

## **Agriculture in the Context of Climate Change: Conversation in the UNFCCC**

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Agriculture is inherently relevant to the goals of the United Nations Framework Convention on Climate Change (UNFCCC) as well as being a crucial consideration for individual parties on a national level. Agriculture is responsible for as much as a third of all global emissions and is highly vulnerable to the consequences of climate change.<sup>1</sup> Civilization was created from the development of agriculture, and history has shown that a productive agricultural system is elemental in a functioning society and economy. Yet, agriculture is largely absent from negotiations largely because of gridlock in conversation between developing and developed nations. Developing nations are typically focused on placing agriculture in almost exclusively an adaptation context. Developed nations agree that adaptation should be central, however, they seek to place an equal emphasis on agriculture's mitigation potential. This is because the role of agriculture within developing and developed nations' societies, economies, and cultures is fundamentally different. For example, in most developing countries and least developed countries a large portion of their citizens' livelihoods is connected to agriculture, whereas in developed countries it is a relatively small portion of citizens' livelihoods. These differences create a separation of perspectives between

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<sup>1</sup> Anna, Lappe. *Diet for a Hot Planet: The Climate Crisis at the End of Your Fork and What You Can Do about It*. New York: Bloomsbury USA, 2010. Print

the two groups that fuel disagreements on how agriculture should be incorporated into the UNFCCC. While it has been included in some past UNFCCC outcomes, at the most recent Conference of the Parties (COP20), in Lima, Peru, agriculture was not included in any specific agenda item, and had a relatively limited role in overall conversations. These conflicting positions between developing and developed nations have historically characterized the way in which agriculture has, and has not been included within the negotiations.

Issues that compliment and are inherently included in the disagreement between prioritizing adaptation or mitigation are poverty reduction, increasing agricultural productivity, and food security. Another key component is the discussion of means of implementation or, ways in which to actually implement the outcomes of an agreement should the UNFCCC have one. This includes the creation of a knowledge platform to better understand the various problems and solutions attached to agriculture. This has led to a heated debate on what should be the main focus of a work program under the Subsidiary Body for Scientific and Technological Advice (SBSTA). Financing is another means of implementation that is a source of friction between the two sides. A commonly argued potential compromise to the dissent between developing and developed parties is the idea of co-benefits in agricultural practices and policies. This includes the increasingly common phrase, “Climate Smart Agriculture,” that theoretically promotes an increase in productivity, reduced vulnerability and increased mitigation capability. The objective of this paper is to further develop both sides of this tension between developing and developed nations and how it has impacted the negotiations on agriculture in the

UNFCCC and then to explore ideas that may lead to a compromise between the dissenting parties.

## **Methods**

The main methods of research involved literary and online research, followed by first hand investigation at COP20 in Lima, Peru. The research conducted prior to COP20 was focused on obtaining necessary background information on agriculture. This included the history of when agriculture was involved within UNFCCC negotiations and discussions, what are the general perspectives and positions of nations, how agriculture contributes to climate change and ways in which it is vulnerable to climate change. This information was gained from sources that included the UNFCCC website that supplied party submissions, COP outcomes and summaries. These sources also had some information on nations' assessment on what can be done to mitigate agricultural emissions and how vulnerable their agricultural systems are to climate change. Other sources included action statements from NGOs, and issue briefs from organizations specific to climate change and agriculture, such as the UN Food and Agriculture Organization (FAO), International Fund for Agricultural Development (IFAD), and CGIAR, an agricultural research organization. These were supplemented and expanded upon through scholarly articles specific to the role agriculture is, or should be, playing in international negotiations. Research conducted while in Lima was focused on obtaining a deeper understanding of party perspectives, how agriculture was directly involved in the discussions and negotiations, and expectations for how

agriculture will be included in the future of the UNFCCC. The majority of the information attained during these 10 days was derived from interviewing participants attending the conference, and attending relevant the side events.

### **History of Agriculture in the UNFCCC**

Since the creation of the UNFCCC agriculture has been included in the discussion. The founding text of the convention references agriculture in both Article Four, the statement of its ultimate objective, and Article Two, the commitments of the parties. Article Two states that the overarching goal of the UNFCCC is to prevent “dangerous climate change” through international cooperation on reducing greenhouse gasses, “to ensure that food production is not threatened and to enable economic development to precede in a sustainable manner.”<sup>2</sup> This statement implies that food security is a founding element of the convention and is a major reason why the existence of the UNFCCC is relevant. This has substantial meaning for the initial framing of a discussion on agriculture in the convention. It provides evidence that there was a base level of agreement on the importance of agriculture within the UNFCCC.

Article Four begins with the concept that there are, “common but differentiated responsibilities and respective capabilities” (CBDR) between developing and developed parties as a prelude to the commitments parties should

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<sup>2</sup> “Full Text of the Convention.”

take.<sup>3</sup> It alludes to the point that developed nations are responsible for creating climate change through their historical emissions, and thus should make the largest efforts to reduce and sequester emissions. It also implies that developed nations have the resources, technology, and capital to expend on mitigation efforts. Additionally, this statement notes that it is by and large the responsibility of developed nations to help developing nations in mitigation and adaptation efforts. This mindset has largely defined the attitude developing nations have historically held within the UNFCCC, and has had significant relevance in essentially all major UNFCCC discussions and agreements to date. This concept provides important context of developing nation's perspectives and positions on agriculture.

Paragraph 1 C of the Article Four specifically mentions agriculture in the context of mitigation. It states that parties 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 not controlled by the Montreal Protocol in all relevant sectors, including... agriculture."<sup>4</sup> This statement within the founding text specifically gives weight and establishes a goal of mitigating agricultural emissions and potentially sequestering carbon through agricultural processes from the onset. It also references the importance of the means of implementation to create a knowledge platform to better inform parties of best technologies and practices that will help all

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<sup>3</sup> "Full Text of the Convention." *The United Nations Framework Convention on Climate Change*. 1 May 1992. Web. 12 Nov. 2014.

<sup>4</sup> "Full Text of the Convention."

nations implement agricultural mitigation strategies. This has since been reiterated and is a crucial component of the conversation.

