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What climate-smart agriculture means to members of the Global Alliance for climate-smart agriculture

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Abstract

Climate-smart agriculture (CSA), a concept originally coined by the Food and Agriculture Organization of the United Nations (FAO), has been presented as a solution to the interlinked challenges of food security and climate change. According to the FAO, CSA explicitly aims for three objectives: (1) to sustainably increase agricultural productivity to support equitable increases in farm incomes, food security and development; (2) to adapt and build resilience to climate change at multiple levels; and (3) to reduce greenhouse gas emissions from agriculture. This definition of CSA is central to ongoing debates between different groups of stakeholders, such as NGOs and policy-makers in developed and developing countries, over what exactly constitutes CSA, e.g. does it encompass large-scale industrial agriculture and small-scale agriculture, organic and non-organic farming practices, and which associated practices fall in its ambit. Thus, to frame CSA's efficacy for the future, it is important to explore how different groups of stakeholders define CSA. This study collects and analyses data from qualitative, semi-structured interviews with 30 active members of the Global Alliance for Climate-Smart Agriculture (GACSA)—one of the most prominent organizations currently involved in shaping CSA policy. The interviewees include employees of governments, NGOs, research institutions, agribusiness companies and representatives of farmers' groups. Their responses reveal that for CSA practitioners within GACSA, doing CSA is perceived to be significantly more important than defining CSA or attempting to identify the differences between, for example, agroecology and CSA. Particularly challenging is to define what qualifies as "smart". Nevertheless, clarification of CSA is important for governments and policy-makers, in particular with regard to the use of inorganic fertilizers and GM technologies. Although these latter approaches are not explicitly promoted by GACSA, the membership of several "Big Ag" companies in the Alliance attracts criticism concerning the shaping of CSA's agenda and possible "greenwashing" by private interests. At the same time, the respondents note that some proponents of agroecology can be accused of "claiming the space as their own." Almost all interviewees stress the importance of a bottom-up approach based on shared governance and growth and placing farmers' needs first, rather than creating division among stakeholder groups. In addition, cooperation between farmers, researchers, and policymakers, as well as a context-specific approach to collaborative, data-driven education programmes are all cited as crucial for the future development of CSA.

Introduction

The Food and Agriculture Organization of the United Nations (FAO) coined the term "climate-smart agriculture" (CSA) in a document prepared for the 2010 Hague Conference on Food Security, Agriculture and Climate Change (CCAFS and FAO, 2014). The subsequent creation of the Global Alliance for Climate-Smart Agriculture (GACSA) marked a seemingly successful end to several years of dialogue and engagement between several or-

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ganizations and stakeholders. GACSA defines itself as a multi-stakeholder, "voluntary platform open to governments, international and regional organizations, institutions, civil society, farmers' organizations and businesses who agree with its vision and framework document" (GACSA, 2019).

Today, climate-smart agriculture is widely touted as an effective approach for improving agricultural yields and protecting the livelihoods of farmers in the face of climate uncertainty. Still, while CSA has found a home among policymakers and international organizations, including NGOs, it has been met with resistance by organizations who have openly criticized GACSA for various shortcomings. For example, CIDSE complained that one year on from GACSA's launch in 2014, 60 percent of its private sector members came from the fertilizer industry (CIDSE, 2015). Another shortcoming attributed to GACSA is its failure to strictly define CSA. Many such critics have declined to join GACSA, arguing that in the absence of explicit guidelines, the term stands to be exploited by agribusinesses that have already begun to introduce climate-smart initiatives as part of their self-proclaimed efforts to curb climate change (Newell & Taylor, 2017). Furthermore, Chandra et al. (2017) claim that organizations, mainly originating in the global North, are establishing the scientific evidence base and credibility of climate-smart agriculture by launching CSA projects targeting rural communities in the global South, where they draw criticism from grassroots farmers, civil society groups and NGOs.

