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## Agriculture, Climate Negotiations, and the Paris Summit

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**Abstract:** Agriculture and allied activities is a sector of production that is directly vulnerable to global warming, and the outcomes from Paris will be of particular relevance to the way developing countries cope with climate change in agriculture. Although agriculture was not explicitly the subject of negotiations in Paris, agriculture emerged as a key issue of concern, with respect to mitigation and adaptation, in the Intended Nationally Determined Contributions (INDCs) made in the run-up to COP 21. The results from the Paris Agreement on the issue of adaptation finance will also affect agriculture and allied activities indirectly.

**Keywords:** Agriculture and climate change, COP 21, Paris Agreement, adaptation and mitigation, agriculture and INDCs

Agriculture is a sector of production that is directly related to weather and climate. This is true of all its subsectors, including field and tree crop production, horticulture, livestock, and fisheries, inland and marine. Forestry is also a sector of production that is directly dependent on climate.

In the context of global warming, at the global scale, it is perhaps true that forestry has received greater attention than agriculture, especially in the context of global negotiations. This is because forests are, to a greater extent than agriculture, also important to climate change mitigation. Forests store carbon in the form of biomass and the conservation and extension of forest cover across the world provides a useful means of removing carbon from the atmosphere (although obviously not sufficient by itself). Deforestation similarly involves the loss of stored carbon and a release of part of it into the atmosphere or the Earth system and hence can be regarded as a source of global warming.

A number of schemes of carbon trading that reward the preservation or expansion of forests in underdeveloped countries by the provision of monetary compensation

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from developed country sources have been designed within the UNFCCC and the Kyoto Protocol. One such scheme, REDD+ (pronounced “red plus”) has gained some favour among underdeveloped countries.<sup>1</sup>

In the climate negotiations, adaptation has been a difficult subject, dominated by two concerns. The first is the delineation of the role of vulnerability and the requirements of adaptation in different countries. The second is the provision of financial, technical, and capacity-building support for underdeveloped nations. The first is a subject of ongoing discussion, although it was not a major point of contention at the Paris Conference. The second was the subject of much discussion at COP 21 in Paris.<sup>2</sup>

The discussion of agriculture has had a complex history in climate negotiations. In the early 1990s, when climate action was just beginning, an issue was raised by scientists from developed countries, who argued that rice fields were a potent source of global warming because of the generation of methane from decaying vegetable matter in flooded fields. In some preliminary estimates, quite a significant proportion of global warming was attributed to rice cultivation across the world, especially in Third World countries. The publication of these estimates had two consequences. The first was extensive field research on paddy cultivation, especially in India, which established that methane production in rice fields was vastly overestimated.<sup>3</sup> The second consequence was a reaction against the inclusion of agriculture in the negotiations on climate mitigation among climate activists in the Third World and among Third World governments. At the same time, for sound scientific reasons, agriculture was included in the sector of mitigation in developed countries, especially when advanced agricultural techniques were involved.

In the Third World, the fear has been that climate change mitigation would come to be an additional burden on the vast mass of small producers and large farmers whose economic standing nevertheless is not comparable to large farmers in developed countries. From the developed world, however, there is continuing pressure to bring agriculture into the ambit of mitigation, either directly or through the linkages between mitigation and adaptation.

Nevertheless, it has been quite clear to all that agriculture is a major arena for adaptation. This view has been well stated and broadly accepted from an early period, even before the signing of the UNFCCC at Rio de Janeiro in 1992. Agriculture contributes only about 3 per cent of global GDP.<sup>4</sup> This figure hides wide variation, from less than 1 per cent in the United States to more than 25 per cent in some Least Developed Countries. The importance of agriculture in ensuring world food security

<sup>1</sup> For an introduction to REDD+, see <http://redd.unfccc.int>.

<sup>2</sup> For a brief discussion of adaptation finance in the negotiations, see my accompanying paper in this issue.

<sup>3</sup> The late A. N. Mitra, who headed the National Physical Laboratory, organised and conducted these crucial experiments and provided the accurate estimates.

<sup>4</sup> FAO (2012).

and securing livelihoods can hardly be overstated. The population dependent on agriculture accounted for approximately 2.6 billion people in 2010, or approximately 32 per cent of the global population.<sup>5</sup>

What about agriculture in climate negotiations in recent years? Agriculture has not received the attention in the negotiations that is warranted by its importance to the world and its vulnerability to climate change. In a note written before COP 21, the Consultative Group on International Agricultural Research (CGIAR), through its Research Programme on Climate Change, Agriculture, and Food Security (CCAFS), argued that it “would welcome the strengthening of aspirations for food security through action on mitigation and adaptation within a new agreement.”<sup>6</sup> However, in the event, the sole reference to food security is in the preamble to the Agreement, in which it recognises “the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change.” The CCAFS note also expressed the hope that the 2015 agreement should reinforce the references to food production in its text, again a hope that was not realised.

