

Key Considerations on Agriculture and the UNFCCC

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The agricultural sector occupies a unique space in relation to climate change. Agriculture is key to food security and livelihoods globally, providing food, feed, and fibre, as well as income, for millions directly through production and indirectly throughout the value chain. The sector is complex and diversified, combining the production of a myriad of crops through varied farming systems – from small-scale production of mixed crops for local consumption, to large-scale production of staple crops such as rice, wheat, maize and soybeans, but also including livestock production, agroforestry, biofuels, and cash crops. A range of farming systems usually coexists in any given country, meeting diverse needs and interacting with other sectors of the economy in different ways. This makes agriculture integral to most economies, but also difficult to characterise on the global level.

Agriculture faces significant challenges in the next 30 years. Growing demand for food will increase pressure on natural resources. At the same time, climate change will increasingly impact on agriculture, requiring more adaptation efforts to build resilience to protect farmers' livelihoods and contribute to a more food secure and prosperous world. It is already, and will be increasingly, affected by climate change. Impacts of climate change on crop yields are already evident across several regions of the world, in particular with negative impacts on net global yields of maize and wheat (IPCC, 2014).

Over the long term, increases in climate variability, rising temperatures, changes in water availability, and other features of a changing climate will affect farmers' ability to produce food.

With 75% of the world's poor living in rural areas, agriculture can act as an important driver for poverty reduction in many countries (World Bank, 2008; IPCC, 2014). Climate change will hit the most vulnerable first and hardest. Poor rural populations are among those most vulnerable as their livelihoods can be strongly affected by the changes brought on by climate change. Recent projections suggest that the number of people at risk of hunger will increase by 10-20% by 2050 as a result of climate change (UK Meteorological Office, 2012). More specifically, the International Food Policy Research Institute (IFPRI) estimates that, by 2050, the decline in calorie availability could increase child malnutrition by 20%, eliminating many of the improvements that have been made in child nutrition in recent years (Nelson et al, 2009).

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At the same time, agriculture itself is responsible for about 10-12% of global greenhouse gas (GHG) emissions (IPCC, 2014). This does not take into account emissions from the global food chain. Taking these into account agriculture and the food system contribute about 19-29% of global GHG emissions.

While the effects of climate change may be felt first and most acutely in developing countries, in particular in those already facing environmental and food security challenges, it will ultimately affect countries across all regions – as such, it is a global issue in scope.

Agriculture in the UNFCCC

The United Nations Framework Convention on Climate Change (UNFCCC) is the principal instrument for action on climate change at the international level. It has focused on a growing number of issues over time, but agriculture has not been successfully integrated into the negotiations to date.

Agriculture was not part of the issues originally negotiated under the UNFCCC Ad Hoc Working Group for the Kyoto Protocol (AWG-KP) or the Ad Hoc Working Group on Long-term Cooperative Action (AW-LCA). However, there have been discussions about its role in climate change mitigation and adaptation since 2005, with a view to exploring how agriculture may be integrated into the negotiations.

These discussions have occurred on the basis that the UNFCCC text (article 4) includes agriculture, calling for “cooperation in preparing for adaptation to the impacts of climate change in agriculture, as well for promotion and cooperation in the development and transfer of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases in agriculture.” It also references the impact of climate change on food security (article 2).

Since 2005, there have been a number of activities on the subject of agriculture:

- In 2005, several workshops were held under the Subsidiary Body for Scientific and Technological Advice (SBSTA), and agriculture-related topics were discussed, including ‘Agriculture, forestry and rural development’ (May 2006) and ‘Non-CO2 emissions, including methane recovery and utilisation’ (December 2007).
- In 2007, the IPCC’s 4th assessment report analysed the potential future effects of climate change on agriculture and identified current knowledge gaps to be addressed
- In 2008, at the request of AWG-LCA, the UNFCCC Secretariat prepared a technical paper on the challenges and opportunities for mitigation in the agricultural sector, which was discussed in March 2008 at an in-session workshop, along with submissions from Parties.
- In September 2008, a dedicated drafting group for agriculture was established to discuss a draft text on ‘cooperative sectoral approaches and sector-specific actions in agriculture’. This draft text proposed establishing a SBSTA work programme on agriculture.
- From 2008 to 2010, this proposal was discussed in working groups under LCA but without agreement.