Later Article Four establishes the idea of adaptation as another necessary element in the conversation. Paragraph 1 E states that parties shall, “Cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for ... agriculture.”<sup>5</sup>. The term “cooperate” within this statement is important to developing nations that expect means of implementation (such as finance) to be supported by developed nations. It is also a reference to the previously stated common but differentiated responsibilities of nations. Clearly, adaptation is still a top priority, particularly for developing nations

The founding document is critical to understanding the way agriculture has been discussed and negotiated since. It implies that nations agreed that action should taken to protect agricultural systems, which as stated in Article Four meant both mitigation and adaptation. Yet, it also set up the principle that there are different levels of accountability and expectations among the nations apart of the UNFCCC that are differentiated by level of development. This can explain both sides of the debate. Developed nations view both mitigation and adaptation as the central goal of the convention because it is clear they are expected to carry out both goals. This attitude translates in the agricultural conversation through insisting that both mitigation and adaptation be equally prioritized in any negotiated outcome. Developing nations view it as the duty of developed nations to mitigate climate change and to assist developing nations with adaptation, and mitigation when it

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<sup>5</sup>“Full Text of the Convention.”

does not infringe on development goals. This attitude translates to the agricultural conversation as prioritizing adaptation and being wary that any attempts to include mitigation would impair food security. This difference in attitudes has defined the conversation since they are not easily reconciled.

Still, agriculture has also been present within several official outcomes of COPs, albeit in nuanced ways. One example of this is the Kyoto Protocol. Article 3.4 states that Annex I countries should provide information to the SBSTA about its “level of carbon stock” to later, “decide upon modalities, rules and guidelines as to how, and which, additional human-induced activities related to changes in greenhouse gas emissions by sources and removals by sinks in the agricultural soils.”<sup>6</sup> This is one of the first times the SBSTA was requested to do work on agriculture and it also references it as a means to achieve emissions reductions. The use of SBSTA has largely been supported by all nations, however, developing nation’s requests for a SBSTA work program has been for adaptation almost exclusively, whereas developed nations want a focus on both adaptation and mitigation, and the connections between them. This later creates a larger argument of what a SBSTA work program would focus on that prevented action within SBSTA for years.

The Kyoto Protocol also includes agriculture, more specifically agricultural soils, and “field burning of agricultural residues” under sector and source categories

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<sup>6</sup> Kyoto Protocol to the United Nations Framework Convention on Climate Change." *The United Nations Framework Convention on Climate Change*. 1 Dec. 1997. Web. 12 Nov. 2014

of which Annex A parties should reduce greenhouse gas emissions.<sup>7</sup> Article Two of the Kyoto Protocol states that Annex I parties shall, “[Promote] sustainable forms of agriculture in light of climate change considerations.”<sup>8</sup> The idea of “sustainable agriculture” has since taken hold in popular awareness, however, is still rarely defined specifically. The Kyoto Protocol had several mentions of agriculture within its text and advocated for a more climate thoughtful approach, yet there was little beyond that. While, this was theoretically a binding agreement among developed nations, this aspect of the protocol was a suggestion on areas to reduce emissions that parties paid little attention to in their emissions reductions plans afterwards.<sup>9</sup> However, this advocacy does imply the inclusion of agriculture in the conversation and negotiation that created the protocol.

Agriculture was also included in the Bali Road Map from COP13, which created Nationally Appropriate Mitigation Actions (NAMAs) that then informed the Copenhagen Accord (the outcome of COP15). These are voluntary commitments made by nations to reduce greenhouse gas emissions based on their own targets, policies and actions. Its creation demonstrated one of the first times developing countries took a stance in making international mitigation commitments, although they were not legally binding. Of the non-annex I parties that published NAMAs, over fifty-five percent included agriculture for their 2020 mitigation goals.<sup>10</sup> This indicates that many developing nations do see potential in their ability to reduce

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<sup>7</sup> "Kyoto Protocol to the UNFCCC"

<sup>8</sup> "Kyoto Protocol to the UNFCCC."

<sup>9</sup> "Towards a Work Program on Agriculture: A submission to the AWG-LCA by the food and agriculture organization of the United Nations" *UNFCCC*. 2010. Web. 21 Sept 2014. <http://unfccc.int/resource/docs/2010/smsn/igo/081.pdf>

<sup>10</sup> "Towards a Work Program on Agriculture"



agricultural emissions, as previously seen within the founding text of the UNFCCC. However, these are nationally created goals that were specifically created to be within what they thought were proper and feasible given their capabilities. While an impactful outcome, NAMAs do not have the constraints of an international agreement that applies to all nations within the UNFCCC. This means that developing nations have more control to ensure food security is not negatively impacted by the priorities of other nations.

Prior to NAMAs was the creation of National Adaptation Programs of Action (NAPAs) that was created by the UNFCCC at COP7 to identify the most urgent adaptation needs of Least Developed Countries (LDC). Of all the NAPAs submitted to the secretariat, eighty percent included projects in the agricultural sector.<sup>11</sup> Clearly, developing nations and especially LDCs are very concerned about agricultural vulnerability to climate change, and are eager to include it within the UNFCCC. These differences in percentages are also indicative that developing nations more broadly prioritize adaptation to agriculture.

Agriculture has a varied foundation of key players involved in conversation and negotiations. It includes farmers, major food corporations and companies, civil society and the consumers. At COP20 there was an emphasis on needing to better incorporate and empower smallholder farmers, whom are largely in developing countries.<sup>12</sup> There are also several international non-governmental organizations and research organizations that focus on a full range of aspects surrounding climate

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<sup>11</sup> "Submissions from Parties: Views on Issues Relating to Agriculture." *UNFCCC Subsidiary Body for Scientific and Technological Advice*. 27 March 2012. Web. 21 Sept 2014. <http://unfccc.int/resource/docs/2012/sbsta/eng/misc06.pdf>

<sup>12</sup> Laganda, Gernot

change and agriculture. Perhaps the most important research organization engaging in the conversation is the CGIAR that created a specific project named Climate Change, Agriculture and Food Security (CCAFS). These groups and organizations attempt to influence and better inform party decisions at COPs.

