'Triple wins' or 'triple faults'?

Analysing policy discourse on climate-smart agriculture

Working Paper No. 197

CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

Linus Karlsson
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Contact:
CCAFS Coordinating Unit - Faculty of Science, Department of Plant and Environmental Sciences, University of Copenhagen, Rolighedsvej 21, DK-1958 Frederiksberg C, Denmark. Tel: +45 35331046; Email: ccafs@cgiar.org

Abstract

This paper aims to unpack the equity implications of 'climate-smart agriculture' (CSA). The CSA approach has gained considerable traction in recent years, but remains highly contested. One of the principal areas of contestation relates to CSA's contribution to social equity, yet equity is rarely defined in the CSA literature. To fill this gap, we apply an equity framework to four discourses that are commonly encountered in debates on the challenges and opportunities for applying CSA in different contexts and for different purposes. From this, we identify three important equity issues: First, distributive equity implies a need to acknowledge how CSA may transfer the burden of responsibility for climate change mitigation to marginalized producers and resource managers. Second, a procedural equity perspective reveals how CSA discourses generally fail to confront entrenched power relations that may constrain or block the emergence of more 'pro-poor' forms of agricultural development, adaptation to climate change, or carbon sequestration and storage. Third, to improve CSA outcomes, a focus on contextual equity means the need to pay more attention to the institutions that underpin the bargaining power of the poorest and most vulnerable groups, as well as a deeper acknowledgement of the political nature of transformations that are needed to address challenges around the agricultural sector in a changing climate.

Keywords

Triple wins, climate-smart agriculture, social equity, climate change, discourses

About the authors

Linus Karlsson is a PhD Student at the Department of Urban and Rural Development, Swedish University of Agricultural Sciences.

Andrea Nightingale is a Professor at the Department of Urban and Rural Development Swedish University of Agricultural Science.

Lars Otto Naess is a Research Fellow in the Resource Politics Research Cluster, Institute of Development Studies, University of Sussex

John Thompson is a Research Fellow in the Rural Futures Research Cluster, Institute of Development Studies, University of Sussex.

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Contents

Acronyms

AACSA	'Africa CSA Alliance'
CAADP	Comprehensive Africa Agriculture Development Programme
COP	Conference of the Parties
CSA	Climate-Smart Agriculture
FAO	United Nations Food and Agricultural Organization
GACSA	The Global Alliance for Climate-Smart Agriculture
GHG	greenhouse gas
GSCSA	Global Science Conference on Climate-Smart Agriculture
IFA	International Fertilizer Industry Association
IFAD	International Fund for Agricultural Development
SBSTA	Subsidiary Body for Scientific and Technological Advice
SDGs	Sustainable Development Goals
UNFCCC	U.N. Framework Convention on Climate Change
WBCSD	World Business Council for Sustainable Development

1. Introduction

Climate-Smart Agriculture (CSA) is based on the idea of 'triple wins' and synergies between enhancing adaptation, improving mitigation and increasing food security (FAO 2010, 2013, 2016; World Bank 2012). The assumption is that there are a multitude of practices that could lead to improvements across mitigation and adaptation while also enhancing food security, that are greater than the sum of its parts (FAO 2013). Over the past few years, CSA has gained considerable traction in policy and research circles (Lipper et al. 2014), directing new attention and resources to the agricultural sector, globally as well as at country levels. Today, more than 30 countries, most prominently in Sub-Saharan Africa, specifically refer to CSA in their Intended Nationally Determined Contributions agreed at the U.N. Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP21) in Paris in December 2015 (FAO 2016). This growth in interest and funding for CSA has been accompanied by the emergence of new global and regional networks, notably The Global Alliance for Climate-Smart Agriculture (GACSA), the Africa CSA Alliance, as well as a multitude of conferences, panels and online discussion fora. There is also a growing literature assessing field experiences with climate-smart agriculture (Lipper et al. 2014; Rosenstock et al. 2016).

From the outset, however, CSA has been a contested concept, with critics raising concerns around how it may undermine the livelihoods of smallholder farmers, promote genetically modified crops at the expense of traditional crop varieties, or lead to accelerated 'land grabs' by corporate interests and local elites (Stabinsky 2014; Suppan and Sharma 2011; Caron and Treyer 2016). Critiques range from those highlighting its negative effects on ecosystems and biodiversity to those arguing that it can undermine cultural heritage and social equity.

In this paper, we probe the political economy of CSA by examining who mobilizes the concept, with what assumptions and for what purposes in order to evaluate the implications for social equity. Key to the contestation around CSA is that it may be achieved through a number of different pathways, with widely diverging technologies, processes and actors. Given its broad definition, the approach is not prescriptive beyond the focus on attaining its 'triple wins'. This sets it apart from other major concepts such as conservation agriculture, which is defined as a set of practices, including continuous minimum mechanical soil

disturbance; permanent organic soil cover; and diversification of crop species grown in sequences or associations (Kimaro et al. 2016), or agroecology, the application of ecological principles to the production of food, fuel, fibre and the management of agroecosystems. Hence, what actions and activities are rendered as being 'climate smart', and what triple wins actually mean and for whom, are shaped by who interprets the term and how it is applied; in short, reflecting power relations within societies. As such, CSA is not a new agricultural system, nor a new set of practices. What is new are first, the aims and intentions to link with mitigation, and second, the integration of the three goals, both of which are highly contentious. In order to understand the equity implications of CSA, it is crucial to keep these intentions and goals in focus as they profoundly shape how CSA plays out on the ground. To limit our discussion, we focus on four narratives found within CSA: mitigation as a policy mechanism, agricultural development, agri-business, and community-based approaches.

Equity is chosen because concerns and claims regarding social equity are central to CSA, both among those supporting and opposing it. As a policy goal concerned with simultaneously achieving adaptation, mitigation and food security, equity underpins climate policy as well as agricultural and development aims, notably in the Paris Agreement and in the Sustainable Development Goals (SDGs). Social equity and gender are often mentioned as important components of achieving climate-smart agriculture, as well as in guidelines for how to carry out and govern implementation of CSA (FAO 2013; Vermeulen 2015). Some also see CSA as a new opportunity to address long standing equity challenges for smallholder farmers. On the other hand, a range of civil society actors in particular consider the goal and emerging practice of CSA to be fundamentally incompatible with equity goals, disproportionally benefitting large-scale actors at the expense of poor and marginalised smallholder farmers. An example is the argument that there is a direct trade-off between effectiveness and equity (Taylor 2017). As Neufeldt et al. (2013: 3) point out, given the breadth of what might be termed 'Climate-Smart Agriculture', there is no guarantee that CSA practices lead to improved outcomes: "Reducing GHG emissions or improving resilience may not always result in the best natural resource management outcomes if consequences include biodiversity loss, degradation of cultural heritage, increased social inequity or long-term ecosystem instability". The authors argue for a "safe operating space" for CSA, defined as a "set of conditions that demonstrably better meet human needs in the short and long term within

foreseeable local and planetary limits and holds ourselves accountable for outcomes across temporal and spatial scales" (ibid: 3).