- In 2011, in the final text from COP17, Parties and observers were invited to submit their views on agriculture to SBSTA, with the aim of exchanging views to enable the COP to adopt a decision at its 18th session the following year.
- By May 2012, SBSTA had received 20 submissions from parties. An exchange of views on issues relating to agriculture was initiated, and continued in during the December 2012 session, when Parties once again agreed to continue discussions at the SBSTA session in June the following year.
- In 2013, Parties discussed issues related to agriculture at the SBSTA session in June. A workshop was then organised during COP19 in November 2013. However, aside from the workshop, Parties did not discuss agriculture during COP19. SBSTA concluded that the Secretariat should prepare a workshop report to be discussed during the SBSTA meeting in June 2014, together with submissions from Parties and observers.
- In 2014, the IPCC 5th assessment report Working Group II published an update of the potential future effects of climate change on agriculture, identifying knowledge gaps and increased urgency for adaptation in the sector.
- In 2014 SBSTA agreed to conduct four technical workshops on agriculture:
 - a. Development of early warning systems and contingency plans in relation to extreme weather events and its effects such as desertification, drought, floods, landslides, storm surge, soil erosion, and saline water intrusion;
 - b. Assessment of risk and vulnerability of agricultural systems to different climate change scenarios at regional, national and local levels, including but not limited to pests and diseases;
 - c. Identification of adaptation measures, taking into account the diversity of the agricultural systems, indigenous knowledge systems and the differences in scale as well as possible co-benefits and sharing experiences in research and development and on the ground activities, including socioeconomic, environmental and gender aspects;
 - d. Identification and assessment of agricultural practices and technologies to enhance productivity in a sustainable manner, food security and resilience, considering the differences in agro-ecological zones and farming systems, such as different grassland and cropland practices and systems
- The first two of these were held in Bonn in June 2015. The second two workshops will be held in Bonn in June 2016.

Despite slow progress on agriculture under UNFCCC negotiations, many countries are already reporting emissions and removals from the agriculture sector under either land use, land use change and forestry (LULUCF) or REDD, and agriculture is often included in country's NAMAs and NAPAs. The experience in developing accounting systems under LULUCF, as well as in creating supporting and understanding for REDD, holds potential lessons for agriculture. Actions on agriculture are also being include in countries Intended Nationally **Determined Contributions** (INDCs) ahead of the Paris COP. INDCs are statements on what countries plan in reducing GHG emissions

Main challenges in agriculture discussions

Several sets of issues have emerged as 'stumbling blocks' in the discussion on agriculture, under both the LCA and SBSTA.

Structure and framing:

- *Validity of 'sectoral' approaches:* When discussions on agriculture under AWG-LCA began in 2009, agriculture was initially discussed under sectoral approaches with bunker fuels. There is no link between the two sectors in terms of substantial technical matters for the negotiations, but this structure caused wider debates about the validity of a sectoral approach, and the rationale for discussing some sectors and not others.
- *Positioning in mitigation chapter:* While the LCA as a whole included adaptation as well as other issues, such as financing and technology transfer, 'sectors', including agriculture, were discussed under the mitigation chapter. This raised concerns among parties who perceived adaptation as a priority for agriculture.
- *Overall negotiating issues:* Agriculture was entangled in broader questions related to the framework of the LCA, as well as issues such as trade, national circumstances, finance, and Common but Differentiated Responsibilities (CBDR), which were not specific to agriculture but that parties felt were relevant. These issues have continued to be raised in the context of SBSTA.

Complexity and sensitivity of the sector:

- *Gaps in scientific and technical knowledge:* Knowledge regarding the impact of climate change, and the impact of different practices and policies on agriculture, is perhaps not as complete and thorough than in other sectors. While this underpins the value of a SBSTA work programme, it also creates uncertainty about what type of actions or priorities should be envisaged.
- *Technical challenge of Monitoring Reporting and Verification (MRV):* Some negotiators are concerned that technical challenges (e.g. monitoring carbon sequestration by millions of farmers and pastoralists) are too great to develop agriculture agreements on adaptation and mitigation.
- *Importance for food security and economic development:* The importance of the agriculture sector for all countries' food security and economies contributes to difficulties in negotiations as Parties are concerned about possible negative impacts of action for example potential restrictions on conversion of land to agricultural use
- *Complexity of the sector:* Additionally, the sector is complex and encompasses a broad range of activities, so it has proven difficult to understand where to start with the many possible issues that could be valuable topics of discussion. As research on those issues progresses outside of the UNFCCC, discussions may become easier.
- *Trade:* A concern from some agricultural producers is that any mitigation measures for agriculture could become nontariff trade barriers and restrict trade from 'high-emission agriculture'.