### **Problem Context**

Agriculture is inherently tied to a relatively stable climate, something that humans are rapidly destabilizing. Food production is extremely vulnerable to the consequences of climate change, the effects of which are already being seen today.<sup>13</sup> Vulnerability is often disproportionately placed on subsistence farmers in developing countries that are the least capable of adaptation and mitigation of damages due to a lack of access to helpful technology and capital. However, there will most likely be severe consequences for both large and small-scale agriculture, regardless of level of development.<sup>14</sup> Thus, a need to adapt agriculture to the changing climate is clear and is why adaptation is a focus of international discourse.

Experts in projecting future impacts and manifestations of climate change have stated that there will most likely be severe consequences on agriculture in the coming years. Climate change will likely increase the number and severity of droughts, floods and other extreme weather events that negatively impact agricultural productivity and food security. According to the World Development Report, created by the World Bank, "Climate change will depress agricultural yields

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<sup>13</sup> Godfray, H. C. J., J. Pretty, S. M. Thomas, E. J. Warham, and J. R. Beddington. "Linking Policy on Climate and Food." *Science* 331.6020 (2011): 1013-014. Web. 12 Nov. 2014.

<sup>14</sup> Godfray, H. C. J.,

in most countries by 2050 given current agricultural practices and crop varieties,”<sup>15</sup> This clearly varies from region to region, relative to the adaptive capabilities of the nation at risk, however, many will be between a ten and thirty percent decrease in overall yields.<sup>16</sup> The most recent report by the Intergovernmental Panel on Climate Change (IPCC) projected that overall there will be a strong and steady decrease in crop yields, worsening as the century progresses, with only some specific areas seeing crop yield gains.<sup>17</sup> It projected that, “All aspects of food security are potentially affected by climate change, including food access, utilization, and price stability (*high confidence*).”<sup>18</sup> These are direct threats to worldwide food security.

Due to this major threat to food security there is a general fear among developing nations that if the conversation on agriculture is not focused on adaptation, mitigation will overshadow all other needs. Still, mitigation remains an important component to the conversation. Agriculture is responsible for a large segment of global emissions. Direct emissions from agriculture accounts for roughly fifteen percent of total global emissions, that is more than global transportation emissions.<sup>19</sup> Direct and indirect emissions from agriculture combined are responsible for almost thirty percent of total global emissions.<sup>20</sup> While clearly the scale of emissions is significant, the unique aspect of direct agricultural emissions is

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<sup>15</sup> "World Development Report 2010: Development and Climate Change." The World Bank, 1 Jan. 2010. Web. 12 Nov. 2014.

<sup>16</sup> "World Development Report"

<sup>17</sup> "Climate Change 2014: Impacts, Adaptation and Vulnerability: A Summary for Policymakers." *Working Group II: Fifth Assessment Report of the IPCC (2014)*: n. pag. Web.

<sup>18</sup> "Climate Change 2014"

<sup>19</sup> UNEP 2013. *The Emissions Gap Report 2013*. United Nations Environment Programme (UNEP), Nairobi. Print.

<sup>20</sup> UNEP 2013.

that the problem is not CO<sub>2</sub> emissions, but other greenhouse gasses that are much more effective at trapping heat. Breaking the fifteen percent down: thirty-eight percent is from nitrous oxide emissions from soil degradation, thirty-two percent of it is methane emissions from “enteric fermentation in ruminant livestock,” twelve percent is biomass burning, eleven percent is rice production and seven percent is manure management.<sup>21</sup> Direct emissions are responsible for sixty percent of all nitrous oxide emissions and fifty percent of all methane emissions worldwide.<sup>22</sup>

A simple way to understand the significance of these numbers is through knowing the “global warming potential” (GWP) of these greenhouse gases, or how efficiently they are able to trap heat in the atmosphere based on a hundred year timescale. Carbon dioxide has a GWP of one, methane’s is 23, and nitrous oxide’ 296.<sup>23</sup> A highly respected climate scientist, Mike MacCracken, stressed the importance of these short lived greenhouse gasses saying that the effect of current CO<sub>2</sub> emissions will not present itself until 2050 and that only about half of current warming is actually a consequence of CO<sub>2</sub> and the other half is from methane and other greenhouse gasses.<sup>24</sup> He noted the possibility of quickly reducing warming by half by, “going after short lived greenhouse gasses.”<sup>25</sup> This underscores the importance of agriculture in mitigation efforts, and even implies the impossibility of

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<sup>21</sup> UNEP 2013.

<sup>22</sup> UNEP 2013

<sup>23</sup> Anna, Lappe.

<sup>24</sup> DC trip

<sup>25</sup> DC trip

preventing more than a two-degree global warming, without including agriculture in mitigation strategies.<sup>26</sup>

Yet, that is only part of the story when it comes to agricultural emissions. In 2008 indirect emissions from agriculture was between 2.2 and 6.6 gigatons of carbon dioxide equivalent per year.<sup>27</sup> This is in part because of the large role agriculture has on deforestation; about eighty percent of which is a result of agriculture.<sup>28</sup> Even highly sustainable agriculture, that actively sequesters carbon in a closed loop system, do not have the sequestering capabilities of forests and peat land. The inputs going into industrial agriculture also has a significant portion of external emissions, from the creation of fertilizers, that are often petroleum based and whose production is energy intensive.

All of these emissions reflect a huge reduction potential. Changing parts of the current agricultural system could result in reducing global emissions by 1.1 to 4.3 gigatons of carbon dioxide equivalent per year.<sup>29</sup> A 2013 emissions gap report by the United Nations Environmental Program (UNEP) emphasized agriculture as a key way to reduce the “emissions gap” and avoid major climate change. Yet, mitigation would involve a very concerted effort. Current trajectories on where emissions from agriculture, both direct and indirect, are going paints a grave increase. Nitrous oxide emissions are projected to raise seventy- one percent and methane emissions

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<sup>26</sup> McSweeney, Robert. "Meat and Dairy Consumption Could Mean a Two-degree Target Is off the Table" *The Carbon Brief*. 2 Dec. 2014. Web. 6 Jan. 2015.  
<http://www.carbonbrief.org/blog/2014/12/meat-and-dairy-consumption-could-mean-a-two-degree-target-is-off-the-table/#.VH8V7EeTtG0.facebook>.

