

A Gender Strategy for Pro-Poor Climate Change Mitigation

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Abstract

The Climate Change, Agriculture and Food Security Research Program (CCAFS) of the Consultative Group for International Agricultural Resources (CGIAR) CCAFS “seeks to overcome the threats to agriculture and food security in a changing climate, exploring new ways of helping vulnerable rural communities adjust to global changes in climate.”¹ The CCAFS Gender Strategy (Ashby, et al. 2012) makes the case for gender analysis as critical to increased production, improved outcomes for poverty alleviation and increased well-being, and a fairer distribution of burdens and benefits in agriculture among women and men.

This report proposes a gender strategy for climate change mitigation and the promotion of low emissions agriculture—the focus of CCAFS Theme 3: Pro-Poor Climate Change Mitigation. Specifically, we provide a strategy for assuring that mitigation efforts meet the goals of poverty alleviation and food security, and do so in ways that benefit poor women materially, personally and socially. We focus on women because of their historical and contemporary disadvantages, and recognize that benefits for women are generally broader and more durable to the extent men embrace those benefits, whether out of their own material interests or from commitments to family and community well-being.

Although CCAFS has separated mitigation, adaptation, and risk management into three distinct research themes, we suggest these must be addressed in an integrated way to meet farmers’ needs. Farmers are primarily concerned with their well-being and that of their families and neighbors, rather than larger global environmental issues. Many also hold a ‘landscape-view’ of their home places in which water and energy sources, forests and grasslands, farms and fallows are all considered in relation to one another in contributing to farmers’ livelihood strategies, even though strategies for adaptation may emphasize one part of the landscape and mitigation another (Shames and Scherr, 2011). Initiatives to mitigate greenhouse gas (GHG) emissions should therefore ideally enhance and at least not harm adaptation and risk management. Similarly adaptation should aim to minimize GHG emissions where possible.

Keywords

Climate change; gender; agriculture; mitigation; smallholder farmers.

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Introduction

The Climate Change, Agriculture and Food Security Research Program (CCAFS) of the Consultative Group for International Agricultural Resources (CGIAR) has a mandate to address the threats posed by global climate change to agricultural systems and the people who depend on them. In doing so, CCAFS must take into account social difference in how climate change impacts people and environments, who proposes solutions, and how potential solutions affect different groups of people.

Gender analysis is justified in terms of procedural and distributive justice, assuring that women have opportunities to engage in decision-making that affects their lives as much as men do, and that outcomes of mitigation initiatives benefit women and men fairly. Climate change projects and programs, focused on rapid changes in agricultural systems, present opportunities to redefine gender and other social relations. There are also instrumental reasons for gender analysis. Women and men may also experience climate change and climate change interventions differently. Understanding how the impacts differ between men and women can provide early warning about potential inequities and where change is needed. Gender analysis in this way can also play an instrumental role in designing interventions. Women and men often have different responses to mitigation efforts that will shape the effectiveness of research and development practice. Valuing women's knowledge can lead to new technologies, management practices, organizational forms, and political strategies that encourage low emissions agricultural development.

Pro-poor climate mitigation poses particular challenges for gender relations

- Mitigation incentives related to the carbon market involve market actors, particularly private investors requiring high returns for investments through emissions reductions, new kinds of monitoring and accountability, and timelines. This structure imposes special burdens on poor women and other individuals marginalized by global market infrastructure and networks. At the same time, payments for carbon could, theoretically, inject new financing streams into agricultural change that benefits women as well as men.

- Climatological, economic and agricultural sciences that drive mitigation analysis and policy recommendations are often not accessible or useful to local people and those supporting local development. The models and related research often take a gender blind approach to gender relations that avoid addressing long-standing inequalities.
- Mitigation is characterized by narratives of crisis and shared responsibility that legitimate top-down planning through existing, often patriarchal institutions, making the pursuit of procedural and distributive justice and transformative social change more difficult.
- The scale at which climate negotiations take place, the large actors involved in mitigation initiatives, and the pressure for ‘scalable’ innovations strains the types of institutions, networks and organizations that women significantly influence.

We address these challenges by proposing three priorities for research to improve the gender justice of mitigation practices and improve relations between women and men engaged in agricultural activities. We examine gender in terms of how knowledge is produced and shared, how gender impacts material well-being—through assets, income and labor—how women and men develop social networks and institutions, personal efficacy and leadership among women, and how women and men engage with cultural values and practices.

First, we propose the need for a political ecological analysis of key actors within low emissions agricultural development, through looking at the narratives, social and political networks, policies and laws that shape their activities, and also by identifying alternative narratives, new networks, and new policies and laws that will facilitate reduced emissions while supporting livelihoods, food security and more equitable gender relations. Key actors will include financial institutions and carbon market actors, scientific and social science researchers and their institutions, national and local governments, non-profit organizations, and local groups. A gender component to this analysis will show the effects inequalities have on gender justice and the efficacy of GHG reduction strategies. Ideally, women and men working together in their communities and institutions can support the emergence of more equitable gender norms.

Second, we recommend research to support local innovation in agricultural systems. CCAFS can help make such innovation visible and underscore the enabling and constraining conditions through the research it supports, and through its power to convene and develop

action plans with researchers, development aid organizations, local and national governments, and community-based organizations. Facilitating innovation by women acting individually or in groups as often as possible with the cooperation of men will improve mitigation's social and environmental outcomes.

Third, we suggest that research is needed to assess women's contribution to low emissions agricultural development. To better facilitate women's ability to adapt agricultural innovations introduced from outside the local community to local social and environmental conditions, CCAFS should test the potential future contribution of women to low emissions agricultural development to demonstrate the extent to which women's direct involvement will make a tangible difference in outcomes for emission, livelihoods and food security. It should also examine ways of enabling women to participate more. This research must examine and provide safeguards against potential tradeoffs between mitigation successes and harms to livelihoods, food security, and gender justice. Facilitating women's adaptation of introduced innovations will require that gender differences in resource tenure, spaces used, and labor obligations are accounted for, and that gender aspects of organizational functioning and local social norms are addressed. Better accounting of women's contributions should attract much needed material and human resources to their efforts. However, no mitigation initiatives should compromise women's personal efficacy and status in the community, their livelihoods, social networks and organizations, or their cultural practices.

These interventions are supported by methods that emphasize an agricultural innovation systems approach and social learning. Self-reflexive, iterative and shared learning is extended to include actors who are integral to value chains, policy processes, media images, and research and development. The learning must consider innovations not just in technology or farming system management, but also in organizational form and political activities. Learning must focus on decisions made at the farm scale, but also within communities and organizations, and within broader multi-stakeholder networks.

The 'social' in social learning must be balanced with methods that support women and men who are less powerful in public forums. A household approach can support negotiations within households over new approaches to farming. Building leadership capacity, especially among the poorest and most socially marginal women and men, can also prevent communitarian problems from emerging.

Focusing on Gender

This section provides a rationale for focusing on the role of gender in climate change mitigation and low emissions agriculture. It examines how and why climate change itself *and* low emissions agricultural development can affect women and men differently, the role that women can play in proposing changes to agricultural systems, the importance of seeing women and men in relationship to each other, and the opportunities that agricultural innovation presents for local women and men to rethink gender norms and relations.

Box 1: Gender and CGIAR

Insightful gender analysis is produced by many centers within the CGIAR. The International Center for Tropical Agriculture (CIAT) coordinated the Participatory Research and Gender Analysis Program from 1997 to 2011, and helped demonstrate that engaging women in technology design and management decisions improved outcomes for their communities. The International Food Policy Research Institute (IFPRI) has an active research agenda disaggregating the impacts of policies and programs by gender, identifying differences among women and men in their access and control over critical assets, and in analyzing institutional arrangements for promoting gender equality. The World Fish Center has embarked on a ‘gender transformative’ approach to addressing gender differences within agricultural communities, one focused on social norms and power relations as well as technologies, resources and markets.

The recently established Gender and Agriculture Research Network of the CGIAR also supports strategic research on gender with focal areas such as value chains, property rights and information systems, while also promoting the integration of gender analysis within all center research.

Why focus on women and gender? Ashby et al. (2012) have outlined reasons for gender analysis. We revisit many of their arguments here, but also give attention to the potential of rural women to play a role in charting new pathways towards low emissions agriculture that better meet CCAFS goals and to avoiding the harms that gender-blind projects and policies can do. Building on Ashby’s analysis, we also emphasize the need for transforming gender relationships, recognizing that improving women’s well being requires concomitant attention to men. Box 1 highlights gender initiatives within the CGIAR.

‘Gender’ can be a complex term, with different meanings for different people. Appendix 1 defines gender, gender justice and low emissions development as used in this document.

Attention to gender in CCAFS Theme 3 programming can be justified on three accounts: (1) social justice, (2) gender’s effect on how men and women experience low emissions agricultural development, and (3) the instrumental value gender equity can bring to CCAFS Theme 3 outcomes.