Common to these concerns and arguments, however, is that what equity means in the context of CSA is poorly theorised (Taylor 2017). Assumptions underpinning the linkages between CSA and equity are therefore left implicit, weakening the arguments from either side on the equity implications of CSA; i.e. the potential of CSA to either support or undermine equity goals. Furthermore, contrary to Neufeldt et al. (2013), we suggest that 'safe operating spaces' are not only impossible to identify but also problematically assume that benefits for all can be achieved. This lack of conceptual underpinning is important in view of the significant investment in CSA to date, and the expected increase in CSA implementation over coming years.

To address this gap, the paper examines three essential dimensions of equity (distributional, procedural and contextual), in relation to four key contending discourses surrounding CSA, and how these discourses can exercise visible, hidden and invisible power (Lukes 1974) with rather contradictory effects. We draw these three dimensions from the literature on climate justice and related debates in environmental governance and conservation (cf. McDermott et al. 2013; Schreckenberg et al. 2016). Together, they allow us to ask questions about who is considered responsible for climate change goals, how that maps onto historical and present day inequalities in emissions and burdens for mitigation, and how and by whom the goals of CSA are assumed to be enforced. We do this by examining the main narratives (and counter- and sub-narratives), the associated networks of actors and their power relations, and how they have shaped actions and field-level activities on CSA.

Through these, we examine the implications these contestations raise for its application in shaping agricultural sector priorities and practices in a changing climate. Our starting point is that CSA can be seen as a discourse, or narrative, where debates – and outcomes – are influenced by the actors' underlying ideas and ideologies, as well as the activities and priorities a 'climate smart' discourse sanctions. Such narratives exercise power through their ability to focus attention on some issues over others, defining the scope of a problem, and at what scale it should be addressed, and the range of possible solutions to be pursued (Lukes 1974; Nightingale 2003; Keeley and Scoones 2003). In turn, the power of CSA discourses is

both to directly shape different actors' control and access to resources, as well as promoting equity goals or reproducing inequities.

We argue that CSA should be conceptualised explicitly as a contested social-political process that mediates how individuals and collectives deal with multiple types of simultaneously occurring agronomic, environmental and social changes. Our conceptualisation builds on perspectives that view CSA not as a single decision or measure, but as a process wherein social and political relations shape the simultaneous management of diverse changes, many of which are not driven directly or consciously by climate change (Pelling 2011). As such, climate change mitigation and adaptation should not be separated from other kinds of change to which societies respond, nor should uncertainty and change in agricultural systems be considered as something new that only emerged with climate change (Eriksen et al. 2015).

Perhaps most importantly, the discourses around CSA reflect strongly polarised positions that leave little middle ground. It is assumed to be either a transformative approach that will lead to the emergence of more sustainable and climate-resilient forms of agriculture (cf. FAO 2016; Lipper et al. 2014) or a rebranding of techno-managerial approaches to 'business as usual' commercial agricultural practices (cf. Stabinsky 2014). This paper argues that both these discourses reflect a profound shift in responsibility for climate change mitigation and poverty alleviation from international and regional actors to national governments and particularly to local producers and resource managers, who are increasingly categorised as the front-line defence against climate change. It is therefore crucial to probe what practices and networks are formed on the ground in response to these discourses of CSA.

From this, we argue that an analysis of equity brings out three major areas of concern. First, the vagueness of CSA goals has left considerable scope for actors to make unrealistic and unsupported claims about the likely positive developmental outcomes and impacts resulting from implementation. Despite recent shifts in the rhetoric around the approach, a large share of CSA-labelled activities is still focused primarily on mitigation and assume that benefits will flow to more or less automatically to those who need it. This has led to the shifting of responsibility on climate change mitigation efforts from international and regional actors to national governments and more nefariously, to poor local producers and resource managers who are ill equipped to respond. CSA measures and the costs and benefits that accrue from their application will ultimately be politically negotiated, raising questions around who sets

the terms of the agenda and how the poorest and most vulnerable groups are involved or excluded from decisions that affect their resources and their livelihoods. Thus, while some may see 'triple wins', CSA may involve significant trade-offs with equity goals, creating winners and losers in the process.

Second, while CSA is often portrayed as a force for transforming the agricultural sector, evidence suggests that it is unlikely to fundamentally shift power to address the key factors that constrain or block the emergence of more 'pro-poor' agricultural development, adaptation to climate change, or carbon sequestration and storage. The dominant focus on market-based transformations in particular may lead to new risks and vulnerabilities, and entrench already unequal power relations. Third, we argue that to improve CSA outcomes, more attention needs to be given to the institutions that underpin the bargaining power of the poorest and most vulnerable groups, as well as a deeper acknowledgement of the political nature of transformations that are needed to address challenges around the agricultural sector in a changing climate.

An analysis of the political economy of discourses on CSA and their implications, we believe, brings important evidence to the debate and helps broaden dialogues with government and non-government actors who are invested in promoting the approach. If the goals of CSA are to be achieved – increasing food security and adaptive capacity among the poorest and most vulnerable groups, while simultaneously capitalizing on agriculture's mitigation potential – it is important to understand both how the concept has emerged and how it has been used, by whom, and with what consequences, for whom. Through this analysis, we are aiming to direct attention to opportunities for new knowledge, solutions and actors to emerge that may have been excluded to date, yet which may be important for achieving CSA policy goals.

The paper is structured as follows. The next section provides a brief background to the emergence of climate-smart agriculture, providing a summary of its conceptual origins and its rise as a global agricultural development priority. This is followed by the introduction of the analytical framework focused on the three dimensions of equity and a discussion of its relevance to ongoing debates on CSA. Section 4 introduces the key discourses associated with different aspects of the CSA agenda and their chief protagonists associated with each of these. The final section compares and contrasts these contending discourses and draws out a set of conclusions for policy and practice.

2. The emergence of climate-smart agriculture

The concept of climate-smart agriculture emerged in the context of increasing concern over food security in view of raising global populations, and the impact of climate change (FAO 2009). The concern centred on the fact that the global population is expected to increase by around 2 billion people, putting increasing pressure on agriculture by the middle of the 21st century. A commonly cited figure is that agricultural production will need to increase 60 percent by 2050 even in the absence of climate change to meet projected demand (FAO 2009, Campbell et al. 2016).

In its first major report, the United Nations Food and Agricultural Organization (FAO) in 2009 stated that CSA "(…) contributes to the achievement of sustainable development goals by integrating the three dimensions of sustainable development (economic, social and environmental) by: (1) sustainably increasing agricultural productivity and incomes; (2) adapting and building resilience to climate change; and (3) reducing and/or removing greenhouse gases emissions, where possible (FAO 2013). It went on to define CSA is "an approach to developing the technical, policy and investment conditions to achieve sustainable agricultural development for food security under climate change…" (FAO 2013: ix-x).

