/Add.1

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