Procedural justice and distributive justice for women are complicated by the large role played by corporate actors within carbon markets and in agricultural commodities and inputs, the highly technical quality of mitigation modeling and the monitoring and evaluation that is part of emissions accounting, and the framing of the problem as a ‘global crisis’ that requires immediate action. Each of these qualities makes it more difficult for disenfranchised women and men to influence the direction of project priorities, designs, implementation strategies and learning frameworks. At the policy level, gender scholars point to the lack of gender analysis within forums such as the IPCC, or within many Nationally Appropriate Mitigation Action (NAMA) plans, as evidence of a breakdown in procedural justice (BRIDGE 2012; Ambani and Percy 2012). Evidence from REDD projects indicates that the absence of gender analysis leads to distributional injustices for women, the poor, and other marginalized groups (Gurung et al. 2011).

Gendered experiences of low emissions agricultural development suggest attention should be paid to the differences in how men and women experience the threats and opportunities associated with climate change mitigation projects. Women can lose access to and control over vital resources when ill-conceived climate mitigation projects are introduced. Even while labor burdens increase, social status weakens, and vital cultural links to agriculture are severed in ways specific to women (Boyd 2002, Arora-Johnson 2011, Leach et al. 2012, McAfee 2012). ‘Gender blindness’ can turn helping intentions into practical harms. How does this happen?

Long-standing patterns of male domination within local communities, local and international government agencies, research institutions and still many non-governmental agencies, agrarian movements and unions mean that if gender is not actively investigated, existing power-imbalances are perpetuated and women are likely to miss opportunities or suffer disproportionately (Dankelman 2002, Ashby et al. 2012, Kapoor 2011, Otzelberger 2011,

Gurung et al. 2011). The misunderstanding of local gender relations by those from outside communities can also harm local men through distortions in how scarce labor and other resources are allocated, thereby reducing the capacity of families for social reproduction, or favoring large-scale land acquisition by wealthier men from poorer women and men.

The instrumental argument is that gender analysis and improving women's participation can further the goals of emission reduction, poverty alleviation, and increased food security. This argument is drawn from the limited early literature on mitigation outcomes and the growing literature on adaptation outcomes. In general, early mitigation and adaptation programs have had or are expected to have limited impacts to reduce emissions or increase resilience because technologies have been socially or environmentally inappropriate and rejected (CAPRI 2012); organizational forms—such as carbon markets—have been slow to attract the rural poor (Shames and Scherr 2011, Wollenberg et al. 2012); information has been communicated ineffectively (Harvey et al. 2012); or institutional barriers such as resource tenure, marketing infrastructure, or resource-use policies increase risk or otherwise prevent action (CAPRI 2012). When programs have not fully understood the relationships among actors in an agricultural system, or how actors relate to the soils, water, plants and animals in their agricultural systems, they do not achieve either their emissions reductions or social goals (Agrawal, Orlove and Ribot 2012).

Two further instrumental justifications significant for CGIAR purposes are the role of women as agents of change and the transformative role innovation can have on gender relations and norms.

Women as creative change agents. Because gender plays such a significant role in divisions of labor, resource use, consumption and cultural relations with agricultural environments, men and women are likely to propose different technologies, ways of organizing labor and other farm inputs, institutional arrangements for managing conflict or cooperation, and even different ways of sharing experiences and learning from them. Literature from the Local Agricultural Research Committees (CIALS) in Latin America (Ashby et al. 2000, Humphries 2011), Farmer Field Schools in Asia and Africa (Braun and Duveskog 2008, Friis-Hansen and Duveskog 2011), and from Traditional Ecological Knowledge (TEK) around the globe (Parotta and Trosper 2012) demonstrates that when men and women engage with their environments in different ways, they develop different knowledge bases that shape strategies

for solving problems. Studies of collective action and gender suggest that men and women sometimes organize differently, value organization differently, and deploy organizations for different purposes (Ferguson and Kepe 2011, CAPRI 2012). Understanding how gender influences organizational work may lead mitigation projects towards more just and more effective outcomes.

The historical development of women's movements points to drivers that could enable women (and men within evolving gender relations) to influence climate change mitigation pathways and policies. Rural women in many places in the developing world are now organized in farming or other local groups that enable them to pool resources and act with more influence over governments, companies, and development organizations. Women have more representation and leadership in mixed gender groups than ever before. National and international networks, organizations, and projects exist with explicit gender objectives, with examples found through UN Women, WEDO, WOCAN and CARE. International funding to support rural women is available through mainstream organizations such as the World Bank, IFAD, and most bilateral donors. The gender justice goals of these different actors do not always match up perfectly, and attention to the power dynamics within collaborations is essential. Building on and enhancing these strengths of existing efforts can support women to be more active change agents.

Innovation as a key to transforming gender relations and norms. Women and men have generated different but mutually supportive ideas for addressing agricultural problems in many communities (Urmilla 2004, Barkin and Baron 2005, Molua 2011, Sultana and Thompson 2012. See Appendix 2 for an example from Honduras). Their experiences demonstrate that technical and managerial innovations can feed back to affect local social relations, advancing gender and class equality through changes in the agricultural system. These changes in the social system may then facilitate further creativity within the community, as the perspectives of previously marginalized groups are now considered and combined with other ideas from within and outside the community. Technical and social change can create a virtuous circle, and gender justice and gender instrumentality are served together². Innovation, by definition associated with new ideas and practices, may be an

² See Otzelberger, 2011, for deeper treatment of the link between justice and instrumental good. At the theoretical level, see Haraway (1988) and Harding (1995) for extended discussion of feminist objectivity. The key claim is that by embracing multiple,

especially good catalyst for re-imagining existing gender norms and relations. This is most true if men are also engaged in, and benefit from, the innovation practices because the shared experience of innovation and its benefits provides a platform for discussion.

Mapping the Intersection of Climate Change Mitigation and Gender: Context and Opportunity

The tables below summarize the intersection of gender analysis and climate change mitigation efforts in agriculture to provide a context and framework for identifying strategic action research. They identify starting points for discussions between CCAFS and its partners over priorities.

Climate change mitigation has features associated with its historical development over the last twenty years that shape the vertical axis of the table. These features are driving forces in how climate change mitigation interventions shape gender relations. The following paragraphs highlight the four most salient forces.

- **New markets, finance streams and actors**, particularly private investors requiring high returns (in terms of GHG savings) for investments, new kinds of monitoring and accountability, and timelines that impose differential burdens on poor men and women. At the same time, payments for environmental services could - theoretically, though not yet often in practice - inject new financing streams into more gender-just agricultural change (Shames and Scherr 2011, see Appendix 3 on climate change financing).
- **Climatological, economic, and agricultural science that drives mitigation analysis and recommendations** is often inaccessible and not transparent to local people and those supporting development initiatives, and can overlook locally specific, context-dependent interventions.

partial perspectives on an issue in ways that openly acknowledge interests, values and experiences and their impact on our habits of thinking – rather than trying vainly to filter these out in a search for neutrality - we generate objectively better, more effective solutions to problems.

- **Narratives of crisis and shared responsibility** that legitimate top-down planning through existing, often patriarchal institutions, makes the pursuit of procedural and distributive justice and transformative social change more difficult.
- **The scale** at which climate negotiations take place, the large actors involved in mitigation initiatives, and the pressure for ‘scalable’ innovations strains the types of institutions, networks, and organizations that women significantly influence.

The table’s horizontal axis outlines the domains where climate change affects gender relations and individual women, women in groups, and women acting with men. The domains are defined as:

- **Knowledge:** how it is produced and shared;
- **Material life:** who controls and benefits from assets, income, labor;
- **Social life:** how women and men organize and network, how they influence custom and other institutional arrangements, in conflict or in collaboration with men;
- **Personal qualities:** how personal efficacy and leadership are experienced by women;
- **Culture:** the values and beliefs that shape the way men and women act, the meaning that they assign to actions.

The contents of the table represent recommendations for research and action in each of the resulting cells based on interviews and literature reviews of leading scholars and practitioners. We have selected them based on our reading of where mitigation research and practice is currently (and more precisely, what types of information and activity are most lacking), where key points of leverage are for influencing actors in the short term and across scales, reflecting the emphasis on political ecology, information networks, and improved social science generally, and where there is potential for significant learning over the long term (balancing the consequences of crisis-planning). The terms ‘project’ or ‘program’ include efforts to introduce new technologies, management strategies (e.g. economic incentives, labor allocations, institutional arrangements), organizational forms (e.g. cooperatives, CBOs, rural unions, and communication networks) or otherwise intervene in agricultural systems to promote low carbon development and GHG emissions mitigation.