From the outset, however, CSA represented a recognition of the possible contributions of agriculture to emissions reductions (Mann et al. 2009). This was rooted in the unique role of the agricultural sector as both a leading contributor to carbon emissions as well as a sector with high vulnerability to climate change. Agriculture is thus both a major 'victim' by being severely exposed to impacts of climate change, as well as a 'villain' in being a major contributor to greenhouse gas (GHG) emissions (Smith and Olesen 2010; Hedger 2011; Vermeulen et al. 2012). For example, globally, 22 per cent of the cultivated area for the most important crops and 56 per cent in Sub Saharan Africa is projected to experience negative impacts from climate change by 2050 (Campbell et al. 2016). Often-cited figures is that global yields of maize and wheat have already decreased by 3.8 and 5.5 percent respectively (ibid). At the same time, an estimated 10-12 percent of the global GHG emissions come from crop production. Therefore, the climate change mitigation potential from agriculture is considerable, and it presents a strong case for the key role for agriculture in any interventions or solutions to tackling climate change (ibid).

CSA did not arrive in a political vacuum, it entered arenas with major contestations and long-standing (and often entrenched) positions around the aims and means of agricultural development (Sumberg and Thompson 2012). These include, but are not limited to, discussions over the past decades around multifunctional agriculture, sustainable land management, sustainable intensification, agroecological approaches, and conservation agriculture, to name a few (Thompson and Scoones 2009; Sumberg, et al. 2013).

It is beyond dispute that agriculture must be central to any strategy for tackling climate change and its impacts. Yet, when analysing how CSA is imagined by different actors and communities of practice, it becomes clear that the envisaged gains and trade-offs vary considerably and attract some of the sharpest critiques from detractors. While several international organisations, including the FAO, the International Fund for Agricultural Development (IFAD), the World Bank and a number of international agricultural research centres and programmes (such as the World Agroforestry Centre (ICRAF), and the CGIAR's Climate Change, Agriculture and Food Security Research Program (CCAFS), have endorsed CSA as a policy goal, other groups of actors have levelled sharp criticisms. These include, but are not limited to: challenging its ethical grounds in increasing smallholder participation in carbon markets, its emphasis on technology development and transfer, the prevalence of support for agro-industrial expansion, and the exclusion of smallholder voices and priorities (e.g. Atela 2012; Suppan and Sharma 2011; Anderson 2014; Pearce 2011). Initial scepticism also centred on the manner in which agriculture was introduced in the climate negotiations, predominantly focusing on mitigation and bound up with contested issues relating to agricultural trade (Caron and Treyer 2016; Stabinsky 2014). Arguably, many of the critiques were based not on evidence of how CSA would appear on the ground, but rather the emphasis in CSA strategies, as well as the track-record of the leading organisations promoting CSA, notably the World Bank (Suppan and Sharma 2011; Taylor 2017). This in turn led to concerns that initiatives focused on climate change and agriculture, including CSA, were introducing emission reduction targets 'through the back door' for some of the poorest and most vulnerable farmers in the world (Chinsinga et al. 2012).

The World Bank and various UN bodies have embraced the CSA agenda and initiated projects to showcase its potential (World Bank 2012; FAO 2014). With examples from Africa, South and South East Asia and South America, they have identified a variety of

practices that can be incorporated under the CSA framework for example: introducing cash crops to subsistence farmers, improving irrigation capacity and efficiency, training in sustainable resource management, carbon sequestration and mitigation, introducing energy-efficient cooking stoves to reduce deforestation, reforestation through plantation schemes, construction of biogas digesters, improving genetic diversity, creating CSA readiness though environmental education and awareness making, improving efficiency in fertilizer use, foster technology transfer and innovation, and making markets more accessible (FAO 2014). Within these, there is potential for very wide interpretations of what CSA is or should be, and indeed, it reads a bit like a laundry list of natural resource related development schemes over the past thirty years.

Because these activities are so diverse and encompass such a wide array of activities with widely diverging objectives, several scholars have argued that CSA leans on a poorly understood and somewhat tenuous relationship between mitigation, adaptation and food security, and hence serves to justify nearly any agricultural practice to be 'climate smart' (Neufeldt et al. 2013), or at least constructed as such. This argument finds some merit as our review of recent literature reveals that CSA is used by advocates of activities spanning fields of sustainable intensification, agroforestry, agroecology, conservation agriculture, tenure formalisation and land titling, carbon sequestration and REDD+ programs, knowledge creation and dissemination, market integration, technology innovation and transfer, and the use of fertilizers, pesticides and genetically modified (GM) crops.

Several scholars have noted that CSA activities tend to focus on industrial agricultural practices where the biggest emission reduction gains can be found, rather than on improving food access or reducing vulnerability (Adekola and Terdoo 2014; Anderson 2014). In comparison to industrialised contexts, the per capita contribution to global climate change is low in agrarian societies, and at the same time, poverty levels are high and vulnerabilities to the effects of climate change significant (Stabinsky 2014). These inequalities in tandem with the fact that the 'Global North' carries the historical responsibility for anthropogenic climate change makes it politically controversial to connect climate change interventions to farming practices in the global South. Following this argument, some claim that reconciling adaptation, food security and mitigation is not viable from a historical responsibility or climate justice point of view (Stabinsky 2014). Here, we see clearly how different discourses

of CSA are used to frame the same problem differently by differently positioned actors. It is remarkable how CSA has circulated so widely and so quickly globally, notwithstanding criticisms from predominantly social scientists and civil society organisations.

Recent activity on CSA has arguably responded to some of this critique, notably with more emphasis on landscape-centred approaches that focus on CSA benefits to be found at larger scales, not project or programme level, avoiding situations where mitigation and adaptation actions are artificially combined, resulting in sub-optimal outcomes (Harvey et al. 2014). At the same time, many development NGOs, while being critical of aspects of CSA, have also taken up and made CSA 'their own', notably through smallholder-focused initiatives under CGIAR's CCAFS (Bernier et al. 2013). An example of this wider engagement is also the 'Africa CSA Alliance' (AACSA), which is convened by the African Union through NEPAD's Comprehensive Africa Agriculture Development Programme (CAADP) and includes a range of international and regional agencies, governments, research bodies and civil society organisations. The Alliance is seeking to leverage existing CSA initiatives in several countries in the region to deliver results at scale and drive policy reform. However, to its critics, CSA remains an idiom to focus on efficient production along with governance structures that help to sustain the legitimacy of development as a metaphor for technology transfer and market integration, without addressing the underlying vulnerability of poor farmers.

In 2014, more than 100 civil society organizations signed a joint letter rejecting the Global Alliance for Climate Smart Agriculture, arguing that it legitimises agro-industrial expansion and socially and environmentally destructive activities that increase GHG emissions. The criticism emphasized how the vagueness of CSA allows the agri-business sector to use GACSA as a platform for image making and agro-industrial expansion. Further, since carbon offsetting and revenues from carbon trading schemes are necessary to fund CSA, this would create a demand for carbon capturing lands in the Global South and lead to land dispossessions for populations without recognizable property rights. A third category of critique argued that GACSA places mitigation burdens on the most vulnerable populations (Anderson 2014, Via Campesina 2014).