While the expansion of climate-smart agriculture is endangered by the harsh criticism received over its goals and legitimacy (CIDSE, 2015; Climate-Smart Agriculture Concerns, 2015), actual debates among CSA stakeholders and practitioners are poorly understood because critics focus principally on CSA policy proposals emanating from GACSA. This paper proposes that debates among GACSA members may provide fresh insight to industry and governments seeking to understand the definition of CSA and to gauge how its policy might evolve over the medium to long-term future. Using qualitative interviews with stakeholders who are members of the GACSA, the paper looks at how they attempt to resolve key questions as legitimate practitioners of CSA, such as the problem of achieving CSA objectives in the context of use of fertilizer and genetically modified (GM) technologies, the context-specific issue of "doing" CSA in different geographic areas, and the challenge of differentiating CSA from agroecology. The paper first provides a background on the debates concerning definitions of CSA; then it explores GACSA members' views on CSA; and finally, it presents a discussion and conclusion that addresses these findings in the broader context of contemporary debates to further understanding of climate-smart agriculture and what its future holds.

Literature Review

Current political and academic debates surrounding climate-smart agriculture reflect uneven power relations between the North and the South and between industrial agriculture and small-scale agriculture (Chandra et al, 2017; Chandra et al, 2018; Lipper & Zilberman, 2018). The concept of CSA has always been positioned between policy and science (Saj et al., 2017), and there are various definitions assigned to the term by international organizations, policy-makers, NGOs, and scholars.

The FAO states that CSA contributes to the attainment of sustainable development goals by confronting climate challenges and food security through three pillars: "sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate change; reducing and/or removing greenhouse gases emissions, where possible" (FAO, 2013, p.9). Thus, in its discussion of CSA, the FAO emphasizes aims over methods, leading to criticism from NGOs that there is more adaptation than food security or mitigation in CSA initiatives and that CSA in its current form is a 'business as usual' strategy (Saj et al., 2017).

Other definitions presented in the academic literature, albeit different from the FAO's definition, also focus on aims, such as reducing climatic risks that are occurring with more frequency today (Engel & Muller, 2016; Steenwerth et al., 2014). Still, Lipper et al. (2014) describe CSA as a transformation process of agricultural systems to support food security under climate change realities. The ambiguity regarding CSA's definition has led some critics to suggest that CSA is simply used—or was designed—to gain access to climate funds (Newell & Taylor, 2017).

Whilst the definition of climate-smart agriculture is contested, a separate political and academic debate revolves around which approaches to agriculture can be considered 'climate smart'. It should be noted that there is sparse scholarship clearly identifying the scientific underpinnings of CSA, including which approaches are included in its ambit (Rosenstock et al., 2016). Some practices included within CSA are widely considered to be 'climate-smart' by proponents and critics alike (Branca et al., 2011; Lipper et al., 2014). According to the World Bank (2012, p. 2), these involve "mulching, intercropping, conservation agriculture, crop rotation, integrated crop-livestock management, agroforestry, improved grazing, and

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improved water management" as well as "better weather forecasting, more resilient food crops and risk insurance." CCAFS and FAO (2014) also include farm, ecosystem and landscape management to improve resource efficiency and resilience in CSA approaches. Yet a principally results-based definition underpins the idea that CSA cannot be "universally applied" because it "involves different elements embedded in local contexts" (CCAFS and FAO, 2014, p. 3).

At the same time, the promotion of GM technology as climate-smart has generated controversy. An official CSA document published by FAO and CCAFS (2016) explicitly states that CSA does not promote genetically modified organisms (GMOs); however, GMOs are not expressly forbidden, and the FAO suggests that organizations and individuals may use GM technology as their national policy dictates. Moreover, there is no unified view on this issue in the academic literature. While Newell and Taylor (2017) argue that GMO technologies are among the controversial interventions in CSA and that CSA justifies financing and advancing them, Nagargade et al. (2017) consider genetic engineering to be a promising tool to reduce greenhouse gas emissions in CSA.