Table 1: Gender, Carbon Markets and Climate Finance

CC Mitigation/ Gender Relations	Gender and knowledge production and sharing	Gender and the material world - assets and income, budgets, labor	Gender and the social world - institutions, networks, policies	Gender and personal identity & efficacy	Gender and culture - practices, values, beliefs
Carbon markets and carbon finance institutions	<p>Promoting gender justice: Evaluate and build on 'performance knowledge' of rural men and women.</p> <p>Test deliberative decision- making and social, looped learning as means to procedural justice and greater objectivity. Deploy community radio and other media strategies to democratize monitoring and learning from CC projects</p> <p>Safeguards: Assess impacts of using a single, price-able measure of women's agricultural work; provide safeguards against unintended consequences for projects that overlook elements of men and women's relations with agricultural systems</p>	<p>Promoting gender justice: Direct CC financing towards pro-poor, gender-just agricultural projects; test barriers to financing locally- driven projects; assess impacts on women's labor, assets and income; focus on gender budgets within finance institutions to bring material support to pro-poor and gender-just projects</p> <p>Safeguards: Investigate the impact of carbon projects on common pool resources; assess projects by impacts on gender, class and other locally-relevant lines of social differentiation</p>	<p>Promoting gender justice: Assess the potential for aggregating payments, investing in public goods, and reducing risk through micro-insurance and other mechanisms; work through local groups to understand when and how they are effective in promoting pro- poor, gender-just mitigation initiatives; examine potential for social networks across scales (UN, GGCA, WEDO, et al.) to promote pro-poor, gender-just projects and programs</p> <p>Safeguards: Identify and build on lines of accountability within carbon finance for social/gender impacts; assess impact of resource tenure and contracts on land uses, social differentiation, & social cohesion</p>	<p>Promoting gender justice: assess impact of market participation on women's sense of efficacy and well-being; assess role of women's leadership in promoting pro-poor, gender just outcomes for mitigation; provide training for rural men & women in technical, managerial and organizational skills</p> <p>Safeguards: Assess impact of carbon finance on women's roles and activities, and their connection to status, autonomy, efficacy</p>	<p>Promoting gender justice: Promote PES for activities already part of cultural practices of men and women; assess impact on recognition and protection for those practices</p> <p>Safeguards: Assess carbon finance impact on social cohesion and values and beliefs about agricultural systems.</p>

Table 2: Climate Change Mitigation, Science and Gender

CC Mitigation/ Gender Relations	Gender and knowledge production and sharing	Gender and the material world - assets and income, budgets, labor	Gender and the social world - institutions, networks, policies	Gender and personal identity & efficacy	Gender and culture - practices, values, beliefs
Production of CC mitigation narratives dominated by formally trained natural scientists and economists	<p>Promoting gender justice: Require strategies for pro-poor, gender-just engagement from problem definition through project design and implementation, to monitoring, evaluation and learning; follow models of informed consent (individual and collective) from indigenous studies; Promote the study and support of locally-driven, pro-poor and gender just innovation; assess scientific cultures for their capacity to support locally-relevant innovation and knowledge production; deploy modes of communicating information among stakeholders that embody pro-poor and gender-justice elements</p> <p>Safeguards: Assess political economy/ecology of UNFCCC and other sources of CC expertise for responsiveness to pro-poor and gender-justice issues</p>	<p>Promoting gender justice: Refocus evaluation for project outcomes to include pro-poor, gender just criteria, including differences in assets, income, budgets;</p> <p>Safeguards: Design evaluation to capture potential for men taking over women’s resources, unintended degradation of critical assets, and other unforeseen material harms</p>	<p>Promoting gender justice: Assess current level of local innovation and identify barriers and resources for expanding innovation; deploy learning strategies that have worked with gender-just organizations: farm-to-farm visits, clinics at market, radio lessons, cooperatives; facilitate pro-poor and gender-just organizations to engage in experimentation related to climate change; include (transformative) impact on gender relations as an element of evaluation and learning</p> <p>Safeguards: Develop explicit measures of impact of technologies and projects on women’s labor time, social networks and political power.</p>	<p>Promoting gender justice: Assess current level of local innovation and identify barriers and resources for expanding innovation: build capacity to analyze experiences and data; treat locals as scientists to demystify scientists</p> <p>Safeguards: Develop frameworks for identifying local innovations and the means to support them; include gender-aware assessments of identity formation (particularly prestige and status) associated with different types of agricultural change</p>	<p>Promoting gender justice: Make use of cultural domain analysis or similar approaches to highlight local meanings of technology, agricultural systems and climate change; develop mechanisms for increasing reflexivity within scientific community to improve attention to meaning and identity among scientists</p> <p>Safeguards: Engage social science and humanities studies of cultural impact of CC initiatives</p>

Table 3: Crisis Narratives and Priority Syndrome

CC Mitigation/ Gender Relations	Gender and knowledge production and sharing	Gender and the material world - assets and income, budgets, labor	Gender and the social world - institutions, networks, policies	Gender and personal identity & efficacy	Gender and culture - practices, values, beliefs
Crisis narratives and priority syndrome	<p>Promoting gender justice: Include historical analysis of adaptation to complex environmental change at sites as a foundation for collaborative planning; build local capacity to adjust development pathways through consistent social, looped learning;</p> <p>Safeguards: Expand review of ‘lessons learned’ from REDD to deepen analysis of gender and other aspects of social differentiation; plan for ‘outlier’ site in each iteration of CCAFS research and project activity to minimize ‘priority syndrome’ (initial focal areas might be areas of heavy out-migration or isolated indigenous groups)</p>	<p>Promoting gender justice:</p> <p>Include livelihood mapping differentiated by gender, class, and other social groupings in each proposal for research and action</p> <p>Safeguards: Engage partners with expertise in gender and social differentiation to help assess potential impacts of ‘fast policy’ - (WEDO, WOCAN, GROOTS, Prolinnova)</p> <p>Link the evaluation of professional staff to frequent, iterative evaluation of project impacts on assets and income, labor, and other elements of local livelihoods differentiated by gender, class, and other social groupings</p>	<p>Promoting gender justice: Analyze ‘cultures of science’ to uncover assumptions, incentives, pressures embedded in individuals and institutions; conduct institutional analysis/social network analysis to identify groups beyond traditional NGOs as potential partners: rural unions, social movements, schools;</p> <p>Safeguards: Evaluate project proposals in terms of procedural justice and research ethics; re-evaluate collaboratively during project for mid-course corrections.</p>	<p>Promoting gender justice: Assess differentiated perceptions of climate change mitigation threats and opportunities as a basis for problem definition; Use future scenario planning or similar tools to highlight the roles of rural women and men in addressing threats</p> <p>Safeguards: Engage women’s leadership through capacity building, gender-aware planning sessions</p>	<p>Promoting gender justice: Assess culturally-embedded narratives of climate change, agricultural change, and responses as a foundation for problem definition and project design</p> <p>Safeguards: Review project proposal based on ethical standards established in UN protocols for indigenous peoples.</p>

Table 4: Gender and the Scale of Climate Change Mitigation Efforts

CC Mitigation/ Gender Relations	Gender and knowledge production and sharing	Gender and the material world - assets and income, budgets, labor	Gender and the social world - institutions, networks, policies	Gender and personal identity & efficacy	Gender and culture - practices, values, beliefs
Scale of issues	<p>Promoting gender justice: Partner with IIED and similar institutions studying climate change communication to link local to larger scales; Build capacity of women’s organizations, federations, cooperatives to reach global institutions</p> <p>Safeguards: Facilitate access of representative groups (NGOs, but also social movements, rural unions, schools and others) to regional and global forums for planning climate change interventions</p>	<p>Promoting gender justice:</p> <p>Gender budgeting can direct resources towards gender justice at larger scales; focusing on collective, organizational benefits as a potential safeguard against gender bias</p> <p>Safeguards: Investigate impact of scaling up on gender relations to track risk of men capturing benefits</p>	<p>Promoting gender justice: Pursue ‘scalar politics’ analysis of different networks to identify threats to gender justice of scaling up; Embrace a polycentric adaptation model as a guide to research strategy development;</p> <p>Safeguards: Evaluate intermediary institutions for risk of bureaucratization and elite capture</p>	<p>Promoting gender justice: Analyze institutional cultures of large-scale institutions for support of pro-poor and gender-just agendas;</p> <p>Identify exemplary researchers pursuing pro-poor, gender-just research and publicize stories; publish stories of local women’s innovation to change imagery of rural women, build capacity of women to link to supportive local, national and international networks.</p> <p>Safeguards: Identify women leaders and engage them in evaluation of projects at various scales.</p>	<p>Promoting gender justice: Analyze institutional cultures of large-scale institutions for support of pro-poor and gender-just agendas; promote materials (video, audio, stories) that embody local cultural values but that can be disseminated to global institutions</p> <p>Safeguards: Identify with communities key cultural issues in advance and include them in looped learning processes.</p>

A Strategy for Gender Research

Research is needed to address the power balances that negatively affect women, enable women to be creative forces for change, and highlight women's potential role in achieving low emissions agriculture. This section identifies priority areas of social science research, key questions, and strategies for bringing about change to meet these needs.

CCAFS Theme 3: Pro-Poor Climate Change Mitigation aims to inform decision makers about the impacts of alternative agricultural development pathways, identify institutional arrangements and incentives that enable smallholder farmers and common-pool resource users to reduce GHG emissions and improve livelihoods, and test and identify desirable on-farm practices and their landscape-level implications.

Given these objectives and the forces affecting and enabling shifts in gender relations outlined in Tables 1 to 4, we suggest that the challenges for low emissions agricultural development are to:

- Overcome unequal power relations for women in mitigation related to (1) the role of market and finance actors, (2) the processes underlying global-scale modeling and decision-making, (3) technical service provision, and the sense of crisis that drives mitigation-related initiatives.
- Identify how women can most strategically influence the visioning, developing, testing and evaluating of (1) low emissions development pathways that meet technical, social and cultural needs (2) innovation in on-farm practices for improving low emissions development (3) the institutions, policies, social networks, and cultures that influence movement along different development pathways.