In this way, these counter narratives consider CSA to be a 'green-washing' project and a prolongation of the Green Revolution, resulting in increased indebtedness, vulnerability, GHG emissions and environmental degradation. Using historical narratives of injustice and

development failures, proponents of this discourse re-politicise the debate, and show that CSA prevents recognition of radical change and masks structural impediments for pro-poor development (Via Campesina 2014; Anderson 2014). Via Campesina (2014), for instance, has argued that CSA is "part of a larger process of 'green' structural adjustment projects required by an economic system and the political elites in distress, because they have exhausted other places for enormous speculative financial investments and now see agriculture and agricultural land as the new frontier." The argument is that it is exactly the practices that CSA engenders which create food insecurity in the first place, namely reliance on agro-industrial practices and corporate control over inputs and seed stocks.

3. Theorizing equity in the context of climate-smart agriculture

To understand the equity implications of CSA, we need to analytically link different aspects of equity with CSA as a discourse that influences policy and practice. That is to say, to probe the systemic ways that CSA as a concept constructed around 'triple wins' is adopted by a variety of actors, re-articulated in policy and translated into practice. While a range of practices may be deemed 'climate smart' from the narrowly defined perspective of adaptation, mitigation and food security, the question is: to what extent they can also be considered equitable, and if so, according to what understanding of equity? Who is defining the goals? Whose responsibility? Who is ultimately accountable? Who wins and who loses?

Our approach sits in opposition to rational-positivist-linear views, in which assumptions are made that technical knowledge is available and communicated to policy-makers, who then make policies grounded in a thorough understanding of 'the problem' (Keeley and Scoones 2003). We rather consider policy processes as incremental, complex and 'messy', involving actors with often competing goals and interests, which invoke evidence provided by research in less than straightforward or transparent ways (Keeley and Scoones 2003; Tanner and Allouche 2011). Our goal is to understand how such processes impinge on equity by privileging some priorities over others, and through which some actors have the power to better assert their visions of what 'climate smart agriculture' means in practice.

Over the past 10 years, the climate change-agriculture policy area has been characterised by a large number of actors that have diverging preferences, priorities and concerns. Most actors are not new, neither are the solutions proposed as the laundry list of CSA activities presented above shows. This situation resembles what Jordan et al. (2013: 164) describe as "an unpredictable assortment of ideas, problems, solutions and decision-making priorities jockeying for attention". Thus, while we are prone to think that policy reflects a desired condition that generates distinct kinds of projects, it is rather the case that projects conducted by institutions, networks and actors provide the evidence for promulgating policies. In this way, CSA practices are shaped by existing actors and activities as much as they are shaped by novel policy work.

When seeing climate change and agriculture as an integrated policy complex, the implications are significant both environmentally and socially for those who are affected, and financially for those who may stand to gain from climate or CSA funding. The CSA concept thus fits with the description of a 'wicked' problem (Turnpenny et al. 2009), situations where only partial solutions are possible; where stakes are high and decisions urgent, but where facts are uncertain and values are disputed. These characteristics of wicked problems tend to create spaces for powerful actors to use the uncertainty to define problems and the 'allowable range' of solutions. Wicked problems are also often characterised by trade-offs and the potential for unintended consequences (Campbell et al. 2016).

Yet, as policies are focused on stabilizing an interpretation of how to implement change (Fischer 2003), they have to be coherent across actors, interests and scales. Policies achieve this coherence by drawing on discourses that are adequately flexible and ambiguous, and give enough room to manoeuvre for parties with different goals and interests. Policies need to be packaged and sold to fit prevailing worldviews. Thus, when it comes to translating policy into practice, the mobilizing narratives that drive policy making, such as 'sustainability' or 'triple wins', may recede into the distance in favour of direct impacts achieved through political relationships and management procedures that can be included in narratives of 'success' (Sumberg et al. 2012). In other words, projects may favour strategies with demonstrable results over more risky innovations intended to produce 'triple wins'. Recent work has shown how such processes – through a variety of mechanisms - may push the debate in certain directions that bring some opportunities but close down others, jeopardizing goals of

implementation (Ojha et al. 2015). This can set policy on pathways that lead to outcomes shaped by these, but not necessarily reflecting the original aims (Leach et al. 2010).

To probe the equity implications of CSA in any meaningful way, we therefore need to take into account this non-linear, political character of policy processes. We do this by examining how different actors interpret CSA principles and construct narratives that frame problems and solutions. This has important equity implications because as argued above, narratives drive activities and define outcomes on the ground through informing policy and translating into practice in local contexts. As Schmink and Wood (1987: 51) note, ideas are never innocent but "either reinforce or challenge existing social and economic arrangements". In line with this argument, we suggest that while there is nothing fundamentally 'new' in CSA, the discourses of CSA serve to reorient climate change mitigation and adaptation on certain issues, which may change or reinforce current inequities. This reorientation highlights the need to 'insert' power and politics into the CSA debate in order to probe the ways CSA travels and transmutes across scales, how various actors use it and for what purposes, how it informs policy and materializes on the ground, and ultimately who have been the winners and losers in this process. As Raik et al. (2008: 731) notes,

> "While much technical knowledge of natural systems is applied to practice in supposedly neutral, disinterested ways, much professional practice operates—sometimes intentionally, sometimes unintentionally—to exclude, dominate, marginalize, or otherwise disadvantage some groups."

The discourses used by different actors are shaped by their backgrounds and interests, and will determine the types of evidence and knowledge that is included or excluded, the types of priorities that are being made, and by whom (Nightingale 2005). Scholarly work has also shown how debates on complex social and environmental issues are often closed down – sometimes very quickly – around certain types of discourses and solutions, effectively blocking alternative narratives and actors (Leach et al. 2010).

In our effort to capture such dynamics our framework thus puts emphasis on different narratives and their histories on CSA, and examines how they are framed, what kinds of knowledge and evidence they draw upon, the associated actors, and the kinds of policies and practices to which they are linked (Keeley and Scoones 2003; Wolmer et al. 2006).

We use a framework focused on three dimensions of equity, informed by broader conceptualisations of equity and resource access (McDermott et al. 2013; Schreckenberg et al. 2016). Equity is conceptualised in the UNFCCC through the Convention's reference to "common but differentiated responsibilities and respective capabilities". There has been a considerable discussion around what this means at global, national and sub-national levels, ranging from, on the one hand, utilitarian and effectiveness-related arguments, to moral and rights-based arguments on the other (Adger et al. 2006).

Following McDermott et al. (2013), we look at three aspects of equity; distributive, procedural and contextual. Distributive equity is focused on distribution of costs, risks and benefits and has strong correlation with the economic dimensions of equity (McDermott et al. 2013; Schreckenberg et al. 2016). We here consider distributive equity to relate to the sharing of benefits and costs and risks emanating from CSA interventions, importantly around who the intended beneficiaries are, and how interventions are justified. These may include both instrumental or efficiency concerns, as well as rules- or moral-based concerns. For each of the discourses, we ask whether and how there is attention to winners and losers, how these are justified (e.g. based on efficiency or needs of the poorest), and whether there are benefits and burden-sharing arrangements in place.