Fertilizer and pesticide use have been another source of contention within climate-smart agriculture debates (GRAIN, 2015). Among stakeholders, there is no agreement on the validity of inorganic fertilizer use as a climate-smart agricultural practice (Duflo, Kremer, & Robinson, 2011; Lipper et al., 2014). Some CSA programmes, such as Smart Rice in Indonesia, apply both inorganic and organic fertilizers (Perdinan et al., 2018) and there seems to be growing evidence from developing countries that the use of inorganic fertilizers can reduce emissions and increase yields and returns for the farmers, including smallholders (Arslan et al., 2015; Behnke et al., 2018; Zougmoré, 2018). However, Newell and Taylor (2017) underline the key role of biotechnology and fertilizer associations in promoting CSA in developing countries, where, as they argue, application of fertilizers could be dramatically reduced without comprising crop yields. In this regard, the Global Alliance for Climate-Smart Agriculture is also a focus of harsh criticism, as some stress a major presence of fertilizer companies within GACSA and worry that this creates more opportunities for climate-smart agriculture to be misunderstood and misappropriated (Steenwerth et al., 2014). In September 2015, nearly four hundred civil society groups signed a joint statement rejecting the Alliance's "false solutions" which they claim enable members to "greenwash" their practices, i.e. portray them as more environmentally friendly than they are in reality (Climate-Smart Agriculture Concerns, 2015).

At the same time, GACSA has steered the remarkable growth of CSA, and its evolution will continue to impact CSA's future. Yet how CSA stakeholders and practitioners, including the diverse stakeholders at GACSA, understand CSA and the debates surrounding it are poorly understood. This paper seeks to contribute to current scholarship on CSA by exploring meanings assigned to climate-smart agriculture by GACSA practitioners, navigating contemporary debates on CSA through the lens of stakeholders within GACSA, and framing CSA's efficacy for the future.

Methodology

The purpose of this research is to explore the meanings assigned to climate-smart agriculture and its approaches among Global Alliance for Climate-Smart Agriculture members representing diverse stakeholder groups such as policy-makers in developed and developing countries, academia, NGOs, and the agriculture industry. A qualitative methodology is best suited to address this research aim.

Data Collection

Organizations listed on the roster of the 2016 annual forum of the Global Alliance for Climate-Smart Agriculture were invited to participate in a brief qualitative telephone or Skype interview. All 105 listed organizations were contacted by email, with positive responses obtained from 30. The interviews with the 30 GACSA members were conducted in spring and summer 2016. All participants were assured anonymity and gave their informed consent.

A semi-structured interview format was chosen because its flexibility allows for new, important topics to emerge (Gill et al., 2008). Interviews ranged in length from 21 to 45 minutes, with an average of 33 minutes. Twenty-one interviews were conducted by phone; nine were conducted via Skype. An interview guide was formulated using clear, open-ended questions. Topics included participants' educational and professional backgrounds; experiences working within climate-smart agriculture; and debates surrounding the meanings of climate-smart agriculture, its uses, and its future. I took time before beginning the interviews to familiarize myself with the questions in order to prevent the interview process from appearing too scripted or unnatural (Gill et al., 2008). Some questions were added or skipped during each interview.

Participants

All interviewees were at least 18 years of age, one-quarter were female, the remainder men (7 women, 23 men). CSA involvement broadly split along science, policy, farming and business lines; position titles included Agriculture Inspector, Regional Director, Chief Scientist, Senior Ecologist, Senior Policy Adviser, Program Manager, Vice President of Production and Sustainability, Climate-Smart Advisor, and Director of Agriculture. Interviewees were professionally based in the following nations: United States (15); Italy (5); and one each in Belgium, Canada, Costa Rica, Germany, Ireland, Indonesia, Kenya, Malawi, South Africa, and the United Kingdom.

Data Analysis

The transcripts of the conducted interviews were read, re-read and coded based on a grounded theory approach (Glaser & Strauss, 1967). The qualitative data analysis computer software NVivo was used to understand the various meanings assigned to climate-smart agriculture and contemporary debates and issues within this type of work. The coding schema was developed out of an iterative approach to identify themes and analytical categories within interviewees' experiences and narratives.

Findings

An overwhelming majority of climate-smart agriculture stakeholders and practitioners were of the view that CSA emerged as a critical response to increasing concerns over agriculture's footprint on the environment and deteriorating food security, and a growing awareness concerning the complex relationship between agriculture and climate change. One US-based interviewee working in the food industry aptly summarized this idea:

> "[CSA] . . . grew out of an evolving understanding of . . . agriculture as being the sector most vulnerable to climate change . . . and on the other hand, the fact that agriculture, directly and indirectly, through land conversion, is a driver of climate change."