Adaptation and mitigation:

- *Balance:* There have been ongoing discussions about how to balance mitigation and adaptation priorities. The history of climate change negotiations has often placed emphasis on mitigation. Yet, as the scope of activities considered and the number of participating Parties has increased, the role of adaptation has come to the forefront
- *Interpretation of 'mitigation':* Mitigation in the agriculture sector can be understood in terms of absolute reduction in direct agricultural emissions, or reductions in emission intensity – especially important where increases in productivity are needed that may

require trade-offs with increase emissions with higher yields. Given agriculture's link to livelihoods and food security, and with growing demand for food and other agricultural goods driven by population growth and rising incomes, there are differences in interpretation.

Issues for consideration in the UNFCCC

There are a number of issues related to agriculture that would benefit from being discussed in the UNFCCC and which cannot be addressed similarly elsewhere. Many may not be addressed by 2015, but awareness of these topics could help inform what is needed in 2015 to set the scene for future discussions on agriculture.

Priorities, synergies and trade-offs in mitigation and adaptation

Discussions in UNFCCC need to appreciate priorities of adaptation, in particular short-term priorities as temperatures are rising. It should also consider a spectrum of mitigation policies that not only reduce the risk of dangerous climate change but also protect the sector in the long term. Consideration for policies that serve mitigation and adaptation together could include:

- Knowledge transfer policies: extension and agricultural support services that increase the efficiency of agriculture, increase uptake of good practices and improve resilience of farmers.
- Economic policies: market-friction instruments to shift demand towards mitigation, impacting supply and demand.
- Supply and demand side measures: A climate agreement that incorporates agriculture could help to catalyse a broader approach to assuring food security through market based measures, insurance and public-private partnerships. Finance: financial incentives and financial tools such as risk insurance, improved credit and other measures to mitigate risk of uptake of new practices and increase resilience to climate variability and shocks.
- Regulations: Regulations could help address 'hotspots' in emissions in the food chain and in sub-sectors, for instance, emission caps on agricultural sub-sectors that are high-intensity or high-level emitters. Regulations can also help transition towards more sustainable practices, in particular those with co-benefits.
- Institutionalisation: Motivating institutionalisation (government, non-government and commercial) of best practices (including knowledge transfer), expertise, capacity and resources.
- Communication: Improved communication at and between the global and local level to rally support for planning and enable the early identification of food insecurity hotspots resulting from climate change.

Relationship to other sectors and other mechanisms under UNFCCC

As negotiations evolve and progress is made on other issues, consideration of how agriculture may be better aligned or integrated with other sectors, such as forestry and LULUCF are would be important. The IPCC 2006 guidelines merged agriculture and LULUCF into one sector referred to as AFOLU, already signalling the relevance of this issue. In addition, linkages to other mechanisms that are part of UNFCCC, such as the Green Climate Fund (GCF) or the Technology Mechanism, are also relevant to enable progress.

Measurement and indicators

The ability to measure and report on actions is central to mitigation activities, but these issues could be of similar relevance for adaptation. Assessing best methodologies for measuring emissions from agriculture, measuring change over time, and including lessons from LULUCF would be useful to enable a comparable basis for understanding the impact of mitigation activities in agriculture globally over the long term. In addition, metrics for measuring adaptation impacts are also valuable in order to inform policy making and national strategies, but are currently less developed.

Coherence with other international processes

As illustrated earlier, there are a number of other international processes, whether directly related to climate change or more broadly to sustainable development, where actions are being undertaken, knowledge created and exchanged, and commitments made. How coherence and synergies can be achieved with such processes is important to ensuring relevance of the UNFCCC.

Flexibility and comparability

Changes in climate conditions, but also in demand drivers and country circumstances, require consideration as to how any agreement or actions under the Convention can offer the level of flexibility necessary to enable as many countries as possible to participate, while also ensuring that contributions can evolve over time to reflect advances in knowledge, technologies, and changes in circumstances. This is useful to ensure that participation in agriculture-related actions is not perceived as posing any risks to national food security. Discussions around a format or common 'template' for stating activities related to national contributions could also be useful to help enhance information sharing and comparability across the range of national contributions.

Timeframe

The issue of timeframe for action is an important topic that cannot be discussed and tackled in a similar way in other venues or fora, because it benefits from the participation of all countries and is closely tied to Parties' overall plans. Understanding where priorities on agriculture lie up to 2025 and then post 2025 would help then inform activities at the national level, as well as the activities of programmes and initiatives outside of UNFCCC.