However sparse the references to agriculture in the Agreement, it is possible that agriculture will be one of the potential recipients of the Green Climate Fund.<sup>7</sup> In the Intended Nationally Determined Contributions (INDCs) submitted by countries before the Paris Conference, agriculture was discussed extensively.<sup>8</sup> More than 80 countries’ contributions carried some reference to agriculture, with references to both mitigation and to adaptation. In noting the aggregate effect of the INDCs, the UNFCCC report does not present country-wise data from developed and developing countries on the inclusion of agriculture in their INDCs. However the CCAFS has produced an information note that provides these data.<sup>9</sup>

India’s INDC discusses agriculture exclusively in the context of adaptation, and notes particularly that India does not intend to offer sector wise targets, “including in agriculture.”<sup>10</sup> By contrast, China’s INDC offers detailed discussions on agriculture with respect to mitigation and adaptation, as well as to sustainability.<sup>11</sup> For instance, it notes in the section on “Building energy efficient and low-carbon energy system,” that China will make efforts to achieve zero growth in fertilizer and pesticide use by 2020, while “promoting low-carbon development in agriculture.” China also notes that it will control methane emissions from rice fields and nitrous oxide emissions from farmland (no quantitative target given) and will work to construct a recyclable agricultural system.

<sup>5</sup> From Table 1 in FAO (2012).

<sup>6</sup> See Hedger *et al.* (2015).

<sup>7</sup> Interview with Anand Patwardhan at COP 21.

<sup>8</sup> UNFCCC (2015).

<sup>9</sup> Richards *et al.* (2015).

<sup>10</sup> India’s Intended Nationally Determined Contribution (INDC) is available at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf>

<sup>11</sup> China’s Intended Nationally Determined Contribution (INDC) is available at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/China/1/China's%20INDC%20-%20on%2030%20June%202015.pdf>

There are other interesting cases among the smaller countries. Ethiopia has promised to ensure that its annual emissions in 2030 would be only 0.15 GtC or lower.<sup>12</sup> As part of the reduction of 0.255 GtC of carbon dioxide from Business-As-Usual (BAU) levels, a full 51 per cent is to be delivered by reductions in the agriculture sector alone. The reduction of emissions from BAU levels in forestry is to contribute 37 per cent. Thus, for Ethiopia, agriculture is a site of both mitigation and adaptation.<sup>13</sup> By contrast, Vietnam does not propose any major or quantifiable target from mitigation in agriculture, though it does refer to reducing emissions through sustainable agriculture without giving any specific targets.

In another track in the negotiations, sector-specific actions for mitigation, inherited from negotiations in the pre-Durban phase, were considered. The idea of undertaking mitigation across the world in a number of countries in specific sectors of industry is an idea due to the developed countries. A part of this idea has been taken up in the negotiations, and these sector-specific actions continue to be considered in the Subsidiary Body for Scientific and Technological Advice (SBSTA). This negotiations track deals explicitly with agriculture. For some years the discussion in SBSTA on agriculture focused on both mitigation and adaptation. After years of slow progress, adaptation appeared, by 2014, to have come to dominate the discussions on agriculture. Discussions focusing on specific themes have begun subsequently. These themes include the following:

1. The development of early warning systems and contingency plans in relation to extreme weather events and their effects, including desertification, drought, floods, landslides, storm surges, soil erosion, and saline water intrusion.
2. Assessments of risk to and the vulnerability of agricultural systems to different climate change scenarios at the regional, national, and local levels (including risks and vulnerability involving pests and diseases).
3. The identification of adaptation measures, taking into account the diversity of agricultural systems, indigenous knowledge systems, and differences in scale, as well as possible co-benefits from shared experiences in research and development and on-the-ground activities. These measures were to take socio-economic, environmental, and gender dimensions into account as well.
4. The identification and assessment of agricultural practices and technologies to enhance productivity, food security, and resilience, while taking into consideration differences in agro-ecological zones and farming systems, such as different grassland and cropland practices and systems.

<sup>12</sup> Ethiopia's Intended Nationally Determined Contribution (INDC) is available at [http://www4.unfccc.int/submissions/INDC/Published per cent20Documents/Ethiopia/1/INDC-Ethiopia-100615.pdf](http://www4.unfccc.int/submissions/INDC/Published%20Documents/Ethiopia/1/INDC-Ethiopia-100615.pdf)

<sup>13</sup> The promised reduction in emission levels below BAU projections suggests that Ethiopia has no plans for any major effort at industrialisation until 2030. Ethiopia's strategy for development is known as the Climate Resilient Green Economy (CRGE), which is being carried out with substantial aid and assistance, especially from the Department for International Development (DFID) of the United Kingdom.

These themes are being considered in special workshops and the discussions are proposed to be taken up by June 2016 in SBSTA. Much of this technical effort is eventually aimed at providing guidance with respect to the main issues relating to agriculture and climate change, which, in turn, is expected to feed into other aspects of the work of UNFCCC. Given the intricate procedural tangles that affect negotiations, and the inability of official negotiations to react quickly to scientific discussion, much of the work on climate change and agriculture is driven by players such as multilateral organisations and international NGOs.

Thus, while the Paris Agreement does not directly or explicitly deal with agriculture, it is of critical significance to agriculture, and its influence will be felt by the agricultural sector in different ways. The scientific evidence on the impact of climate change and global warming on agriculture and allied sectors is now definitive. The general neglect of agriculture in the climate negotiations despite this wealth of evidence is a reflection of the larger problems related to agriculture at the national and global scales. We are all dependent on agriculture for food security, and vast sections of the world are dependent on agriculture for their incomes and livelihoods. The world owes the poor a guarantee that climate change will not further damage their well-being. The absence of such a guarantee gives ground for concern that the resolution of the problem of global warming will be on terms that are inequitable and will place undue burdens on the poorest sections of the world's population.

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