For some, the creation of CSA, and subsequently the Global Alliance for Climate-Smart Agriculture, was part of a trend towards accepting agriculture's role in climate change, or at least for GACSA members to become part of those discussions. Other interviewees were sceptical about CSA's novelty, claiming that many of the practices pre-dated the term's emergence on the international scene in 2010. One interviewee recalled, "I used to call it 'Low Carbon Farming' and . . . 'Resource Efficient Agriculture' [but] it's about the triple bottom line—lower environmental impact, higher profitability and improved food security." Another observed that "here in Africa, farmers have been doing some of the practices that are now being labelled as 'climate-smart' from long back."

Stakeholders and practitioners were asked to define climate-smart agriculture based on their own experience and work in the field. Although many interviewees restated the original FAO definition, many others acknowledged the existence of diverse interpretations of the term climate-smart, one of the potential challenges for CSA implementation. Yet one interviewee asserted that this problem was not unique to CSA, comparing it to the notion of organic farming before the advent of certification. When asked what other names could replace CSA, some interviewees proposed "climate-resilient" or "climate-conscious" agriculture to capture the essence of CSA without being objectionable, divisive or just another buzzword. Several interviewees noted that the term "smart" raised questions about whether programmes or organizations critical of CSA could be judged "climate-stupid." While the majority of interviewees clearly felt that CSA holds great promise for addressing climate change on a global scale, many reflected on the challenges of defining what "smart" means in terms of creating effective change.

Part of climate-smart agriculture's challenges arise from the careful balancing and high standard posed by the FAO's focus on the three pillars of productivity, adaptation, and mitigation. When questioned if CSA objectives could be met if only two out of three pillars were achieved, interviewees emphasized the importance of context. "It depends how you define success in your field," answered one ecologist. Others stressed the importance of maintaining a careful balancing act—or "interesting trade-offs" as a scientist put it—to ensure that productivity does not come at the expense of adaptation and mitigation. Indeed, one US-based interviewee observed, "There is an inherent tension between production and greenhouse gas emissions."

Interviewees in the study came from several organizations, with a handful working in agribusiness, a sector that is often criticized in debates surrounding climate-smart agriculture and the composition of the Global Alliance for Climate-Smart Agriculture. One US-based interviewee in the fertilizer industry readily acknowledged the criticism that "[CSA is] being driven by Big Ag or it's being driven by the fertilizer companies" and suggested that, "maybe [the critics] don't understand the efforts that we have going on." Interviewees outside of the fertilizer industry also questioned the usefulness of these criticisms. "One side of the argument

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affirming that . . . climate resilience is the single biggest benefit that biotechnology can confer; others arguing [the] agricultural model it represents is the antithesis of resilient agricultural systems." With regard to GMO use, several interviewees pointed out that the Alliance didn't promote or forbid the use of these technologies. One of the respondents noted the following:

> "I would say the biggest piece that's not helpful is that . . . there are those that would say there's only one way to do that, and that's this way: GMO-free, organic, all natural, that's the only way we can achieve this. . . . So, the biggest challenge is programmes that want to claim all the space as their own and that want to say their way is the only right way."

Some responses pointed to several important issues outside of the original research questions. Among them included the ideological and technical distinctions between climate-smart agriculture and agroecology. Several interviewees representing both developed and developing countries stated that agroecology was consistent with CSA; however, the two agricultural approaches were not identical. One respondent went on to admit that CSA had always been about the outcomes but stressed that agroecology was about the methods. Another interviewee noted that in terms of being 'climate-smart,' methods of CSA and agroecology were very similar, although not exactly the same. Several interviewees agreed that debate on distinctions between agroecology and CSA was not technical but rather ideological or even philosophical. These tensions are highlighted below:

> ". . . [T]here's certainly voices in the commodity agriculture private sector agribusiness world which are very hostile to some of the voices that are defending a more agroecological approach. Likewise, I think there are also many organizations on the agroecological side of the spectrum that regard commodity agriculture as an enemy by definition. . . ."