Definitions

A definition of 'agriculture' is likely to be an important topic before agriculture can be incorporated into an agreement. This is a discussion that needs to take place within UNFCCC as the participation of all countries, while perhaps making the discussion more complex, is needed to ensure its legitimacy. Definitions of agriculture can range from a globally connected system involving transport, industry, land use and technology sectors through to a ring-fenced focus on land use and productivity. Some definitions extend into aquaculture, fisheries and forestry – themselves complex sectors with ecological cycles that influence climate change. The definition (or framing itself) could determine to a certain extent how agriculture overlaps with LULUCF and REDD.

Related and cross-cutting issues

Agriculture has an impact on a number of issues related to sustainable development, including gender, poverty reduction, and human rights. Many of these cross-cutting issues are being addressed through the other initiatives and programmes outside of UNFCCC but, as they deeply affect practice and implementation, discussions of linkages and cross-cutting issues could be useful in the UNFCCC too. For example, there is extensive literature documenting the importance of gender consideration in agriculture, including on the role of women in implementing mitigation and adaptation measures.² Gender is also an important differentiating line in many contexts in terms of how the impacts of climate change will be felt by local populations, and gender analysis can help ensure that programmes are delivered with success. In the UNFCCC, gender has started to be more visibly discussed, with efforts being made to apply gender mainstreaming within the Convention, as well as to engage parties in substantive discussion on the gender dimension of climate change (UNFCCC, 2013).

Conclusions

Although discussions on agriculture in the UNFCCC have been slow, there has been progress on mainstreaming climate change into agriculture policies and programmes, and in other international initiatives that stimulate action in the agricultural sector.³ These include the Global Research Alliance on Agricultural Greenhouse Gases, the Climate and Clean Air Coalition's Agriculture Initiative and the Global Alliance for Climate Smart Agriculture, among others. While all these initiatives are very important, their nature is fundamentally different from that of the UNFCCC. In general, those initiatives are focused on specific issues or topics, helping to promote knowledge creation and sharing, diffusion and uptake of 'climate-smart' practices, and increases in the flow of funding towards agriculture mitigation and adaptation.

The UNFCCC occupies a distinct space that differentiates it from other organisations or initiatives on climate change:

- It is the only venue with such a large and representative membership, where discussions on climate change benefit from a full spectrum of views and experience, which gives legitimacy.
- As the recognised UN body and framework on climate change, it serves to set global priorities in a way that other initiatives may not.
- As a body focused on more than just agriculture, it offers the possibility to fully assess cross-sectoral impacts and other linkages beyond agriculture itself to improve coherence in policy making.
- The funding capacity and technology transfer element of UNFCCC could be important for agriculture.

² See, for instance: UNFPA. (2009) *Climate Change Connections: A Resource Kit on Climate, Population and Gender*. New York; IFAD. (2014) *The Gender Advantage: Women on the front line of climate change*. Rome; UNDP. (2013) *Overview of Linkages between Gender and Climate Change*. New York; FAO & CCAFS. (2013) *Gender and Climate Change Research in Agriculture and Food Security for Development*. Rome; FAO. (2011) *State of Food Security Report*. Rome; FAO, IFAD & WFP. (2011) *Gender dimensions of agricultural and rural employment: Differentiated pathways out of poverty*. Rome; World Bank. (2012) *World Development Report: Gender Equality and Development*. Washington, D.C.

³ See "Iniciativas internacionales de acción colectiva para enfrentar el cambio climático en el sector agrícola" http://infoagro.net/archivos_Infoagro/Regatta/biblioteca/ES_NotaactualizadaInici.pdf

Action to increase agriculture's resilience to climate change requires action at many levels (local, national, regional, international) and the involvement of a wide range of actors, from governments, research organisations, and UN agencies to farmer organisations and consumers. However, given the UNFCCC's unique position and role, agriculture needs to be addressed in that forum as well.

Furthermore, given the significance of agriculture's contribution to global emissions and its potential for adaptation, it is likely that an agreement seeking to address mitigation and adaptation would need to include the sector to be successful in effecting change. Finally, agriculture is, in many ways, already 'included', such as through LULUCF, but mostly negatively as a driver of change, so there would be benefits from greater and broader inclusion in UNFCCC to help inform decisions on other issues, such as forestry.

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