<sup>27</sup> UNEP 2013

<sup>28</sup> UNEP 2013

<sup>29</sup> UNEP 2013

by fifty-seven percent.<sup>30</sup> According to the same UNEP report if, “mitigation options are mainstreamed into agricultural policies and incentives,” this trajectory could be reversed.<sup>31</sup> Often this is why discussion of mitigation rarely occurs without discussion of the means of implementation, specifically policies and practices.

While there is clearly a strong argument to be made to include agriculture in a UNFCCC agreement, there are strong sentiments against doing so. An article published by *Global Change Biology* discussing using agriculture as a mitigation tactic notes that, “...developing countries understandably view potential commitments to mitigate GHG emissions, even if they are voluntary, as a barrier for increasing food production to feed growing populations.”<sup>32</sup> When mitigation is discussed it is often coupled with acknowledgment that the priority is adaptation and food security. For example, a statement made by Uganda said, “Climate Change mitigation actions in the Agriculture Sector should therefore be promoted. However, the approach to mitigation should be to prioritize mitigation actions that deliver co-benefits of Adaptation in the sector, contribute to efficiency in agricultural production systems, and do not negatively affect food security, livelihoods of rural communities to improve resilience.”<sup>33</sup> A statement made by China asserts that greenhouse gas emissions are unavoidable in agriculture and for developing

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<sup>30</sup> UNEP 2013

<sup>31</sup> UNEP 2013

<sup>32</sup> Ogle, Stephen M., Lydia Olander, Lini Wollenberg, Todd Rosenstock, Francesco Tubiello, Keith Paustian, Leandro Buendia, Alison Nihart, and Pete Smith. "Reducing Greenhouse Gas Emissions and Adapting Agricultural Management for Climate Change in Developing Countries: Providing the Basis for Action." *Global Change Biology* 20.1 (2014): 1-6. Web. 12 Nov. 2014.

<sup>33</sup> "Submissions from Parties"

countries they are “survival emissions.”<sup>34</sup> A statement made by the senior Director of Agriculture Global Practice at The World Bank sums up this side of the conversation saying that in agriculture the, “first objective is not mitigation but to feed the people [and] increase productivity;” in other words it is about adaptation and food security.<sup>35</sup>

The interviews I conducted while in Lima, highlighted this debate over the priority setting between mitigation and adaptation. When asked about why there are such difficulties in even bringing up the word agriculture within the UNFCCC, Herwig Ranner, a policy officer for the European Union delegation, directly cited this argument. He said that, “I will not name any countries, I will not go into lots of detail but the main differences are that developing countries feel that they need to do more in adaptation and would not be that interested in mitigation ... Whereas, the EU and other annex one parties would actually like to have a balance of mitigation and adaptation work on agriculture.”<sup>36</sup> He then went on to explain that within agriculture there is huge potential to have co benefits between adaptation and mitigation saying, “We feel that these are two sides of the same coin.”<sup>37</sup>

While there is clearly a push to emphasize that mitigation and adaptation are not mutually exclusive when it comes to agriculture, that duality was noted but not emphasized within many party opinions at COP20. Kelly McGlinchey, a delegate with the NGO SustainUS, observed that at the conference there was little mention of the topic, however, when she did notice its presence it was, “in the context of

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<sup>34</sup> “Submissions from Parties”

<sup>35</sup> GACSA Inaugural Meeting

<sup>36</sup> Ranner, Herwig

<sup>37</sup> Ranner, Herwig

adaptation discussions.”<sup>38</sup> In a paper created by the Inter-American Institute for Cooperation on Agriculture (IICA) titled, “The position of the Americas on Agriculture within the Agenda of the International Climate Negotiations” the high priority of adaptation was noted. The report synthesized the submissions to SBSTA for an agricultural work program by nations in the Americas into four main arguments: increase in productivity, food security, adaptation and a means to improve socioeconomic situations.<sup>39</sup> The report stated that, “In addition to the common arguments set forth in the submissions, only [Independent Alliance of Latin America and the Caribbean] AILAC’s position emphasizes the importance of taking mitigation into account as an adaptation co-benefit.”<sup>40</sup> Although AILAC is a relatively large consortium of nations, it was only one submission of many that supported the strategic use of co-benefits. Herbert Mwawkomo, a delegate from Malawi, working with the Civil Society Network on Climate Change, emphasized co-benefits between mitigation and adaptation. Yet, he still did not think that mitigation should be included in an international agreement. He explained his position saying, “Am I supposed to be constrained at the national level not to do certain things in my agricultural system because there’s a decision at the COP?”<sup>41</sup> This mentality is one that is pervasive in least developed and developing nations, and acts to put the brakes on negotiations that include mitigation.

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<sup>38</sup> McGlinchey, Kelly

<sup>39</sup> “The Position of the Americas on Agriculture within the Agenda of the International Climate Negotiations.” *Agriculture, Natural Resources and Climate Change Program* (2013). Print.

<sup>40</sup> “The Position of the Americas on Agriculture within the Agenda of the International Climate Negotiations.”

<sup>41</sup> Mwawkomo, Herbert



This difference in opinion has created large amount of gridlock of attempts to include it under the UNFCCC. Developed countries argue that it is possible to do both mitigation and adaptation, and developing countries are extremely wary of anything that could limit their growth or security. Ranner attempted to explain that the mindset of developing countries is misconstruing the other side of debate. He said, "I don't think that it is our goal to do anything that would harm little farmers with less than a hector sitting somewhere and force them to reduce emissions so they cannot produce food for their families."<sup>42</sup> Regardless, this fear is a major reason why the developing nations do not support including mitigation in an international agreement on agriculture, yet over half of them included mitigation within their own mitigation goals.