CCAFS Theme 3: Pro-Poor Climate Change Mitigation can meet these needs through social science research in three areas:

- Political ecology analysis to identify strategies: (1) for women to effectively engage with powerful actors driving mitigation options, with special attention to finance, scientific research and the provision of technical services and inputs; (2) for powerful actors to

interact more effectively and justly with women from diverse backgrounds and locations within social systems; and (3) for supporting new, more just gender norms and relations;

- Research as a tool to improve the visibility of women's innovations related to climate change mitigation and adaptation, the scaling up and out of those innovations, and the social and environmental efficacy of the agricultural innovation systems in which women operate;
- Research to assess and improve women's potential contributions to low emissions agricultural development and gender justice, including their use and adaptation of technical options, as well as research into safeguards against negative impacts for poor women and other disadvantaged social groups.

The strategies for linking knowledge to action are built around promoting democratic decision-making, strengthening the visibility, capacity and influence of local women and men's innovations, and aiming for joint mitigation-livelihood-food security outcomes for mitigation projects initiated from outside but adapted by local communities.

Political ecology analysis: Shifting power to improve impacts

A political ecology analysis would seek to identify the underlying causes of gender inequities and opportunities for changing them. This research would address the impacts of the laws, policies, and contracts that frame how farmers engage with climate change mitigation. It would also address the narratives, networks of actors, and the various rewards and pressures on those actors that shape how policies, for example, are interpreted and acted upon (Rocheleau et al. 1996, Otto Naes et al. 2011, Tanner and Allouche 2011, Beymer-Farris and Bassett 2012). It seeks primarily to create awareness about and improve the impacts of interventions. The relationships between market and finance actors in the global north - i.e. private investment and agricultural commodity companies, carbon exchanges, financial institutions, and large NGOs - on the one side, and the individuals, households and communities in rural areas of the global south on the other are particularly important (Otzelberger 2011, McAfee 2012). Initial experience with REDD projects indicates that

powerful market and finance actors can develop projects with little regard for local impacts through their influence over dominant narratives of climate crisis and market efficiency, as well as their ability to pump resources into the coffers of poor governments and NGOs in the global south (Miller 2004, Markelova and Meinzen-Dick 2010, Hiraldo and Tanner 2011, Agrawal, Orlove and Ribot 2012). The poor representation of women among corporate actors and financial institutions, and the lack of explicit treatment of gender in project documents place women at a substantial disadvantage (Terry 2009).

CCAFS could contribute to improved policies and institutional arrangements by first characterizing the differences in women and men's access to information and capital, in influence over policy decisions and public perceptions of a problem, and in the mechanisms of accountability and control that exist between these market actors, local women and their allies among men within their communities, NGOs, movements, and agrarian unions. Differences can then be addressed by publicizing mitigation efforts led by local women and men, by strengthening social networks – and helping to create new ones – that decrease power differences, and by encouraging policies and programs that expand the influence of the poorest women, their organizations, and the men that work with them over mitigation initiatives. This work requires social science expertise that is not always available or prioritized in the CGIAR centers and therefore may require external partners and incentives.

While large market actors are certainly influential, government institutions, development agencies and large NGOs do not simply do their bidding. They have a complex set of interests and pressures that they respond to, as well as institutional cultures and important narratives that reflect their public constituencies, various social networks and media (see Appendix 4 for a discussion of climate policy in Ghana). The 'gender blindness' that characterizes many agricultural and environmental ministries (Otzelberger 2011) will likely lead to mitigation projects that have particular, and largely negative, impacts on women. This, however, is not always the case. In some places, climate finance has either been rebuffed, or turned to serve local needs better (Shames and Scherr, 2011), when organizations work effectively with government agents and large NGOs. The emerging Women's Carbon Standard, for example, may improve how climate mitigation financing and market payments impact women, particularly poor women, within agrarian communities (see womenscarbon.org for more information). Gender-just mitigation research should be able to explain why and how

government and NGOs acted in ways that better serve the poorest women and men (Shames et al. 2012, Newton et al. 2012).

A political ecology approach to climate finance and marketing should also focus on politics and ecology in a variety of risk management and PES schemes. Micro-insurance, for example, should take account of what food sources are grown in specific localities, and the types of environmental and social risks that are most prevalent there. To address gender justice, the analysis must consider insurance for products grown by, sold by or otherwise under the management of women as well as men. Care must be taken that any channels for distributing insurance benefits do not exclude women and men who took risks or paid for insurance in the first place. Similarly, payments for carbon emission reductions have to take account of local environmental conditions and social systems. In places where the potential for reductions is low, aggregation of payments has been proposed. A gender analysis could help determine if such payments are likely to treat women fairly for their contributions to emissions reductions. It might also find ways to assign payments to women's organizations as a means of working around unequal gender relations within a community, if local women felt this were appropriate. Gender analysis can also identify existing work undertaken by women that could qualify for PES, particularly work such as the maintenance of common pool resources, post-harvest management of farm lands, or care for small animals. At the same time, gender just work must assure that changes in land use associated with PES do not inadvertently harm resources critical to women, impose labor burdens on them, or otherwise put them at greater disadvantage.

Working within a political ecology framework also encourages us to look at impacts beyond carbon savings and income: first at women's and men's assets and labor burdens, second at social status and identity, and third at social cohesion and cultural meaning. Climate mitigation projects can't be adequately evaluated in terms of income gains and losses alone. Any loss of assets, including skills and knowledge, may threaten long-term adaptive capacity, and should be considered in the overall assessment of any mitigation initiatives. So too should labor burdens, as women have in the past suffered longer days for fewer benefits from environmental restoration works. Women may also be excluded from job creation schemes associated with large mitigation-related plantations, despite the promise of mitigation project developers (Li, 2012). Political ecology should address status and identity as well, again for

their role in helping women and men adapt to changing circumstances, and to avoid highly unjust outcomes in the short term, when, for example, women's trade in improved beans becomes delegitimized by local men as a long-distance affair unsafe for women³. Finally, impacts on social cohesion and cultural meanings may change the ability to adapt among the poor especially, particularly as women appear to rely heavily on group work within much of Africa and Asia in order to work around tenure or other restrictions on the activities of individual women. All this suggests as well the need for gender scholars to help identify improved mechanisms for downward, democratic accountability for climate finance and market interventions, including using social media to allow for commentary on projects, or carbon standards to head off negative impacts before they occur.

³ See Ted Talk by Jemimah Njuki, December 20, 2010 at <http://www.youtube.com/watch?v=nr3J8QYY2Gc>

Box 2: Key questions related to improving gender norms and outcomes in financial, development and governmental organizations

- How do finance, technical service provision and knowledge sharing through, for example, NAMAs, REDD+, carbon market, and development projects take impacts on local women and gender relations into account? Features to consider include impacts on the value and use of men's and women's knowledge; gendered assets and income; social relations among men and women of different classes or ages or ethnicities; the effects of laws, policies and contracts, networks, and on the ability to organize for change.
- What impacts have programs had on gender equity and what patterns do they suggest for intervention? How are impacts influenced by dominant narratives about climate change, agriculture and gender globally and in the location? By the social networks among mitigation actors? By incentives and disincentives for action?
- How could increased attention to gender improve the programs outcomes? How well are existing advocates of women's rights using their influence and leadership, collective action, mobilization of resources and political alliances to support change processes with these programs? What changes in perspectives and norms regarding women, gender relations and climate change mitigation should be pursued? What strategies are organizations using to level the playing field in encounters of farmers and their organizations with powerful market actors and any "gender blind" partners in government and among NGOs? What tools and strategies will make GHG emissions accounting open to greater participation by women and men farmers? What verification standards

Similarly, we believe that a gender strategy for climate change mitigation should examine scientific expertise and its influence over how climate change mitigation projects and programs are designed (Miller 2004, Goldberger 2008, Terry 2009, Hiraldo and Tanner 2011). While recognizing the tremendous power of science to address pressing environmental and social problems, feminist science studies scholars point to weaknesses that can arise within scientific practice—that it can be hierarchical and exclusive, prone to analysis out of context, influenced by funding and publishing pressures, inadequately self-reflexive or accountable to

those impacted by scientific inquiry, among others – as well as to new directions for more democratic science and knowledge production (Harding 1995). By more democratic knowledge production, we mean processes that value different perspectives on a problem and actively seek out diverse perspectives, from the point of problem definition through to final assessments; that recognize that the perspectives generated by formal science have in recent history enjoyed greater power than others, and that a richer and more effective knowledge can emerge if the perspectives of disadvantaged groups are accorded increasing influence in problem-solving; and that knowledge production needs to be accountable *first* to those affected by it, especially those whose livelihoods and well-being may be most at stake. We believe more just and effective mitigation efforts will arise if key questions about knowledge production are answered early in the planning process.

Box 3: Key questions related to scientific expertise and practice

- What power imbalances currently affect knowledge production regarding climate change mitigation? Who among knowledge producers has the authority and the resources to conduct research, interpret findings, and turn findings into enforceable laws, policies and projects?
- How have women on-farm or within research institutions been able to influence mitigation-related research projects, or propose alternatives? How gender-just is knowledge production for climate change mitigation currently?
- What partnerships, research methods, learning platforms, and sharing strategies promote more democratic knowledge production among the actors working on climate change?
- What are the impacts of more democratic approaches to knowledge production on GHG emissions reductions, livelihoods, food security and gender norms and relationships?