The second component, procedural equity, is about participation and representation in decision-making processes, which may include, on the one hand, guaranteeing equal basic rights among all actors, and on the other, positive bias to marginalised or excluded social groups (McDermott et al. 2013). We here interrogate the CSA discourses with respect to whether and how they define the role of relevant stakeholders, accountability for decisions, responsibility for actions, and how meaningful participation is ensured for relevant actors, in particular those who are the most vulnerable and most in need of support.

Finally, contextual equity is about recognising how different actors have different access, capabilities and power to gain from a given intervention or mechanism. (McDermott et al. 2013). We understand this here to be about considerations of root causes for vulnerability to climate-related risks, people's ability to access mitigation-focused interventions such as low carbon technologies, as well as constraints and barriers to benefitting from agricultural development. Thus, we here map to what extent different discourses acknowledge such underlying, pre-existing barriers (whether social, political or economic).

The paper is based upon a review of scientific and 'grey' literature on CSA, with a focus on the period from 2009 to August 2016. Given that CSA is a relatively new concept, few studies have so far engaged in empirical investigations of outcomes of CSA practices (but see recent review by Rosenstock et al. 2016). Thus, our paper is not an attempt to assess actual value and implications of CSA in practice, rather, we are interested in how equity, in its different dimensions, appear in the arguments and narratives that engender and create a discursive base CSA policy and practice. These different discourses will also lead to different outcomes, making an examination of the discourses themselves useful in understanding the impacts CSA is having on the ground.

The document analysis was guided by an aspiration to identify the overall key narratives, potential overlaps, and sub- and counter-narratives at play in CSA debates. In particular we paid close attention to: relative emphasis on adaptation, mitigation and food security; the ways that synergies and triple wins are constructed; the extent to which political considerations are included; whether gender, youth and equity concerns are included; whether links to other issues on agricultural development (such as land, water, tenure) are made; whether emphasis is put on production of or access to food; and at what scale the 'problems' and associated 'solutions' are believed to lie.

Considering that CSA is designed to inform policy goals and desirable outcomes (i.e. triple wins and synergies between food security, adaptation and mitigation), those who take up the idea of CSA can define the means and measures to be adopted. In addition to the UN (notably the FAO) and the World Bank, a large number of national governments, NGOs and private sector companies have taken up CSA's 'triple wins' agenda, and formed new institutional bodies working to operationalize and implement CSA practices across the Global South. Others, however, have come out in stark opposition to the concept. As we shall see, this has created a contested space around CSA, wherein a multitude of actors assert how it should be understood and implemented and divergent conceptualizations of CSA underpinning organisationally driven programs and agendas.

4. Equity in four climate-smart agriculture narratives

In the following, we examine four key diverging discourses of CSA in view of equity, tracing their lineage and current formulation. The four narratives are focused on mitigation, agricultural development, agro-industry and carbon markets, and community-based approaches. These discourses are distinctive with respect to their relative emphasis across mitigation, adaptation and food security. They also differ in their historical trajectories and entry points to climate change-agriculture linkages, their justification, associated actors, knowledge and actions, scale and outcomes. While there is no watertight separation between these, and there are elements of overlap across them, they serve to highlight some of the key ways CSA interventions look like.

4.1 CSA as mitigation policy mechanism

The basic starting point for CSA was, as mentioned above, the unique dual role of the agricultural sector both as a cause of greenhouse gas emissions, and by implication climate change, and as susceptible to impacts from climate change and its effects. CSA was thus intended to address both aspects. The recognition of this dual role was also the key motivation for a separate agricultural programme under the UNFCCC. While notionally focused on the 'triple wins', in practice the primary emphasis was on addressing the twin challenges of adaptation and mitigation, and with a particular focus from the outset on mitigation (Mann et al. 2009). Added to this, discussions related to climate change and agriculture came in under mitigation-focused sections of the Subsidiary Body for Scientific and Technological Advice (SBSTA) of the UNFCCC. This raises concerns for distributive equity in investments favouring large-scale interventions to maximise carbon benefits over concerns for the livelihoods of smallholders. While proponents were quick to point out the triple win potential and the link to food security, the carbon benefit was paramount in agricultural projects identified as 'climate-smart'. For example, the Kenya Agricultural Carbon Project involves the adoption of sustainable agricultural land management practices by smallholder farmer groups to generate increased crop yields, farm productivity and soil carbon sequestration (as well as above-ground carbon sequestration) on approximately 45,000 ha in Nyanza and Western Provinces of Kenya (Atela 2012).

Many questions were raised about the ethics of promoting climate change mitigation within agricultural practices in the Global South, where people are least responsible for carbon emissions. Based on the original conception of CSA, the counter-argument was that it serves to justify on-farm mitigation and sequestration programs with reference to synergies with adaptation and food security. Critics (e.g. Delvaux et al. 2014; Stabinsky 2014; Anderson 2014) argue that these should be considered co-benefits rather than the main objectives of CSA, and the result is that on-farm mitigation is rendered less contentious as it can be considered a 'climate-smart' activity sanctioned by the FAO. Since the initial backlash against CSA, culminating at the Durban Conference of the Parties (COP) to the Climate Convention in 2011, some of the key proponents toned down the language and the CSA definition was revised to state that GHG emissions should be reduced and removed 'where possible' (FAO 2013).

The fallout from this discussion helps explain why many CSA advocates now put emphasis mainly on food security and adaptation measures, rather than mitigation. For example, we observed a CSA initiative in Nepal that has promoted new micro technologies for increasing vegetable crop yields, more efficient grain processing technologies and rehabilitation of traditional ponds used for livestock and irrigation among other adaptation measures (LiBird, personal communication 2015).

Accordingly, the priority in this discourse is on improving livelihoods and adaptive capacity of poor and vulnerable farmers. Mitigation largely remains a potential 'synergy effect' or 'co-benefit' of interventions targeting adaptation of food security. Other commentators have followed this argument. Neufeldt et al. (2013), for instance, point out that food insecure farmers lack ability, capacity and capital to invest in CSA, and assert that the focus should be on creating incentives and opportunities for CSA by combining short-term wins (increased income and improved adaptive capacity) and long-term benefits (mitigation). This was also the central message in the first Global Science Conference on Climate-Smart Agriculture (GSCSA) held in Wageningen in 2011 (Wageningen Statement 2011). According to this discourse, then, food security, increased income and resilience must be prioritized over mitigation.

Another concern from a distributive equity perspective is that within programs oriented towards adaptation, however, it is not clear that benefits are equally distributed or that burden-

sharing arrangements are in place. In the Nepal example, there is a long history of addressing equity issues in natural resource management, there nevertheless is a tendency for interventions to focus on areas that are more accessible (i.e. near roads) and on households where take up of new technologies is more guaranteed (those with some literacy) (Nightingale 2005). The LiBird project began in 2015 so it is far too soon to assess their practices. They have included a gender consultant within the program but there are more complex questions around which members of households benefit and how projects themselves can intervene in communities that are highly hierarchical.