For many the conversation of agriculture is also inherently a conversation about poverty. In terms of who is most affected by climate change it is impossible not to talk about the rural poor and subsistence farmers, the majority of who live in developing nations. In 2012 nineteen percent of the world population was, "directly engaged in farming," yet was responsible for only 2.8 percent of overall income.<sup>43</sup> This is due to the fact that of the 1.2 billion people that live on less than \$1.08 per day, "around three-quarters [of them] resided in rural areas," and of the population that lives in rural areas, "about three-quarters [are] estimated to be living in agriculturally based households."<sup>44,45</sup> Clearly there is a strong connection between agricultural issues and poverty. Therefore, any conversation about changing

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<sup>42</sup> Ranner, Herwig

<sup>43</sup> Godfray, H. C. J

<sup>44</sup> Alston, Julian

<sup>45</sup> Godfray H.C.J.

agricultural practices or the food system more generally must consider the impacts of the rural poor. A statement made by the Food and Agriculture Organization of the United Nations (FAO) said, “Responding to climate change in developing countries, will need to be pursued in ways that do not jeopardize, or better still enhance, nationally-owned development processes that prioritize food security and poverty reduction, wherein agriculture plays a key role.”<sup>46</sup> This emphasis is carried throughout all negotiations.

The impact of crop losses and a damaged agricultural system has a major impact on both social welfare and food security. Many people rely on agriculture for more than just food, but also their livelihood. In least developed countries eighty percent of the workforce relies on agriculture, and 2.3 billion people worldwide live in, “rural areas dominated by small holder agriculture.”<sup>47</sup> According to the same IPCC report there will be, “Major future rural impacts [that] are expected in the near term and beyond through impacts on water availability and supply, food security, and agricultural incomes, including shifts in production areas of food and non-food crops across the world (*high confidence*).”<sup>48</sup> Clearly a significant percentage of the world population that are most disenfranchised that will face serious consequences in terms of their livelihood and accesses to nutrition if a high level of adaptation is not achieved. In developed nations only about 4.2 percent of jobs are related to agriculture, where are as in developing nations its about 48.2 percent (it is over half

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<sup>46</sup> “Towards a Work Programme on Agriculture”

<sup>47</sup> “Submissions from Parties”

<sup>48</sup> “Climate Change 2014”

the population in Africa, and Asia).<sup>49</sup> This is inevitably a large rationale behind the position of developing and least developed nations.

Rarely, are nations talking about agriculture and climate change without also talking about the projection that in 2050 there will be two billion more people to feed. This population increase creates a need to increase food production sixty percent before 2050, no small feat especially considering the anticipated decreases in food productivity from climate change.<sup>50</sup> Experts have already observed a decline in global agricultural productivity, “in yields widespread and pervasive, occurring across most geographical regions and across countries with high, medium, and low per capita income.”<sup>51</sup> This raises serious concerns of whether or not nations will be able to feed their citizens in the coming decades, particularly for developing nations that already struggle.

Increasing nutrition in food, or nutrition security, is also a crucial element in the conversation for many nations seeing these trends. Increasing yields of crops is important, however, if this increase leads to a decrease in the nutritional value of the crop then the problem is not solved. Nutrition security is often categorized more generally under the phrase “food security” as well. Jethro Greene, the Chief Coordinator and delegate of the Caribbean Farmers Network, made a point during his interview to include nutrition security as a vital goal that should be achieved in

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<sup>49</sup> "Agriculture Is the World's Largest Provider of Jobs." *With Close to 40 % of the Global Workforce, Agriculture Is the World's Largest Provider of Jobs*. Momagri. Web. 1 Mar. 2015.

<http://www.momagri.org/UK/agriculture-s-key-figures/With-close-to-40-%-of-the-global-workforce-agriculture-is-the-world-s-largest-provider-of-jobs-1066.html>

<sup>50</sup> "Action Area: Agriculture." *Climate Summit 2014*. Web. 20 Sept. 2014.

<sup>51</sup> Alston, Julian, and Philip Pardey. "Agriculture in the Global Economy." *Journal of Economic Perspectives* 28.1 (2014): 121–146. Web.

<http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.28.1.121>

conjunction with food security.<sup>52</sup> Julie Lennox, the chief of the Agricultural Developments and Sub-divisional Headquarters of UN Economic Commission for Latin America and the Caribbean (ECLAC), similarly said that, “If we’re not, in the end, ensuring that people are well nourished and healthy, what the hell are we doing?”<sup>53</sup> These are the types of arguments made that attempt to ground the conversation by reminding negotiators that their decisions effect people in countries across various levels of development that are not equally capable to abide by the same agreement, and thus any decision needs to include a broad range of considerations. It also highlights the point that any negotiated outcome must include issues of food and nutrition security. From the perspective of developing nations especially, that fundamentally implies focusing exclusively on adaptation, where as developing nations see the possibility of also including mitigation to the list of priorities in a desired outcome.

This being said, there has been some potential progress in the conversation and negotiations within the UNFCCC with the idea of a possible “triple win.” Agriculture is critical for many reasons, some of which are outlined above, yet a large barrier in conversation and agreement has been this difference in opinion on exactly why it is important. However, many nations, including several developing nations, are beginning to reason that there is a possibility that multiple goals can be achieved in unison. The interaction and combination of practices can create, “Higher productivity, better resilience, and lower carbon footprint.”<sup>54</sup> For example using the

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<sup>52</sup> Greene, Jethro

<sup>53</sup> Lennox, Julie

<sup>54</sup> GACSA Inaugural Meeting

agroforestry technique of a multilevel canopy in coffee plantations better adapts the plantation to climate change by, “creating a microclimate that can reduce maximum leaf temperatures by as much as 5 °C, and buffer the coffee plants against extreme temperature increases that are expected to occur in coming decades” while increasing the amount of sequestered carbon.<sup>55</sup> There are seemingly an unlimited number of these types of innovations that are only just recently being recognized seriously on the international agenda.

This notion of co-benefits in agriculture policies and practices has culminated in the idea of “climate smart agriculture.” Climate smart agriculture (CSA) is a term coined by the World Bank and the FAO to create a new way to talk about set of practices that theoretically combine adaptation, increase productivity, and decrease emissions. It has also lead to the creation of the Global Alliance of Climate Smart Agriculture (GACSA). It is a partnership created by the FAO that includes nations and relevant actors (such as NGOs and corporations) in agriculture with the mission to promote, “production systems that sustainably increase productivity, resilience (adaptation), reduces/removes GHGs (mitigation), and enhances achievement of national food security and development goals.”<sup>56</sup> They plan on reaching over 500 million farmers worldwide to help them achieve CSA practices and to “create large scale change” as one of the founding members, Sharon Dijksma, put it.<sup>i</sup> Each new member of the alliance is obligated to announce and create new measures that will promote and work to achieve the goals of CSA.