Answers to these research questions feed a theory of change based on the promotion of democratic decision-making regarding climate change mitigation and low emissions agriculture. Examples of research subjects include:

Financial, policy and science institutions: Decisions about how mitigation efforts are measured and evaluated, what technical packages are appropriate, where human and financial resources should be allocated often still follow a supply-driven extension model, where technical experts design mitigation interventions; experts may consult with rural women and men, but primarily over how to disseminate new ideas (Harvey et al. 2012, Wollenberg et al. 2012). Changing the balance of power is no easy task, but there are strategies available. For example, bi-lateral donors have encouraged a shift in the conversation on gender and agriculture towards the pursuit of more gender just impacts over the last few decades (Otzelberger 2011).

We propose that critical analysis of the narratives, ideologies, social relations, and politics of the dominant institutions and actors is an initial step, building on work done by the Institute of Development Studies (Otzelberger, 2011) and the Initiative on Climate Adaptation Research

and Understanding through the Social Sciences (ICARUS). The analysis should make clear underlying assumptions that characterize mitigation programs and policies, how programs and projects are actually implemented, and the impact of activities on GHG emissions, environmental sustainability, social justice and individual human well-being for especially the poorest women and men farmers (see Appendix 5 for a brief example of narrative analysis). The analysis would be intended for those shaping institutional policy within financial, NGO, government, and research organizations – program leaders, institutional heads – and would open up new areas of social-environmental research and action to the benefit of researchers and practitioners frustrated with limited impact as well as farmers seeking more effective partnerships.

CCAFS should work with partners who can use this evidence to inform finance institutions, policy makers, social and natural scientists, and project managers. Influential partners sensitive to gender and social justice, and with an interest in evidence-based approaches, will be best positioned to take on this role, such as the governments of Norway, the Netherlands and Great Britain, for example, research institutions such as IDS, IIED and Wageningen, non-profits such as WEDO, CARE, ProInnova, or WOCAN, and international lenders such as IFAD and the Asian Development Bank. The end goal would be to work with these partners and other mitigation actors to develop new methods, networks, partnerships, and knowledge-to-action strategies to better account for all sources of knowledge and any differential impacts of research on women and men.

The research should include attention to gender and other aspects of social differentiation at the earliest stages of problem definition and conceptualization of projects, programs or policies, and at each point in a social learning process through wrap up. Differentiation would address not only livelihood impacts, but also impacts on human well-being and personal efficacy, social capital and organizational strength, politics, and cultural beliefs and practices. It should also take a relational approach, focusing on gender and other social relations, and how diverse men and women are changing these relations (Gurung and Biggs 2010, Mitei and Percy 2011, Gurung et al. 2011). These social ‘variables’ are sometimes hard to quantify. Ideally, the women and men within agricultural communities will play a leading role in defining what counts as well-being and personal efficacy, social capital and organizational strength, and adequate assets and entitlements. Various international indicators provide a good

starting point for dialogue, and may, as the Human Development Index and other similar projects have done, provide for carefully contextualized cross-site comparisons⁴. Institutional leadership should be accountable for achieving goals for social impacts (Otzelberger 2011). Accountability will be most effective if it influences promotions, access to resources, and professional status.

NAMAs: CCAFS may play a role by developing and identifying new policy and technical resources for those creating NAMAs so that agreements address gender and social differentiation. Examples might include recommendations on changes in resource tenure policies, supports for farmer-led experimentation, or new ways of measuring GHG reductions in activities dominated by women. The Beijing Conference and the 2009 Monrovia Call for Action on Gender and Climate Change are examples of policy documents that are already available to help shape NAMAs. CCAFS can work with organizations such as UN Women, CARE, WEDO, WOCAN, and partners in the GGCA that can refine the social approaches to climate change mitigation and help NAMAs move in front of international policy documents in addressing gender and social differentiation. This technical, policy and social research would benefit participants in formulation and implementation of NAMAs, with significant benefits for those affected by NAMA activities, including women farmers.

CCAFS can help in convening, facilitating, and publicizing the dialogue and action items from these formal and informal encounters of stakeholders. CCAFS should partner in this work with research institutions, such as IDS and the Center for Sustainable Resource Development, and NGOs such as WEDO, WOCAN, Global Gender and Climate Alliance (GGCA) and GenderCC that have policy and gender credibility. Pressure should be accompanied by new resources—time, funding, and training—to help the research and financial institutions move towards more gender-just approaches to low carbon development. That means resources for those working within those institutions and, as we will argue below, to build capacity among partners in civil society and local government. Again, CCAFS can

⁴ The UNDP has produced an analysis of ‘objective’ and ‘subjective’ well-being and happiness indicators such as income and assets, but also social connections, time with family, education and civic engagement (http://web.undp.org/developmentstudies/docs/subjective_wellbeing_conceicao_bandura.pdf). The United Nations, IFPRI, WEDO, CARE, WOCAN and many other organizations have recommended that well-being and personal efficacy indicators include a gender analysis, such that education levels, income, assets and entitlements are disaggregated by gender, and that gender issues such as sex ratio and violence are included.

play a supportive role, assisting funding agencies to find partners experienced in gender-just research and development, and reviewing funding-related decisions for their potential social impacts.

Market actors: Change among market actors may best be achieved through partnerships with larger activist organizations, media, and consumer groups that can affect corporate balance sheets. The CGIAR is already involved in multi-stakeholder processes that are pushing institutions on the demand side for GHG mitigation to be more sensitive to social differentiation and social impacts (Newton, et al., 2012). CCAFS technical and social research can be influential in these platforms, supporting livelihoods, food security, and gender justice as well as more effective mitigation efforts. Analysis of the structural relationships that shape climate change mitigation will require outside expertise. A political scientist or policy expert, for example, can help identify key strategies for effecting change within the carbon markets, such as aggregation strategies for payments, socially-oriented certification criteria, or public relations strategies for pro-poor trading. The analysis should be done in collaboration with mitigation practitioners and scientists to encourage institutional change from within (Gurung and Biggs, 2010; see Wollenberg et al., 2012 for an example). However, exactly when and how such powerful groups are brought in, particularly if farmers' groups are also participating, is a strategic question that must be answered within the context of specific research projects. A carefully laid out plan for strategic inclusion of stakeholders should be part of any structural analysis of market and scientific actors and institutions (Edmunds and Wollenberg, 2001).

Supporting Local Innovation

If climate change mitigation approaches currently impose many constraints on local women and men, it has not eliminated their ability to act. Farmers can draw on local knowledge, human and social capital, political networks and many other resources to guide agricultural change in ways that they value, achieving both more gender-just and more effective impacts (in terms of GHG emission reductions). Indigenous agro-ecological knowledge tends to be highly integrative and dependent on primarily locally available resources. Gendered roles, rights, schedules, and spaces mean that women and men are likely to have very different

knowledge bases and engage in innovation differently, and that these differences will be influenced by ethnic and class identity (Rocheleau, 1996; Fadiman, 2005). Outside supporters can play a vital role in facilitating change in farming systems (see Robinson and Berkes for an analysis of communities where local knowledge did not evolve quickly, 2011). The point here is that women's local knowledge and practices are often undervalued, and if supported, could lead to more just and climate-effective impacts.

CCAFS can support local innovation by **making visible and enabling women's local, culturally-informed knowledge and practice**. The perspective is growing within the research on climate change that women in particular are capable of generating innovations that enhance their communities (Vincent et al. 2010, Brooks and Loevinsohn 2011, Prolinnova 2011, Friss-Hansen and Duveskog 2011, Harvey et al. 2012). Local innovations may take the form of new farming techniques, new ways of managing inputs to farming or marketing produce, or new ways of organizing to influence political decisions about how state resources are allocated (Woodhill 2010). Or rather, local innovation is likely to take several of these forms at once, as innovators are embedded in their local agro-ecological and social systems, understanding that agricultural change may require a holistic, integrated approach. Learning and innovation platforms that bring together multiple actors within an innovation system are good locations to identify barriers to and opportunities for effective mitigation and gender transforming innovations encountered by each actor. The platforms must be well facilitated to address power and knowledge imbalances, but promise to increase the scope and pace of innovation, and improve the outcomes of mitigation projects.

This work should be attractive to CGIAR centers and their partners, as it can flexibly align with field activities and benchmark sites for a variety of technical and social interventions.

Local innovation and effective adaptation depends in part on the **capacities and leadership skills** of rural women and their male allies. While improving the personal efficacy and leadership skills of women and men farmers is an end in itself, it is also an investment in future efforts to address climate change. Mitigation projects can badly damage such personal qualities if they reduce complex farming systems to single service systems (sequestering carbon), where any important decisions are taken out of the local context. Or they can enhance such qualities by engaging women and men from the beginning in defining problems, designing and implementing solutions, and evaluating and learning from experiences. In fact,

effective change may be impossible without attention to the sorts of relationships and experiences that nurture personal efficacy and leadership (Gurung and Biggs 2010, Friss-Hansen and Duvekog 2011; see also Appendix 6 on GROOTS, Kenya).