This CSA narrative also raises important procedural and contextual equity concerns. Despite an increasing focus on gender and social inclusion (Vermeulen 2015), there are issues around responsibility as well as to what extent CSA is set up to address historical root causes. Alongside the co-benefits approach to mitigation runs the equally significant issue of responsibility. FAO figures reveal that 74 per cent of all agricultural emissions originate in developing countries, and that 70 per cent of the agricultural mitigation potential can be realized in these same countries (Gattinger et al. 2012). This has brought some to argue that CSA is a direct response to this observation (Stabinsky 2014), and that the adaptation and food security components are used to alleviate the political controversy surrounding climate change interventions in the global South. Civil society organisations in particular have argued that CSA displaces mitigation responsibility from the global level and re-scales it onto local populations by situating the problem in the present and in current agricultural practices. This kind of logic ignores the historical origins of greenhouse gas emissions, not only from industry, but also from agriculture. Many of mitigation solutions suggested through CSA displace financially lucrative solutions and opportunities for positive change from local levels and rescale them onto global corporations and financial institutions. As Stabinsky (2014: 7) argues: “This framing conveniently ignores completely the enormous potential in the North for reducing fertilizer production and use and reducing meat production and consumption.” Such activities would also have significant mitigation effects and are directly related to agriculture. Approaching CSA from a mitigation perspective thus risks implying a focus on the potential to maximise carbon sequestration rather than on the more diffused practices of production and consumption.

It is perhaps not surprising that a large number of funded CSA interventions are focused on carbon sequestration in soils. In common with the revised CSA discourse, they attempt to make carbon sequestration beneficial not only from a global climate change perspective, but also from a short-term local livelihood perspective (c.f. Simpson 2012, Woelcke 2012). A recurring example in the literature is that farmers will earn 'extra money' from carbon offsets that will allow financially poor households to invest in adaptive capacity and improved farming techniques. Here, the springboard for adaptation and food security is the financial benefits from mitigation. In these discourses, we thus see the domain of 'agriculture' spread to forests and agroforestry as well. There is little questioning of how such efforts may transform property rights, management practices and access to everyday livelihood needs for small-scale farmers.

4.2 Agricultural transformation

The emergence of CSA happened in parallel with an increasing focus on food systems, and food security and agriculture in a context of a rapidly increasing global population. The key motivation in this discourse is how to increase food production by 60 percent by 2050 to accommodate a projected global population of nine billion (FAO 2009). The World Bank's World Development Report (World Bank 2007) on agricultural development highlighted the need for agricultural transformations to meet these challenges. Unlike the previous discourse, the entry point here was initially not climate change. Climate change was identified by FAO and later the World Bank as a factor compounding the challenges, increasing the urgency of the need to find new solutions and providing the entry point to CSA.

This discourse can be characterised by the convergence of a number of agricultural development strategies, notably conservation agriculture (CA), sustainable intensification and a range of agroforestry systems, are being re-defined as inherently 'climate-smart', i.e. as 'off the shelf' CSA strategies and practices.

Sustainable intensification helps to illustrate well the characteristics but also contradictions inherent within this CSA discourse. Sustainable intensification is, as Campbell et al. (2014: 41) argue, a "cornerstone of CSA, as increased resource use efficiency contributes to both adaptation and mitigation via effects on farm incomes and reduced emissions per unit product." The synergy effect on adaptation is described in terms of 'increased income' and the synergy effect on mitigation in terms of 'per unit product'. This points to a construction of

triple wins where adaptation has become synonymous with increased income, and the focus on reduction in GHG emissions per product.

In sustainable intensification, we find justification for an efficiency- or consequence-based view on distributive equity, both in terms of more economic efficiency in terms of income per product, and in terms of gains coming through predominantly high-input, technology-focused interventions. Most commentators agree that the majority of this will need to come from increased efficiency, including innovative crop science advances, if yields are to increase without adverse environmental impact or the cultivation of new land. Novel research methods have, the argument goes, the potential to contribute to food production through forms of genetic improvement, including the genetic modification of crops that have been altered to introduce new and desirable traits. The focus on increased efficiency and high-input agricultural production sit awkwardly alongside approaches focused on improved access to resources and safeguarding of access to crop genetic diversity, including traditional varieties.

A related argument is that for farmers to benefit from new practices and technologies, access to markets needs to improve. This has brought many to support market expansion and integration as a means to increase farmers' participation in economies of scale (c.f. Nyasimi et al. 2014; FAO 2014). Market integration is presented as a 'climate-smart' strategy to alleviate poverty and food insecurity through adoption of CSA technologies such as drought tolerant varieties (intensification of production), and providing access to markets for producers to sell their output (adaptation through increased income). This has been associated with a push to commercialise small-scale agriculture and steer production away from subsistence crops to cash crops. However, this has implications for procedural equity in that it presumes access to supporting institutions. In the above-mentioned Nepal case, cultivation technologies including new fertilization techniques and plastic tarps for tomatoes were aimed at small-scale production for sale at local markets. To initiate such processes, financial institutions have also highlighted the importance of developing financial mechanisms through which farmers can fund these technologies.

Yet, sustainable intensification can take many forms and be pursued in a number of ways. On the one hand, sustainable intensification is presented as a way for farmers to increase their earnings from production without contributing to environmental degradation through encroachment into forested or other non-agricultural landscapes. On the other hand, as put

forward in a 2009 report from the UK Royal Society (Royal Society 2009), there is a discourse arguing for the sustainable intensification of the global agricultural system. From a 'globalist' perspective, the challenge is presented as the largely technical one of how to meet future demand for food on an area of land that is unlikely to expand (Campbell et al. 2014). Within this framing, science and technology are presented as having a primary role to play in meeting these challenges. Practices promoted as sustainable intensification rarely seek to promote agroecology, organic agriculture or permaculture, which some critics argue are far more climate friendly and sustainable than high input or high yielding practices promoted through CSA tied to sustainable intensification (Stabinsky 2014; ISA 2014).

The 'global sustainable intensification' narrative has been powerful in the CSA debate. This may be at least in part because the 'problems' underpinning CSA are primarily framed as global ones, necessitating global solutions. One way to 'sustainably' intensify production from a globalist perspective is through technology transfer and innovation. The challenges inherent in the need for location-specific solutions, acknowledging the diversity of livelihood vulnerabilities of small-scale farmers and their needs are obscured within such a globalist perspective, making it difficult to address contextual equity issues at that scale.

4.3 Promoting agro-industry

In many respects, CSA from its conception opened up space for agro-industry to take a leading role in defining what counts as CSA. The initial FAO documents outlining CSA acknowledged that a large share of new funding for CSA would need to come from the private sector (FAO 2010). As a result, global agro-businesses were invited to articulate what activities should be funded under the framework of CSA, and hence shape what was to be included and excluded in its translation from policy to practice.