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<sup>55</sup> Ogle, Stephen M.

<sup>56</sup> "About Climate-smart Agriculture." *Climate-Smart Agriculture*. FAO. Web. 11 Nov. 2014.  
<http://www.fao.org/climate-smart-agriculture/72610/en/>.

However, its presence at COP20 was limited despite expectations. One explanation is that there is a significant amount of push back for this term. Its main criticism was that it is ill defined and thus meaningless. The role language plays is particularly crucial in these contentions of CSA. While the term was created, in part, to ease tensions, its ambiguity has led to further debate. Gernot Laganda, a technical specialist with the International Fund for Agricultural Development (IFAD) delegation, later stated that while it theoretically is based on these three objectives, “In practice when you hear people throw the term around it can also be used to just flatten and-and-and pull the discussion into the gray zone that no one really understands.”<sup>57</sup> While he used the term several times throughout his interview, and said IFAD contributes to talks about “climate smart agriculture” he also said that IFAD prefers to use the term “climate resilient agriculture” because it implies a much deeper focus on adaptation. Lennox highlighted the need to take a “systems approach,” meaning everything from agriculture, to food production, food consumption and waste should be approached sustainably. While this is not the official ECLAC position, her view is the terms should exchange the word “smart” with the word “wise.” She went on to explain her position saying, “You could be smart because you’re concerned about your own interests, but wise is because you think of the next generation, and you think of the bigger picture.”<sup>58</sup> Whereas Laganda changed the phrase to prioritize adaptation, Lennox chose to change the phrase to take on meaning for long-term sustainability. Her argument touches on more than an issue of future generations, it gets to the point of many critiques of the

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<sup>57</sup> Laganda, Gernot

<sup>58</sup> Lennox, Julie

term climate smart agriculture: that it can be twisted to benefit an individual's, or company's self-interest fairly easily.

Prior to COP20, there was relatively little literature that highlighted these types of critiques. The majority of articles and explanations of climate smart agriculture praised it as a revolutionary way to bridge political disputes, and one potentially effective solution to climate change. Yet, the majority of people interviewed at COP20 had some type of critique of the term. The most frequent appraisal was its ambiguity made it difficult to create a uniform set of practices to then implement outside of the UNFCCC. It is difficult to say if this was a direct result of conversation happening at COP20 or because of a broader realization, but the GACSA recently added this to its webpage, "Although there is consensus on the need for climate smart adoption there are still knowledge and gaps at the methodological, policy and financial levels. These gaps hinder the ability of actors of development (farm small holders, policy makers and development agencies) to successfully implement climate smart actions."<sup>59</sup> The GACSA is theoretically supposed to be one of the largest promoters of developing and implementing "climate smart agriculture" yet, even they concede that there are major cracks in the term that make it, in some ways, a trivial argument at present. It is unlikely that something with this much criticism, from agricultural specialists and supporters, will reach an agreement in the near future.

## **Means of Implementation**

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<sup>59</sup> "Climate-smart Agriculture." *Climate-Smart Agriculture*. FAO. Web. 19 Feb. 2015.  
<http://www.fao.org/climate-smart-agriculture/72610/en/>.

The conversation about agriculture also includes nations deciding on potential methods, or means, that would successfully implement the outcomes of an agreement, should the UNFCCC have one. Policy and practices that build capacity and efficiency are means of implementation frequently discussed. The policy conversation is largely centered on creating markets and government incentives.<sup>60</sup> Other policy options focus on incentivizing the use of best practices. Certain practices that are often repeated are no-tillage to prevent soil emissions, improved manure and animal management, improved management of rice production, agroforestry, increasing crop diversity and crop rotation. The conversation has begun to take the joint role of, “Advocating for and supporting local, regional and national governments and civil society organizations to create conducive policy environments for the adoption of climate smart agriculture practices.”<sup>61</sup> This also includes capacity building by means of a better understanding and implementation of technology. As stated earlier, practices and policies that would simultaneously improve adaptation, increase productivity, and reduce greenhouse gas emissions and sequester carbon are getting the most attention within this part of the conversation. McGlinchy noted that of the side events at COP20 that were about agriculture, the majority focused on “climate smart agriculture.”<sup>62</sup>

As with any discussion within the UNFCCC, financing is a major source of concern and is a frequently cited means of implementation, especially for developing nations who have little economic capability to expend. Developing

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<sup>60</sup> “Submissions from Parties”

<sup>61</sup> “Africa CSA Alliance.” *Africa CSA*. Web. 30 Sept 2014. <http://csaforafrica.org>

<sup>62</sup> McGlinchy, Kelly



countries are demanding a way to fund any projects related to agriculture, especially involving food security and adaptation. Many nations have called out the Clean Development Mechanism, the Green Climate Fund, and The Adaptation Fund as potential routes to finance agricultural projects.<sup>63</sup> There is also talk about a need for investment. The United Nations specifically have discussed the need for, “investments in [the agricultural] sector to improve its resilience to climate change”<sup>64</sup> In many ways this call to action has already been heard and answered by key players in the international economy and investment sector. The World Bank announced this past September that one hundred percent of all its investment portfolios on agriculture, totaling one billion US dollars, would be “climate smart agriculture” by 2018.<sup>65</sup> However, as previously mentioned, this might in the end mean very little. A submission by Gambia on behalf of the LDCs to the UNFCCC Secretariat advocating for a work program under the SBSTA stated that, “The priority of the discussion on agricultural sector should focus on how developed country Parties provide the supports of finance, technology transfer and capacity building to developing country Parties to help implement their adaptation actions, assuring their food security and achieving their sustainable development.”<sup>66</sup> There is a reiteration of this sentiment carried across climate change negotiations, that least developed countries are the most vulnerable to the impact of climate and the

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<sup>63</sup> “Submissions from Parties”

<sup>64</sup> “Towards a Work Programme”

<sup>65</sup> “UN Climate Summit: Agriculture Results.” *UNFCCC*. Sept. 2014. Web. 30 Sept 2014.