Building **social networking, collective action and organizational capacity** is also vital for local innovation and adaptation. There is a growing interest in collective action and its gender implications, and some research to suggest that women may gain most from a social approach to agricultural change (Fadiman, 2005, Kumar and Quisumbing, 2010). ‘Connectedness’ is generally a social good, and thus an end itself. But connections within communities, and between them, can be a tremendous asset in addressing structural constraints on effective mitigation action. Harvey has suggested that connections to local or in-country networks are vital to support innovative projects beyond the timelines of international donors and research centers (2011). Yet, connections to donors and other agents remain vital for amassing the resources needed for transformational change in some agricultural systems - such as the move to organic agriculture at a national scale in Kenya (Goldberger, 2008). Research on personal efficacy and collective action will require social science skills well developed among CCAFS partners. CGIAR scientists and farmers will benefit from this research through stronger local partners to help design, test, implement and assess agricultural innovations.

The crisis narrative within climate mitigation worlds has encouraged the use of familiar NGOs as intermediaries (Yates, 2012). Many of these NGOs do excellent work. Yet, to avoid the problems associated with relying on familiar faces - reinforcing existing power relations, continuing to ignore important sources of new ideas and new resources, creating new bureaucracies that may slow responses to key issues – CCAFS should reach out to other potential partners. These include **social movements, agrarian unions, schools and others with strong accountability** to rural women and men of lower status and power (Sangtin Writers and Nagar, 2006, Davies, et al. 2012). Similarly, incorporating project outliers – remote and rarely visited communities, or communities with limited interest to the climate mitigation professional networks – can disrupt familiar patterns of thinking and acting among researchers and practitioners, and lead to useful insights into how better to achieve the goals of gender justice, food security and low emission agriculture. This will again challenge the CGIAR, as these groups may have very different cultures for producing knowledge and acting on it, including non-scientific ways of learning, highly democratic decision-making, or

confrontational politics. The payoff will be new ideas for what research should be done, and new mechanisms for putting research to practical use.

Box 4: Key questions related to local innovation, climate change, and gender

- What is the current status of local innovation systems and women's role in them? What mix of innovations is necessary to bring about change in agricultural systems that better meets gender justice, food security and climate change mitigation goals?
- What capacities and enabling conditions are needed by women to engage in local innovation and to scale up their new ideas? How can barriers preventing changes in the agricultural practices valued by local women and men be overcome?
- What networks and organizations have been most effective for women and men farmers in promoting the change they wish to see in agricultural systems? With whom do they partner, when, how and why? How do the partners network amid complex social environments to address the non-technical challenges of agricultural change and gender transformation?
- What benefits to agricultural innovation systems emerge from the inclusion of non-traditional partners and research locations – such as agrarian unions, social movements, schools and other partners who may work in remote locations, peri-urban areas or with politically marginal groups?

Research related to gender and local innovation translates into change through strengthening the visibility, capacity, and influence of local women and men who are already innovating to bring about change in agricultural systems.

CCAFS can help make this work more visible and trace out the enabling and constraining conditions through the research it supports and its power to convene researchers, development aid organizations, local and national governments, and community-based organizations to develop action plans with them. A key part of these plans should be collaborative learning and training where community-based organizations, development practitioners, and researchers work together to enhance the ability of local women and men to pursue their ideas for change. Projects should start with an analysis of the history of agricultural change within communities, paying special attention to the often-invisible role of women, as well as

livelihood and social network mapping. Such research will help all actors within an innovation system build on existing strengths and identify key weaknesses at the local level. Reflections on local meanings of agriculture, climate change and other key concepts, through cultural domain analysis or similar methods, will clarify community goals before much planning takes place. Scenarios planning can also help clarify community goals, and should take care to represent both women's and men's visions.

Support for local innovation should also have a budgetary aspect to it. CCAFS can work with organizations sharing resources directly with community groups through Local Innovation Support Funds (organized by ProInnova) or similar mechanisms. Larger funds may come from carbon markets or mitigation-related grants as Payments for Environmental Services (PES). CCAFS can help the poorest women and men access PES through aggregation strategies, payments for public goods, and risk-reducing programs such as micro-insurance (Wollenberg et al. 2012). Gender analysis will be critical in these efforts to assure that, for example, common pool resources fundamental to poor women's survival are not taken over for mitigation work, or that PES don't break down social cohesion, undermine women's status, or disrupt important cultural practices.

This work would build on the CGIAR Natural Resource Management Strategic Review recommendations to build innovation systems and could gain momentum from FAO's attention to innovation systems as a priority for 2013.

We recommend that CCAFS organize a workshop on gender, agricultural innovation and climate change mitigation to make visible the role of gender in agricultural change and to create a framework that will be useful to researchers, practitioners and activists in identifying, building on and creating space for local, gender-just innovation. The workshop could be followed by a small grant program targeting promising local innovation teams as demonstration projects.

Evaluating Women's Contribution to Climate Change

Mitigation

Much of the work of the CGIAR remains focused on technology development *ex-situ*.

Building on the work of previous gender initiatives within the CGIAR, there are opportunities to make climate change mitigation technology development work gender-responsive. A first step is to make the case for greater attention to gender as mitigation technologies are developed, or more precisely, to define where gender-specific investments are likely to be most fruitful for the CGIAR, within or outside of CCAFS Theme 3: Pro-poor Climate Change Mitigation. The next is to assure constraints on women's engagement in mitigation-related activities are addressed, and that safeguards for women's interests are established for any mitigation technologies developed.

Understanding the environmental, economic, and social value of women's contributions to mitigation can provide an evidence base for whether or not to invest specifically in women, women's organizations and gender-specific mitigation activities, and if so, how. The logic of this work is similar to that documenting the gender gap in agriculture by Crowley and others (FAO 2012). The development community must determine honestly where its limited resources will have the greatest impact on both climate mitigation and on gender justice: enabling and expanding women's mitigation-related activities, safeguarding women from negative impacts of mitigation projects and programs, and/or investing in other areas of development research and practice. There is considerable concern already that mitigation investments are taking funds away from nutrition and family health programs with well-established benefits for women. At the same time, evidence of women's contributions to mitigation could be particularly useful in supporting new, additional investments by donors and multilateral organizations. For entities needing to prioritize investment returns, this may be the most effective way to build justification for expanding the resources available for women's organizations and activities. The assessment must not be done superficially, however, as a quick snapshot of current agricultural practice. Documenting value requires careful assumptions about and analysis of:

- The extent to which men's and women's contributions to GHG emissions and mitigation can be differentiated;
- The dynamic and uncertain nature of gender-differentiated contributions to mitigation; care should be taken to assess trends, identify transformative events, and account for variations in contributions within households, across communities, and within larger-scale networks and institutions;
- The interactions between gender and income, class, or ethnicity as they relate to mitigation activities;
- The constraints on women's activities (as discussed above in the sections on political ecology and local innovation); where women want to and can address these constraints, research should support them;
- Whether women want to or should be involved in mitigation and why, acknowledging that while opportunities or choices to be involved are important, resources to empower women may sometimes be deployed to better effect in other fields of women's activities;
- How women's involvement or shifts in gender relations might enhance mitigation potentials and the impacts in turn this has on women;
- Recognizing that safeguards against expanded work days, misallocated resources and other harms may be required once women's roles in mitigation increase;
- Acknowledging that climate mitigation outcomes need to be considered in tandem with outcomes related to improved livelihoods and greater food security, and gender justice.

This strand of work would have broad relevance across the CGIAR centers engaged in technology development and enable broader attention to gender throughout CCAFS projects. New technologies should be routinely assessed for gender roles and impacts. This is a traditional approach to gender analysis that should be familiar to most gender specialists within the centers, but will require a consistent framework and synthesis across CCAFS work to generate a critical mass of information for external audiences.

Valuing women's contribution therefore has two strategic components: (1) documenting the existing or potential value of women's contributions to mitigation-related activities to direct the allocation of existing resources and to justify further investment and (2) supporting

technology development, primarily through the centers, that is sensitive to gender roles and provides women options to be involved in mitigation with positive gender outcomes. The latter would be closely linked to the political ecology analysis and innovation work.

Research on roles and values should consider the interplay between existing gender relations, local innovation, and externally introduced innovation as a dynamic system. Understanding the drivers for innovation and change in gender roles and trends would help characterize this interplay and the stability or changing nature of norms. As the CG centers and others develop mitigation approaches related to rice, agroforestry, conservation agriculture, or aquaculture among other options, they should be documenting women's existing and potential contributions to taking up and adapting these agricultural innovations and to examining (and providing safeguards against) potential tradeoffs between mitigation successes and harms to livelihoods, food security and gender justice.

We believe that CCAFS will achieve more win-win outcomes if researchers make a commitment to engaging women, especially the poorest and most disadvantaged among them, in defining how new technologies and management practices might be adapted to local social and environmental circumstances, when and where and by whom practices should be taken up, and with what protections in place. Boru Douthwaite (2002) has made a case that a longer adaptation process, starting with simpler, less 'finished' technologies that can be tested and evaluated locally and improved upon using local skills and resources, leads to more robust outcomes. A gender component to the adaptation process is generally necessary, however, to assure that adaptation takes advantage of the widest array of skills, and that adaptations don't serve only the wealthiest, male farmers, or compromise components of the agricultural system most important to women.