Agribusiness companies, including Yara, Monsanto and Syngenta, have branded their fertilizers, pesticides and GM crops 'climate-smart' since they can be applied to increase production and reduce on-farm GHG emissions through various synergy mechanisms. One commonly cited synergy mechanism is found in herbicide-tolerant crops which reduce the need till the soil (see e.g. Neate 2013). Anderson (2014), for example, refers to a Monsanto seed that is resistant to the herbicide Glyphosate. The logic is that the crop can be sprayed with the herbicide as it grows, so that the weeds die back, but the crop remains standing. This practice reduces the need to till the soil for weeds, and hence reduce carbon leakage from the

soil. Using this seed in combination with the Glyphosate herbicide, the author claims, has been brought forward by Monsanto as a 'climate-smart' non-till practice that will enable farmers to earn extra money from carbon offsets. These claims are all part of a CSA discourse revolving around intensification through production efficiency, and fitting in well with neo-Malthusian ideas that population pressure increases demands on agricultural lands. Retailers such as Wal-Mart Stores, Kellogg's and McDonalds have also used CSA to justify activities various 'climate-smart' activities. McDonalds, for example, has pledged to start purchasing beef from 'sustainable' sources consistent with the principles of CSA. What a sustainable source is, and how this fits within a CSA framework remains unclear, however.

Such neo-Malthusian assumptions underpinning agricultural intensification drives have benefited various actors in the global agro-industrial supply chain, but have left little space for participation of farmers. Chemical fertilizers, pesticides and even genetically modified organisms (GMOs) can now be cast as 'climate smart' under a CSA framework whereas they have been under attack from many agricultural sustainability advocates who argue that the externalities that accompany such technologies outweigh their benefits, with farmers ending up bearing the costs. Chemical inputs are known to leach soils of nutrients over time and to cause problems of pest resistance. These kinds of sustainability critiques can easily be side stepped by agro-industry when they can promote their products as climate smart, but raises important concerns over distributive equity.

Spearheading this process is the Global Alliance for Climate-Smart Agriculture (GACSA), an alliance between the private (mainly agro-industrial) sector, UN agencies, the World Bank, national governments and a number of civil society organizations. GACSA was formed in 2014 and works to stimulate governments and other institutional bodies to operationalize and scale up CSA practices through the promotion knowledge, research and development in technology, practice and policy; fostering technology transfer, information sharing and technical assistance; improving effectiveness of public and private investments; and integrating CSA into policy and planning at all levels. GACSA works, in short, to spread CSA. With members including International Agri-Food Network, International Fertilizer Industry Association (IFA), The World Business Council for Sustainable Development (WBCSD) and Yara International, GACSA is heavily influenced by corporate interests.

Fundamentally these mechanisms assume that the problem within agriculture is low productivity and low financial returns on produce. The framing of the problem means proposed interventions are technical in nature, focusing on innovation and technology transfer, such as mitigation through carbon sequestration and capture and use of agro-chemicals. This suggests a largely market-based approach to CSA and the distribution of benefits, and also an implicit focus on farmers' practices as part of the problem rather than the solution. The literature suggests that linking farmers to markets is a common approach to mainstream CSA across economically marginal localities. As explained in relation to a cocoa certification program under a CSA label in Ghana: "The goal was to create a sustainable landscape that harnessed the transformative power of markets" (Noponen et al. 2014). From this perspective, CSA's job is to 'create' and 'expand' markets for small-scale farmers to benefit from, imitate public-private partnerships, and to align producers and buyers. However, the ability of farmers to benefit from these markets relies on a number of other, pre-existing structures that are rarely fully acknowledged in this narrative. The promotion of industrial agricultural practices among small holders' integration in agricultural markets will often be structured along class, caste and gender lines. Markets are not simply open spaces where all entrepreneurial-minded people can improve their livelihoods. Rather, pre-existing social hierarchies are played out within markets, allowing some people improvement and further impoverishing others (Sugden 2009). Without particular attention to these constraints, it is therefore highly likely that CSA efforts will similarly serve to fracture communities and increase, rather than address, structural and contextual inequity.

4.4 Smallholder and community-based CSA approaches

As seen above, there has been considerable opposition within the NGO community to CSA in general, and GACSA in particular. Despite these vociferous critiques, other actors have mobilised the discourse at the grassroots level, converting campaigns of gender empowerment and conservation agriculture into organizations for effecting change within a CSA framework. The starting point for this 'community based' discourse is that there are many examples of agroecology practices (including also agroforestry practices) that adhere to the principles of CSA but at the same time distance themselves from the use of agro-chemicals and carbon market-based solutions. These discourses tend to put questions of equity more in the centre frame.

Opposing the production efficiency narrative, one body of literature argues that to improve food security, CSA needs to prioritize the design and implementation of adaptation to enable farmers to learn to cope with a warmer and more volatile climate (see e.g. Timmer 2013; Shea 2014). Such practices include increasing soil water-holding capacity, engaging in conservation tillage, planting cover crops, diversifying cropping systems etc. These practices are distinct from production efficiency in that they focus on the use of agricultural inputs like water and soil, rather than production outputs. Not doing so, it is argued, will threaten longer-term goals of food security. However, here we again see the emphasis on technologies, rather than social relations. Studies of equity have shown conclusively that new technologies are often taken up by more powerful local actors, serving to further reinforce local hierarchies (Peterman et al. 2014).

Another approach rejects external, expert-oriented solutions and focuses on local level actors instead. Field experience, yet very limited, suggests that CSA is not necessarily perceived as something new at the community level. Adekola and Terdoo (2014) quoted one farmer saying that "This thing (CSA) is just another name for the way we practice our traditional agriculture". In the same study, another farmer said that "These are some of the things we have inherited from our forefathers […], to us it is normal and we see nothing new about it" (Adekola and Terdoo 2014). Many thus believe that the 'solutions' to climate change related agricultural crises are found in local traditional practices of conservation agriculture, which needs to be scaled up. From this perspective, CSA is ultimately about embracing and harnessing indigenous knowledge (Domfeh 2015), and scaling up existing practices, rather than finding new solutions or exporting expert knowledge.

These counter discourses, however, are largely subsumed by the three above-mentioned, arguably dominant narratives of CSA on the global scale. Standard frameworks of market-based, and techno-centric solutions for addressing food security and poverty problems are still put forward on larger scales, while agroecology, organic agriculture, and permaculture struggle to find space. The subsuming of traditional practices to standard frameworks was evident in the Nepal case we visited. While still in the early stages of implementation, we were struck by the emphasis on market integration and new agricultural technologies as opposed to fostering traditional agricultural products which the NGO's other programs promote.