Almost all interviewees claimed to place farmers' needs first, rather than creating division among stakeholder groups, thus adhering to a context- or geographically-specific definition of climate-smart agriculture. "If people say they are doing [CSA], then they would show they are doing it. No one's going to anoint anyone on the planet to become the king of the CSA beliefs. I'm not sure what the value of that is." While some respondents warned that too many interpretations of CSA could hamper its progress, there was an equally strong view that placing too much emphasis on the definition of CSA detracts from the important work that is being done to achieve its aims. Although Newell and Taylor (2017) suggest that GACSA simply exists to align CSA with corporate interests and investments, these interviews indicate that stakeholders did not view themselves and their role in this way. Rather, almost all interviewees agreed that doing CSA was the most important work. Instead of reflecting on the membership of GACSA, they typically sought to emphasize the important role of farmers in CSA and the need for more engagement between farmers, researchers, and policymakers.

"That's obviously a two-way process . . . extension systems, especially in sub-Saharan Africa, they're really not as strong and not as many farmers are within the systems. . . . So that's obviously a major strategic blockage and a real problem if you're trying to increase the resilience of agricultural systems."

On the whole, farmers were described as being vital to the success and growth of CSA. The need to incorporate farmers into discussions in order to improve two-way dialogue and knowledge transfers was often cited by respondents as one of the most pressing issues in climate-smart agriculture:

> "Because often what you see – and this is criticism in this sphere – is you get a lot of smart people together and talk about what farmers should do and there's not a farmer in the room. If you remember Dwight Eisenhower's famous quote, you know, 'Farming seems easy when your plough is a pencil and your cornfield is a thousand miles away.'"

For climate-smart agriculture to succeed, interviewees reiterated the need to conduct collaborative, data-driven programmes working alongside the farmers they seek to help. To do so requires a context-specific approach, but also one that recognizes that it is the farmers' livelihoods at stake when risks are taken in CSA. These interviewees envisioned a CSA that was not top-down, but one based on shared governance and growth. These and other themes discussed during the interviews are presented in Tables 1 a & b, which summarize the main statements made by the interviewees.

Discussion: Policy recommendations

This paper interviewed Global Alliance for Climate-Smart Agriculture stakeholders to understand their definitions of climate-smart agriculture, the challenges of defin-

Table 1a: Themes and categories that emerged during the interviews with GACSA members

History of climate-smart agriculture
Motivating concerns behind the creation of CSA: • Increasing environmental concerns • Accepting agriculture's role in climate change • Realization that climate change is a scientific reality, not a political game • Business-as-usual cannot feed Earth's population in a sustainable way • Main incentive: make CSA profitable for farmers
Historical names of the concepts close to CSA: • Low Carbon Farming • Resource Efficient Agriculture • Resilience, adaptation, and "mitigation" applied to agriculture • Climate-resilient agriculture • CSA is not a new concept: there was "Doing CSA before CSA"
Defining CSA
Challenges of defining CSA: • CSA's three pillars definition generates the most consternation • Main concern: which pillar is the most important? • Stakeholders' perspectives of the pillars are very different • Ultimately, it is not impossible to have all three pillars • Problem of defining CSA is not unique (e.g. the notion of organic farming) • CSA is still new and evolving, and its realization requires time • "Doing" CSA is more important than "defining" it • Definition of CSA is important for governments and policy-makers
Alternative opinions on what counts as CSA: • Some think it is a completely organic production without GMO and inorganic fertilizers • Some think that to achieve at least two pillars out of three means CSA, but in some situations, even one pillar is enough
Opinions on what "smart" means: • Be ahead of the climate-related risks • For the practices to be climate-smart, they need to be site-specific • Smart agricultural practices mean informed by climate science • "Smart" means creating effective change
Criticism of CSA
• It is not clear what 'climate-dumb' agriculture is • CSA is hard to do • Many people think that "climate-smart" is just "business as usual" agriculture and, arguably, greenwashing • There are dangers of accepting "new" things too quickly just because they're labelled "CSA," such as simply giving fertilizers to the farmers without educating them
Criticism of the Global Alliance for Climate-Smart Agriculture
• GACSA allows anyone to join • Private interests of large fertilizer, seed and GM companies are shaping CSA agenda, while they are part of the climate change problem; in particular, inorganic nitrogen fertilizers have a huge carbon footprint • Participation in CSA used as greenwashing by large commercial companies, members of GACSA