We have already noted that women often have different agricultural expertise and experience in agriculture than men (and that different women have different expertise) that can lead to gender-informed innovations. Gender plays the same role in shaping the adaptation of well-known technologies and farming practices to meet the different needs of local people in different social situations. One of the most salient gender differences is in resource tenure (Meinzen-Dick et al. 2010). Land poor women, in particular, have had to develop creative strategies for working around restrictions on their resource access and control to test new crops (Sultana and Thompson, 2012), agricultural trees (Fortmann and Bruce 1988) and fish

ponds (Quisumbing and Kumar 2011). Gender takes on a spatial quality, as men and women often work in different areas of the landscape (Rocheleau 1996, Fadiman 2006), or have access and use rights to different products from trees, other plants and even animals (Rocheleau and Edmunds 1997). These rights may vary over time, by season or by exceptional circumstance, including drought or flood related to climate change (Yan et al. 2012). The CGIAR should promote a locally-specific, negotiated set of tenure arrangements that account for the complexity of tenure rights by gender and other lines of social differentiation (Rocheleau and Edmunds 1997, Sjaastad and Cousins 2008). Gender-informed research can also help explain why well-designed policies to support climate-smart agriculture fail to meet objectives as implemented through different local organizations. The link between local organizations and NGOs, state bureaucracies, market and international actors, has been discussed above, but the internal functioning of local organizations is also influenced by gender (Rajasekhar et al. 2012, Meinzen-Dick et al. 2012). Finally, local gender-based norms of behavior can shape outcomes in crucial ways. There are examples of trees dying from lack of care when women were to squeeze another labor into an already long work day, and of productive new ‘women’s crops’ being taken over by men at women’s expense (Njuki 2010). These technologies designed for low emissions development can be integrated into the farming systems of many communities without harming the poorest women or other marginalized groups, but only **if gendered resource tenure, space, and divisions of labor are accounted for, and organizational functioning and local social norms are addressed.** The CGIAR’s Collective Action and Property Rights initiative (CAPRi) has done significant work within these areas of social science, with IFPRI taking a leading role in gender analysis with respect to property rights and institutional arrangements. More work in these areas is needed, however, to understand where win-win situations might occur, how to facilitate negotiations over tenure norms and rules, what safeguards are needed to protect the poorest women, and where trade-offs between GHG emissions reductions and social harms are simply too great to justify a particular low emissions development pathway.

Accounting for women’s contributions to climate change mitigation risks making them ‘instruments’ of initiatives designed elsewhere, more service providers than agents of their own destinies (Leach et al. 2012, Milne and Adams 2012). As discussed below, climate change mitigation should not cause harm to women’s personal efficacy and status in the community, livelihoods, social networks and organizations, cultural practices, or to the well-

being of other disadvantaged groups. Examples might include creating additional labor burdens, exposing women to higher financial risk, or creating jealousies that encourage domestic violence. Mitigation research that is gender-just must include safeguards against negative social outcomes.

Participatory, gender-informed technology adaptation is an important safeguard against harms to women that might emerge from mitigation initiatives. However, researchers and development practitioners should also be held accountable for the impacts of mitigation projects, programs and policies outside the GHG emissions markets. As noted above, we have outlined a need to monitor impacts in at least 5 areas:

- Gender and knowledge production and sharing
- Gender and the material world: resources and spaces, assets and income, budgets, labor
- Gender and the social world: institutions and organizations, networks, policies
- Gender and personal identity and efficacy
- Gender and culture: values, beliefs and practices

There are good tools for monitoring these impacts, particularly related to material and social impacts (CARE gender toolkit is an example). Degradation of common pool resources and the loss of women's customary access rights to those resources are one example that is well documented by CAPRI and others. Gender-informed research should include an analysis of potential harms to women's local cultural knowledge and practice from proposed mitigation projects. Critics of REDD projects in forested communities point out that development projects – particularly those with large market actors or complex scientific elements - have contributed to the abandonment of cultural practices, a breakdown in social cohesion, and a loss of meaning in the relationship between local men and women and the landscapes they inhabit (Parotta and Tropser 2012, Shankland and Hasenclever 2012). A gender specialist may need to do this work, but the insights will benefit research extensionists and development practitioners, as well as rural women and men by avoiding unintended harms.

Where internal controls are not adequate within research and development organizations, popular oversight of mitigation initiatives can help. Both old and new communication technologies are used to assist communities in monitoring project goals and designs, as well

as project implementation and impact. A combination of radio and mobile phones has helped communities in Ghana comment on a wide variety of rural development issues, for example, including climate change (see Appendix 7, Climate Airwaves). There remain many challenges to implementing public accountability for climate-related projects, even with the spread of communication technologies (Harvey 2011, Gilberts and Myers 2012). Social differentiation at the local level, by gender and age in particular, may make access to the technologies uneven. This may be particularly true in the case of Internet hubs (McOmber and Panikowski 2012). But the potential for broadening the breadth and depth of public accountability for projects, and for building local capacity to address emerging challenges and opportunities, is tremendous, and should be embraced lest the technologies get stuck in older models of push/pull research extension.

Box 4: Key questions related to valuing women's contribution to climate change mitigation

- What is the economic and social value of women's contribution to mitigation?
- How are roles in mitigation engendered and is it possible and meaningful to distinguish women's contribution?
- How do these roles vary over time and in different contexts? Are there examples where women's value to mitigation is particularly high or low and, if so, why? What are the trend in gender relations with agricultural systems, and what key, transformative moments have occurred in those relations, and why?
- How are women's roles and activities constrained? What efforts are women making to address these constraints and why? How would mitigation research and practice affect these efforts?
- How can existing low emissions technologies – such as agroforestry, soil enhancements, animal husbandry—be re-designed, tested, adapted and evaluated by women to enhance women's contribution to mitigation and gender just impacts? How can they better reflect:
 - gender differences in resource tenure
 - gendered spaces in the agricultural landscape
 - gender divisions of labor within the agricultural systems
 - differences in how local organizations reflect and respond to women's visions, needs and interests

Finally, CCAFS can help provide gender-just safeguards by working in two directions. First, CCAFS can partner with organizations with strong gender-justice programs—such as WEDO, IDS/BRIDGE, CARE, Prolinnova, and WOCAN—to develop and implement safeguards within mitigation research initiatives. Second, CCAFS can link to organizations that facilitate public accountability, such as community radio networks or social movement forums. The benefits, or avoided harms, will accrue to women and men farmers, but also to researchers and development practitioners accountable for meeting social as well as technical goals.

Approaches to participatory action research and scaling up

This section examines methods that support research that takes a systemic approach to agricultural change, at once enhancing the capacity of local women and men to innovate, and analyzing barriers to that innovation associated with other actors within the system. We outline a role for social, looped learning within an Agricultural Innovation Systems approach. We also look at intra-household negotiation facilitation to address gender relations within the household that social learning methods may miss when focusing at the community level. We suggest how local, gender-just action research projects can be ‘scaled up’ in terms of their lessons learned and through larger networks and organizations of actors.

The CGIAR mandate for global public research goods sits poorly with the specificities of local, community-driven climate action. This may partly explain the temptation to hold on to supply-driven extension models, despite concerns over their efficacy and impact. We believe that an emphasis on social, looped learning will improve mitigation-related action research, particularly when set within an Agricultural Innovation System framework (see Appendix 8 and IIED’s treatment of looped learning). The ‘social’ elements in social, looped learning are born out of a desire for procedural justice, but also out of a recognition of the positive contributions that women and men can make in changing their own agricultural systems. In a social learning environment, scholars, development practitioners, and policy leaders learn to maintain a supportive dialogue with local agriculturalists, contributing their expertise to locally designed responses to locally defined problems. This is significantly more resource-intensive than extractive surveys or one-off PAR exercises. The payoff, however, should be projects that succeed because they embrace multiple and evolving perspectives. Given the resource intensive nature of this work, CCAFS Theme 3 needs to give careful attention to the generalizable lessons from a particular site and opportunities for scaling up from a selected site. Theme 3 also should seek to build on existing development initiatives or join forces with other CCAFS themes or regions.

Work in the area of Agricultural Innovation Systems (AIS) suggests the transformative change will only occur if actors and institutions outside the immediate researcher or farmer

relationship are engaged (Klerkx et al. 2012). The ‘social’ in learning must include those who can bring a gender justice perspective to influence value chains and institutions, social networks and politics across scales, grand narratives and dominant ideas. How such actors are brought together, when and where and for what purpose, should be carefully thought out, and strategic decisions made. This is, in fact, a topic of inquiry in itself. What narratives, institutional cultures, policies and laws, and social networks within and outside the work place drive the various actors? Which are likely to support pro-poor agricultural change that benefits women and men farmers? What is the pathway to transforming these actors so that they are better able to support poor women and other disadvantaged groups?

The ‘looped’ elements address agricultural systems that are technically, socially and culturally complex, and nested within environmental and social contexts that seem to be changing rapidly. The learning loops build in opportunities to check the continued relevance, completeness, and accuracy of information generated in earlier research and development efforts by building in explicit triggers for critical reflection and analysis, and defining analytical strategies that encourage learning about project implementation, design and even problem-definition. Double and triple loop learning review whether the very problem being addressed still matters, or is properly conceived of. This approach suggests that new (or under-valued) lines of accountability must be recognized - not only to funding sources or senior policy makers, but also to the communities that are the subjects of mitigation initiatives. Ideally, projects that do not serve rural women well would be reconfigured, in spite of any log frames laid out at the inception of a project. A number of specific methods are being developed that incorporate various degrees of social, looped learning: co-design workshops, innovation platforms, digital sand boxes, analogue sites, collaborative future scenario planning, and community/researcher dialogues. All can be tailored to a social, looped learning approach. The choice of which methods work in a particular context may also be made socially.