<http://newsroom.unfccc.int/action-to-adapt/un-climate-summit-agriculture/>

<sup>66</sup> “Submissions from Parties”

least capable of managing it and thus require the technical and financial support of the developed nations.

Mwawkomo from Malawi felt so strongly about the need to prioritize agricultural finance, he felt that if the UNFCCC provided adequate finance, an actual agreement with specific stipulations might not be necessary.<sup>67</sup> He states that, “Whether it is in the 2015 agreement or not is really not the point, the point is how we are going to support the priorities that are defined at the national level- with the necessary technology and the necessary financial support once the country has defined.”<sup>68</sup> One of his main critiques of the UNFCCC is that even after an agreement has been reached; often it is not properly implemented because of lack of financing.

The International Fund for Agricultural Development (IFAD) has created a program to directly finance farmers for resilience technology and tools to deal with climate change called, Adaption for Smallholder Agriculture Program (ASAP). According to Laganda, “We call it ASAP with the acronym, which signifies a bit the urgency, which we contribute to climate change adaptation for small holder farmers.”<sup>69</sup> This is another example of how language is critical to the process of negotiations, it sets the context and tone of the conversation. ASAP is the world’s largest climate change adaptation program for smallholder farmers, reaching millions of smallholders worldwide.<sup>70</sup> Its aim is to implement programs that, “build capacity, empower community-based organizations, improve risk management

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<sup>67</sup> Mwawkomo, Herbert

<sup>68</sup> Mwawkomo, Herbert

<sup>69</sup> Laganda, Gernot

<sup>70</sup> "Momentum for Change IFAD's Adaptation for Smallholder Agriculture Programme (ASAP)." *UNFCCC*. UNFCCC, n.d. Web. 5 Oct 2014.

[http://unfccc.int/secretariat/momentum\\_for\\_change/items/7851.php](http://unfccc.int/secretariat/momentum_for_change/items/7851.php)

skills related to climate, and introduces sustainable land and water management practices.”<sup>71</sup> This program also alludes to a compromise between mitigation and adaptation. Laganda stressed this point saying it provides, “a big opportunity because you can, in the agriculture sector, if you invest climate finance, you can achieve multiple benefits, not just either adaptation or mitigation, but both at the same time.”<sup>72</sup> He argued that even though IFAD does not include mitigation as main criteria for investments, studies have shown that these loans have a significant impact on increasing the sequestered carbon in the area where the adaptation project occurred.<sup>73</sup> This is an organization that deals almost exclusively with agriculture in developing and least developed nations. If IFAD supports with the use of practices with co-benefits for mitigation, this might be a signal for the nations it works with to become more receptive as well.

One of the most discussed and sought after means of implementation is the creation of a work program under the Subsidiary Body for Scientific and Technological Advice (SBSTA). The SBSTA is one of the two permanent subsidiary bodies of the UNFCCC with the mission to give advice to the parties of the convention needed for negotiations at the COPs and CMPs, specifically on “scientific technological matters.”<sup>74</sup> The main argument for its creation is that a work program would, “inform the various aspects of the UNFCCC so that agriculture is better incorporated into the various convention mechanisms for future agreement.”<sup>75</sup>

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<sup>71</sup> “Momentum for Change”

<sup>72</sup> Laganda, Gernot

<sup>73</sup> Laganda, Gernot

<sup>74</sup> “Farming First Launch New Guide”

<sup>75</sup> “Farming First Launch New Guide”

Nations focused on the creation of this work stream, largely, are in favor of some agreement in the long term but are after a more informed discussion. A recommendation at a COP by the SBSTA has the potential to meaningfully impact the conversation by providing a base line of information and strategies that could be incorporated into negotiations.

The majority of the opposition to creating a work program stems from the fears that it could lead to new commitments for mitigation. However, the goal of putting it under SBSTA is to change the tone of the conversation from a charged one based on politics to one of technical, more neutral discussion focusing on the facts. Ranner stated that, “We were always for having a decision to work on SBSTA as the EU... If you only go for the political messaging, you would have a long, long discussion and it might not be easy to get out of certain deadlocks that you immediately produce.”<sup>76</sup> Still, what the work program would focus on was inevitably highly political between developing and developed nations, particularly since the lead up to COP15 in Copenhagen.

After years of discussion without progress, the 40<sup>th</sup> SBSTA meeting during July 2014 became a turning point to move forward in negotiations to include agriculture under SBSTA. While a work program was not created, plans were made to hold workshops on agriculture at SBSTA meetings over the next two years. There will be two at SBSTA 42 in June of 2015, and two at SBSTA 44 in June 2016, and the, “Reports from the first two workshops will be considered at SBSTA 43, held during COP 21 in Paris. Reports from the next two workshops will be considered one year

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<sup>76</sup> Ranner, Herwig

after at SBSTA 45.”<sup>77</sup> There are four specific areas these workshops will focus on: early warning systems and contingency plans, assessing risk and vulnerability under different temperature change scenarios, adaption measures for a variety of systems and threats, and finally identifying practices and technologies to increase productivity sustainably. All of these goals are specific to food security and adaptation. In a statement made by SBSTA on its goals, only the final line mentioned, “Possible adaptation co-benefits.”<sup>78</sup> While, perhaps implying mitigation under the term “co-benefits” that is not made clear. It appears that the end of the negotiations that created these workshops favored the position of the developing nations to largely excluding mitigation. A report by CGIAR on the decision noted that, “G-77/China was unified in supporting the conclusions on agriculture,” and, “the African Group and AILAC Group played particularly important roles in advocating for the conclusions on agriculture.”<sup>79</sup> These are all nations in some process of development that are not historical emitters. The fact that these nations were some of the largest supporters of this specific SBSTA outcome is indicative how and why the priorities of these workshops were set. As noted previously AILAC was one of the few supporters of utilizing co benefits between adaptation and mitigation, and likely contributed to the inclusion of the phrase “co-benefits” and acceptance of other developing nations.

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<sup>77</sup> "UN Climate Change Talks in Bonn Results in Progress on Agriculture and Food Security." *CCAFS: CGIAR Research Program on Climate Change, Agriculture and Food Security*. CCAFS, 24 June 2014. Web. 12 Jan. 2015. <http://ccafs.cgiar.org/blog/latest-un-climate-talks-bring-forward-significant-results-agriculture-and-food-security#.VJ4R-AAOA>.