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Table 1b: Themes and categories that emerged during the interviews with GACSA members

Response to the critique of CSA and GACSA
• CSA is not a religion; it's an inclusive approach to achieve three pillars • CSA is hard to do, but agroecology is also hard to do. Farmers will not adopt approaches that are not in their interests • If production is increasing faster than emissions reductions, it is still a success • Biotechnology can increase the resilience of crop genetic material • Criticizing GACSA is different from criticizing CSA • GACSA does not explicitly promote GM technology or inorganic fertilizers • The critics don't understand the efforts that GACSA has going on • It is good that NGOs and other stakeholders criticize and question CSA and GACSA. This criticism will remain • Disputes are waning over time
Problems doing CSA
• There is a gap in education and culture with regard to CSA • The political-economic power of large international and national civil society groups and NGOs that oppose CSA and GACSA impedes progress and doesn't allow CSA to reach its full potential
Suggestions on improvements
• System-based approach to CSA is required • Place farmers' needs first instead of creating division among stakeholder groups • Need to incorporate farmers into CSA discussions in order to improve two-way dialogue and knowledge transfers • Need for a context-specific approach to collaborative, data-driven education programmes for the farmers
Big corporations versus smaller farms
• CSA is perceived as linked to technology (such as creation of plants with high carbon storage capacities, and other GMOs), and therefore, a threat to smaller farms • CSA does not put a burden on smallholder farmers; it actually pushes them in the direction of a more reliable food supply
The North versus the South
• Farmers' needs in developed countries are most likely very different to a subsistence farmer's needs in a country where the climate is changing or water scarcity is a serious issue • In the case of low food security, the priority might be on improving production and increasing adaptive capacity without much emphasis on mitigation • The USA, similar to other developed countries, is engaged in addressing all three pillars of CSA: productivity, resilience, and mitigation
Agroecology versus CSA
• Agroecology is consistent with CSA, but they are not identical • CSA is about the outcomes and agroecology is about the methods • Debate on the distinctions between them is not technical but rather ideological or philosophical • Some proponents of agroecology can be accused of "claiming the space as all their own" • Some proponents of agroecology fail to see the different contexts of what are the needs of the various farmers • There is a niche in the market for everyone

ing it, and contemporary debates surrounding its use as a solution to addressing food security in a climate change context. The results reveal that even though for some interviewees climate-smart agriculture is merely a new name for old practices, the majority feel that CSA was born from the fact that the current system had to change. Still, for GACSA members, there is no one single definition of CSA and roughly a third of the respondents maintained that given the impending global crisis that is climate change, the work of defining CSA may actually be a waste of critical resources, time, and energy. Many respondents considered that CSA's three pillars model (i.e., productivity, adaptation, and mitigation) is a good idea but hard to achieve, or will be context-specific.

Almost all interviewees considered that the outcomes of CSA are far more important than definitions, and that the priority must be for increasingly shared governance of CSA's objectives with farmers. Overall, most respondents did not take a hard line against the inclusion of agribusinesses. This could be a result of their membership within the GACSA, which has opened its doors to agribusinesses and other industries that have greatly contributed to agriculture's share of greenhouse gas emissions. Below, I place these findings into broader discussions of CSA and what that means for the Alliance.

The origins of GACSA were rooted in an emphasis on empowering smallholder farmers, a group widely believed to be the most vulnerable to the unpredictability of climate change. Still, the extent to which agribusinesses influence CSA policies is not entirely clear though many civil society groups point to the Alliance's ambiguous stance towards fertilizers, GMOs and pesticides as confirmation of agri-businesses' influence in the CSA arena. This has contributed to the growing belief that the "clever ambiguity" of climate-smart agriculture opens the door for powerful interest groups to undermine the important work needed to protect the livelihoods of many around the world who already suffer from or are in increasing danger of under-nutrition.