Another important equity aspect of many CSA discourses surrounds property rights. Despite decades of research showing that the commons work (Ostrom 1990), private property rights are often assumed to be necessary for good environmental management while collective property is more circumspect. Scherr et al. (2012) assert that clearly defined ownership rights are "critical for successful, long-term management. Secure tenure allows land managers to look towards a future where they can build profitable, climate-resilient systems". Insecure property rights, they continue, "pose a barrier to adoption of climate-smart practices, as there is little incentive to invest time and money to transition management practices." Actors advocating for efficient resource management thus tend to argue that the lack of clearly demarcated ownership rights on common and customary property resources impede the progress towards CSA, as it is easier to manage resources with clearly defined boundaries and usufruct rights. As Rajasekhar et al. (2012) argue in relation to south India, contesting claims on land ownership surrounding common property resources "leads to the preference to take up works not relating to natural resource management and assigning higher priority to private lands having clear-cut property rights. While the former impedes the progress towards climate-smart agriculture, the latter makes it less inclusive" (p.16). CSA is thus often used as an excuse for regularizing property rights in places where access to collective lands is vital for the poorest of the poor. Once again, the literature on property rights suggests that equity dilemmas are not solved by tenure rights efforts alone (Peters 2009). Rather, the complexities of overlapping tenure claims, national versus local understandings of tenure and intra-household access issues raise equally complex equity questions (Peluso and Lund 2011). Thus, while certainly debated, the assigning of tenure in itself does not solve problems of uneven access to resources and benefits (Larson et al. 2013).

5. Conclusions

The aim of this paper has been to unpack equity implications around key discourses surrounding climate-smart agriculture. The motivation was that with its broad definition, CSA implies a wide set of very different practices, and as a result, has come under intense scrutiny and criticism. One of the key areas of contention is its implications for social equity. However, equity is rarely defined in the CSA literature, and the broad definition of CSA, notably from the FAO, provides little guidance for addressing equity questions.

The paper is addressing these gaps by unpacking the equity concept and what it means in relation to four key CSA discourses, focusing on, respectively, climate mitigation policy goals, agricultural development and transformation, agri-business, and finally, smallholder and community-based CSA. We applied an equity framework consisting of three dimensions of equity: distributional, procedural and contextual. Some of these are articulated, e.g. around participation and benefits, but many remain implicit in the CSA literature, which the analysis sought to bring out.

Our contention is that these four different discourses, or 'versions' of CSA, have different equity implications, raising different questions and concerns as summarised in Table 1 below. Importantly, none of the discourses address all three dimensions of equity with any degree of robustness. Rather, they are entrenched within existing paradigms and practices, and are likely to reproduce and exacerbate existing inequalities rather than challenging them.

Despite differences between the four discourses, some broad patterns can be drawn out. Common to the first three (climate policy, agricultural development, agro-industry) are a strong focus on efficiency-based distributive equity, while the last (smallholder CSA) tends to focus more on needs-based distributive equity. In all four discourses, there are efforts to increase participation of vulnerable and marginalised groups, but with arguably less attention to this in agribusiness-related discourses, which focuses on existing participation in markets. In terms of contextual equity, with a few exceptions the four discourses predominantly assume working within current institutional and political structures, with as yet very limited focus on transformation of underlying structures to improve resource access.

Table 1. CSA discourses and key equity implications

CSA discourse (key actors)	Characteristics	Distributive equity	Procedural equity	Contextual equity
CSA as opportunity to address climate policy goals (FAO, World Bank, CCAFS, IFAD)	Focus on adaptation and food security, and mitigation as co-benefit	Focus on large scale interventions External knowledge High input agriculture Instrumental over moral equity concerns	Works within current structures Attention to land rights secondary Rescaling of responsibility Increasing recognition of gender and social inclusion	Limited focus on structural constraints Tends to focus on proximate over root causes, climate as driver of vulnerability
CSA as a way of promoting agricultural development goals (FAO, World Bank, CCAFS, IFAD)	Local/regional, CSA as entry point for agricultural transformation. Example sustainable intensification	Focus on improved market access for farmers Improved access to inputs Value chains	Linkages to land and water rights Access to advisory services and credit	Focus on transformation of agricultural sector structures working within current structures
Private sector and the carbon markets as engines of growth (Bi-lateral donors, agri-business actors)	Global to local marketisation of carbon	Focus on instrumental equity concerns	Implicit recognition of farmers' practice as the problem Little space for farmer participation	Assumes ability of farmers to connect to carbon markets
CSA as an opportunity to increase support to smallholders (iNGOs – e.g. CARE, AACSA)	Local - Supporting smallholder initiatives	Strong focus on distributive equity from a moral perspective Focus on local knowledge	Strong focus on local participation and deliberation Acknowledgement of gender constraints to participation	Focus on structural inequalities Acknowledgement of gender inequalities But often weak on addressing underlying/root causes

CSA has arguably served as an effective 'rallying cry', bringing together a wide variety of organisations and actors with different interests and from different backgrounds, all with a stake in the agricultural sector, and a concern around food security and agricultural development in a changing climate (Neufeldt et al. 2013). As such, CSA can be seen as a boundary object (Cash et al. 2003), providing a platform for development of policies and strategies on agriculture and climate change. It is less clear, however, to what extent these meeting spaces are leading to the changes that are needed for the poorest and most marginal social groups. Thus, it may link up actors, but not provide sufficient guidance for change.

In addition to providing more understanding around the equity aspects of CSA, we argue that when equity questions guide the definitions of CSA, implications for policy and practice become clearer. Going back to the original conceptualisation of CSA, namely initiatives and activities that lead to 'triple wins', and linking this to an understanding of equity that focuses attention to distributional, procedural and contextual dimensions, three concerns stand out. First, distributive equity implies a need to acknowledge how CSA may shift the responsibility for climate change mitigation from international and regional actors to national governments and NGOs and, in some cases, to those least able to respond to these expectations, poor local producers and resource managers. In terms of policy, this means that national and international actors need to be cautious about promoting CSA on the ground without addressing the global origins of climate change.

Second, on procedural justice, while CSA is often portrayed as a force for transforming the agricultural sector, evidence suggests that it is unlikely to fundamentally shift power to address the key factors that constrain or block the emergence of more pro-poor agricultural development, adaptation to climate change, or carbon sequestration and storage. The dominant focus on market-based transformations, in particular, may lead to new risks and vulnerabilities, and entrench already unequal power structures. Third, to improve CSA outcomes, a focus on contextual equity means more attention needs to be given to the institutions that underpin the bargaining power of the poorest and most vulnerable groups, as well as a deeper acknowledgement of the political nature of transformations that are needed to address challenges around the agricultural sector in a changing climate.

New governance architectures are required if CSA is to be pursued in ways that are just, socially inclusive and respectful of tradition and livelihoods. Although organisations such as

the FAO explicitly call for context-specific interventions and innovations, the operationalisation of CSA thus far has drawn heavily on conventional, top-down, technical solutions to achieve impact at scale. GACSA, for example, aims at enabling 500 million farmers to practice CSA by 2030. How to achieve that goal and at the same time take local socio-political contexts and agro-ecological diversity into account is almost impossible to imagine. Our analysis suggests that CSA is frequently framed as a global problem, stimulating actors to find global solutions that are easily traded. While practices such as agroecology and permaculture are inherently local but not easily exported, technological interventions are global in reach but are less sensitive to local socio-ecological particularities, including equity concerns, and hence risk exacerbating food insecurity and inequality.

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