<sup>78</sup> "UN Climate Change Talks in Bonn Results in Progress on Agriculture and Food Security."

<sup>79</sup> "UN Climate Change Talks in Bonn Results in Progress on Agriculture and Food Security."

Many nations support the creation of a SBSTA work program, even if they disagree on what it should look like, because it supports the expansion of a knowledge platform. This is another important means of implementation highly sought. While the SBSTA is one way of achieving this, there are many requests for workshops, and improved peer exchange to create optimal circumstances for disseminating best policies and practices. According to Tinashe Chavhunduka, a Zimbabwean delegate with the World Farmers' Organization and the African Farmers Association of South Africa, the most important aspect of the UNFCCC is the knowledge achieved at a COP that can then be brought back to local communities across the world.<sup>80</sup> He said that, "My understanding is when you leave your organization or country coming here, you carry a list of things you want to see to be discussed here and then the idea is to take again from here, the perceived solutions or the proposed suggestions on how you can go back and address the challenges of your country."<sup>81</sup> This also eludes that the creation of a knowledge platform is crucial because it uses the UNFCCC as a facilitator of important discussions, and a final negotiated outcome might not be necessary.

There is also a need to improve monitoring and evaluation of greenhouse gas emissions and sequestering ability of agriculture. The role of CGIAR and its creation of the research program Climate Change, Agriculture and Food Security (CCAFS) have been crucial for the acquisition and dissemination of knowledge used in the conversation within the UNFCCC. The main goals of the CCAFS are to disseminate information on, "foresight, priority setting, work planning, reporting, monitoring

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<sup>80</sup> Chavhunduka, Tinashe

<sup>81</sup> Chavhunduka, Tinashe

and evaluation of research outcomes.”<sup>82</sup> Additionally CGIAR has allocated \$10.2 billion in coming decade for research on what they also term “climate smart agriculture.”<sup>83</sup>

### **At COP20 and Beyond**

Agriculture was not on any agenda item or official discussion at COP20. McGlinchey observed that, “even the word agriculture is not something that you hear often in these halls.”<sup>84</sup> This lack of presence in Lima can be explained several different ways. One probable reason is that agriculture is currently in another realm of discussions within the UNFCCC. Due to its current position in SBSTA there was little point in discussing agriculture in Lima before doing another workshop. This has created somewhat of a “wait and see” attitude. Ranner noted that there simply was not time in the Lima schedule because of the high level of urgency to include a workshop at COP20 or have it be a priority.<sup>85</sup> Another explanation of similar vein is that agriculture is being talked about but in other sectors of the negotiations. For example, in the Intended Nationally Determined Contributions (INDC) discussions and land use and land use change discussions. Furthermore, several argued that the UNFCCC simply do not operate on a sectoral basis. This implies that although it was not specifically included as its own agenda item, negotiators might still have been discussing it. Ranner also noted that historically, “it has been a topic that has created

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<sup>82</sup> "CCAFS: CGIAR Research Program on Climate Change, Agriculture and Food Security." *CGIAR*. n.d. Web. 17 Sept 2014. <http://ccaafs.cgiar.org>

<sup>83</sup> "UN Climate Summit: Agriculture Results"

<sup>84</sup> McGlinchey, Kelly

<sup>85</sup>Ranner, Herwig

some difficulties to be discussed in the right forum.”<sup>86</sup> Still, it is possible to look at programs such as REDD+ and ask why there is not an equivalent for agriculture, a topic that many nations have argued as being equally important. Perhaps, the fact that agriculture is implicitly included in other areas of conversation but is rarely overtly present is another expression of the previously stated tensions between developed and developing nations. All of these reasons are speculations that attempt to further explain its lack of presence. Laganda cites this lack of presence as being largely from differing agricultural economies between developing and developed nations saying, “Some people comment on this from the adaptation angle, others from a mitigation angle, and then in the end you see a bit of a gridlock, you know, the topic gets stuck.”<sup>87</sup> The disagreement in perspectives and priorities of developing and developed nations inevitably informs all conversation about agriculture.

Moving forward few people were confident on speculating at all about the way agriculture will or will not be incorporated into the negotiations. Potentially that was partially because it has thus far been so contentious that any agreement would be difficult to anticipate this far in advance and partially because many found it unnecessary to do so. Looking ahead to future COPs and UNFCCC outcomes, it is entirely possible that agriculture take a completely different shape than the one it has now. Several people at COP20, including Ranner, pointed to INDCs as a likely place to be included, similar to how agriculture was included in the NAMAs and

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<sup>86</sup> Ranner, Herwig

<sup>87</sup> Laganda, Gernot



NAPAs. Yet, there were a number of people were unperturbed by the lack of inclusion within the UNFCCC agenda at all.

Many argued that the UNFCCC is the most helpful by facilitating means of implementation (mostly finance, and the creation of a knowledge platform), and the truly impactful place to handle agricultural issues and policy is at the national level. Mwawkomo from Malawi stated that, “We don’t necessarily need a decision that specifically targets agriculture because at the end of the day, it’s what happens domestically that matters in the sector of agriculture.”<sup>88</sup> Lennox highlighted this saying, “I think that for us [ECLAC], really the most important arena is the national arena, and it’s national climate change policies, because where everything has to happen is on the ground in countries. And we think that countries with stronger national policies are better positioned to negotiate in the COP.”<sup>89</sup> Jethro Greene from the Caribbean Farmers Network made clear that the UNFCCC was being utilized by nations, but not in the form of an agreement between nations. He said, “We don’t need- we don’t have to wait on this negotiation agreement. The information I have picked up here is going to help us. We are going to mainstream climate change issue into our agriculture planning, and that is not going to be whether they agree or disagree”<sup>90</sup> All of these statements suggest that because of the importance of agriculture nations will take action, regardless of an official agreement. They also insinuate that nations will focus more on obtaining means of implementation through the UNFCCC as opposed to seeking an agreement.

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<sup>88</sup> Mwawkomo, Herbert

<sup>89</sup> Lennox, Julie

<sup>90</sup> Greene, Jethro

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