Critics' questions about the role of agribusiness in climate-smart agriculture will continue to serve as a source of scepticism, particularly as their productivity goals are balanced against other pillars within CSA. What this study's findings reveal, however, is that though these debates are important to the future of CSA and the Alliance, interviewees voiced resistance to spending too much time on the work of weeding out who belongs and who does not. Similarly, the interviewees stated that the debate on the differences between agroecology and CSA was not technical but rather ideological or even philosophical.

Many interviewees expressed a sense of urgency, and placed farmers' needs front and centre in their analyses of what needs to be done and by whom. Surely, critics of agribusinesses could argue that a "farmers first" approach keeps agribusiness running as usual and that the Alliance provides a "smart" cover to enable their greenwashing. Although it has been established that the current food supply is sufficient to meet global nutritional needs, and that distribution not production is the biggest challenge, the pillar of "productivity" is still a hard one to argue against, especially when warned of the dire consequences of not securing food for future generations. This enables the "productivity above all else" industries to continue to dominate part of the CSA space. Productivity is highly measurable and provides quick feedback, and thus lends itself well to be privileged over the other two pillars, adaptation and mitigation, whose time horizons extend well beyond a single growing season.

Climate-smart agriculture has grown immensely since its inception in 2010, and despite increasing criticism, its growth hasn't been seriously affected. Indeed, the future of CSA seems very bright and its goal to reach 500 million people, though ambitious, may be yet attainable. Still however, CSA is not immune to serious setbacks if the most pressing issues are not resolved in the short to medium term.

Conclusion

This qualitative study is based on data generated from 30 semi-structured interviews with stakeholders within the Global Alliance for Climate-Smart Agriculture; therefore, the findings must be considered in this context. While every attempt to reach a broad sampling of Alliance stakeholders was made, this paper only provides insight about those GACSA members who were willing to take their time to share their expertise and experiences. Members of the Alliance are naturally biased towards praising its positive attributes to increase its legitimacy and reach, while ignoring harsh criticisms about its goals and legitimacy. Lastly, GACSA members in the US were over-represented among the sample selection. Further research could examine the experiences of members based outside of the US and GACSA, in order to better understand how other stakeholders conceptualize and give meaning to CSA. The analysis of the interviews was organized around several tensions identified in the literature review, namely between agroecology and CSA, smallholder farmers and industrial agriculture, and developed and developing countries.

Given several interviewees' call for shared governance of

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climate-smart agriculture with farmers, further research is also necessary to understand farmers' meanings of and concerns about CSA. Finally, this research is useful to scholars and practitioners seeking to understand how to best convince individuals, institutions, or organizations to adopt CSA practices, by pointing to disparities in viewpoints and motivations driving work to meet each of the three pillars.

The CSA stakeholders interviewed in this study continuously looked toward the future to orient their work and import the significance of the promise and potential of CSA. Of course, these stakeholders recognize that CSA is not perfect, nor will be any solution tackling a massive problem such as climate change. To continue to address climate change successfully, CSA advocates will need to continue to address issues that challenge its legitimacy as a proper and adequate solution to a critical issue.

The FAO's 'three pillars' definition holds great potential, but generates serious questions about its effectiveness if certain pillars (i.e., productivity) are privileged over others. Moreover, one must question the distinction between productivity and equitable increases in productivity. CSA, and GACSA, must guard against upholding agricultural practices that have contributed to the deleterious outcomes (e.g., greenhouse gas emissions) it seeks to diminish. This work is made all the more difficult given criticisms that energy spent on defining and branding CSA actually detracts from the critical work necessary to do CSA. Yet, climate-smart agriculture must address—head-on—criticisms about corporate responsibility, greenwashing, and shared governance in order to succeed. Questions about CSA's legitimacy are important, both for its wider adoption as a solution and for whatever comes next. Global climate change needs innovative solutions—the consequences of doing nothing are simply too great to ignore.

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Conflict of Interests

The author hereby declares that there is no conflict of interest.

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