Social, looped learning within a large agricultural system with many actors expands and complicates the role of knowledge brokers and intermediaries. Brokers must be capable of a more complex set of interventions to bring about transformational change: interventions that may require media strategies and political alliance building, resource mobilization, and capacity strengthening (Klerkx et al. 2012). This raises important questions. What skills do

knowledge brokers need (Sherwood and Larrea 2001)? What criteria for representativeness, equality, and efficacy can we use to evaluate intermediaries? What accountability structures need to be in place to assure that they serve the needs of poorer women (Sangtin Writers and Nagar 2006)? What processes assure effective communication between them and communities, and between them and the CGIAR and similar institutions? What sort of knowledge-generating dialogues and deliberative decision-making processes best account for the many diverse perspectives on agricultural change (Robinson and Berkes 2011). The iterative dialogue and attention to power relations at the center of looped learning methods should make obtaining informed consent much easier—if local women and men ‘own’ the research, a measure of consent to use the social knowledge seems implied. However, careful documentation of how inclusive and meaningful local involvement in and ownership of research is necessary. Protocols for engagement with indigenous communities provide a model for how to achieve truly informed consent at both the individual and community levels (Parotta and Trospen 2012).

Looped learning is more effective when impact pathways are explicitly identified. Though there is still much push/pull extension work that focuses almost exclusively on technical issues within the CGIAR. Some centers have embraced the Participatory Impact Pathways Analysis, or PIPA approach, that embodies more recent thinking on monitoring, evaluation, and learning (Millstone et al. 2010). In this approach, an early workshop makes explicit the theories of change guiding the research - defining which actors will do what to bring about desired impacts - and facilitates participation of women and men farmers in problem definition, project design and other ‘upstream’ phases of project development. The theories of change may be based on network mapping that includes tracing flows of information, lines of regulation, movements of finance, among other elements of an agricultural system, and assesses the type of influence (positive or negative) and the strength of influence of these flows. Multi-Criteria Mapping, like PIPA, helps uncover theories of change at the beginning of projects. Using this method, however, participants can score different pathways to change, explain why they may or may not work, and then aggregate the scores for further discussion. This technique would be applicable to all three strands of the research strategy.

Operating at the community scale is not sufficient to address gender inequalities. Though working through ‘groups’ shows great promise, community-scale interventions can be

blocked by intra-household politics or have unintended and damaging impacts on vulnerable groups (Agarwal 1997). The use of intensive, household-scale dialogues has proven useful in some of the projects directed through the Swedish Aid agency, SIDA (Farnworth 2010). This Household Approach treats farmers as managers rather than ‘beneficiaries’ of scientific extension. Following a community-scale scoping exercise, practitioners meet with all adults and older children in a given household. Household members establish a vision for the household farm and a plan for getting to that vision. Outsiders support the plan through implementation and learning phases, on terms defined by the household. Initial experience in Zambia indicates that important gender-just transformations of the household farming economy (both productive and reproductive aspects) and of gender relations generally can be achieved. This is consistent with arguments summarized by Okali (2011) and Gurung and Biggs (2011) about the ‘emergent’ quality of gender relations, particularly as gender negotiations accompany important changes in ecology and social organization that may be implied by climate change mitigation.

Similar lessons for addressing intra-household relations as barriers to gender-just agricultural change can be gleaned from a) FONDEAGRO in Nicaragua and their Patio Approach, where women and men were empowered to request services of extension workers, and where women were connected to literacy and other programs to help them pursue their goals, b) NALEP in Kenya worked to redefine gender relations in agriculture through Community Action Plans, which are reported to have been particularly powerful in the area of helping women market crops and c) Gender Conversation Groups in Ethiopia that, based on anecdotal evidence, are working to transform gender relations in areas such as land access and farming technologies (Farnworth 2010).

There is also a question of strengthening women’s personal capacity to work in either group or public settings. This may be a question of time availability, roles, power relations, literacy, of confidence and experience, or of local norms regarding women’s behavior in public. Participatory action research (PAR) methods have often addressed this problem by separating men and women for public discussions. This may be a good option for much climate change mitigation research too, at least initially. However, with the emphasis on social, looped learning at various scales, this may be less effective in the long run than building women’s capacity for public meetings and enhancing negotiations among women and men of various

backgrounds and interests. There is also the argument that such capacity building contributes to the transformation of gender relations that can benefit men and women farmers. Three examples of capacity building are instructive:

- GROOTS Kenya focused on building women's confidence and leadership skills first, before taking up climate change-related projects. Men now join the women's groups to address issues so that collectively they can acquire the skills, and build the technical support and marketing networks the need to make organic agriculture work for them.
- The Climate Airwaves case in Ghana, gave less-educated women separate training in climate science so that they could actively participate in social learning platforms.
- Prolinnova shifts a measure of control over project financing to local women and men through the Local Innovation Support Funds, building managerial capacity as well as local self-efficacy.

It is difficult for the intensive engagement among learners implied by these approaches to be scaled up and out, particularly within time frames imposed by many development funders. There may be no easy remedies for this problem, and knowledge brokers and intermediaries may experience frustration in trying to find them. Five strategies may help. First, changing project time lines can create more time for social learning to reach more audiences. CCAFS ten-year time line is a model in this respect, and demonstrating the benefits of social learning should be a central goal of the CCAFS effort. Second, establishing social learning within research and development institutions should facilitate better transitions from one project cycle to the next, as lessons learned from early projects are more tightly integrated into subsequent project designs. Third, improved modes of communication—from better use of traditional media such as radio and television, to the use of new technologies such as cell phones and internet hubs—may allow those in far flung locations to benefit from the learning process (see Appendix 7 for a discussion of call-in radio in Ghana as a learning platform for climate change projects; also McOmber and Panikowski, 2012 for an overview). Attention to differences in access to communication technologies is needed to assure women are not poorly represented in decision-making processes. Fourth, engaging in social, looped learning in regions with a long history of research may allow scholars and practitioners to generalize - carefully, collaboratively - based on similarities among communities identified in surveys or

PAR exercises, though where gender differences have not been accounted for in such research, its value may be limited. Fifth, while focused on adaptation, analogue site visits provide a platform for community representatives to exchange ideas on mitigation aspects, and the gender implications. The site visits may need to grow to include a more systemic analysis of site conditions and the forces that drive or prevent change, but they offer a good platform for regional learning. In some places, restrictions on women's mobility may require special arrangements to achieve procedural justice for women, such as video recordings or single-gender meetings in private spaces.

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Appendix 1: Definitions of Gender, Gender Justice and Low Emissions Development

1) Gender: Gender refers to the meaning ascribed to various sexual identities, typically men and women, boys and girls (CARE, Gender Toolkit, 2012). The meaning is often influenced by a person's biology, but is not determined by it. Other aspects of a person's identity, such as their wealth, age, or kin networks, influence what gender means. Gender roles may soften in times of crisis, such as drought or flood, and gender's meanings can evolve over time. For instance, fathers are increasingly willing to allocate land to daughters in parts of Kenya, and husbands encourage wives to take on leadership positions in Honduras and Bangladesh. Gender is as much about men as women, and thus actions to improve women's well-being must account for impacts on men too.

Gender is not only important 'in the field' among rural communities of the global south. It can also influence the options of people working in research institutions, government offices, non-profit organizations, or companies. Wherever people are located, gender analysis is useful to understand motivations, capacities, networks, constraints on choices, and sources of power.

2) Gender Justice: Gender justice implies a move towards gender relations that empower women and men, that reduce 'discrimination, subordination and exclusion' (CARE Toolkit) and the inequalities in burdens, benefits, and opportunities these imply. Equality should focus on:

- Rights and responsibilities;
- Opportunities to learn and to earn, to share and accumulate, to connect with others or pursue one's own ideas;
- The value attributed to the person, her or his thoughts and beliefs, and his or her work;
- Outcomes related to well-being;
- Personal agency and the ability to make one's own decisions individually, within households, and within the broader community and society.

Gender justice depends on relationships within genders and across them. Researchers and practitioners must work with structural forces that shape these relations – such as laws and policies, cultural norms and values, and everyday practices of cooperation and conflict. No project starts from a point of historical and institutional neutrality. Creating space for men and women to innovate, make decisions, and control their own destinies requires strategic engagement with those who hold power (Alternative Futures, 2011).

3) Low emissions development: Low emissions development means a development pathway that reduces, compared with present practice, the amount of GHG emissions per unit of output (most crucially of food). We assume a life-cycle accounting of GHG emissions, such that emissions associated with inputs, transportation, storage, processing, or consumptions are recognized in the carbon balance sheet of a new practice (Smith and Wollenberg, 2012). We are interested in ‘development’ because in the global south, GHG mitigation should be less a moral obligation than an opportunity to make changes in agricultural systems that support livelihoods, increase food security, protect important social and cultural practices while maintaining a healthy environment locally and globally. At the intersection with gender analysis, development should serve men and women equally as it addresses climate change.

Appendix 2: Facilitating Changes in Agricultural Technologies and, in the Process, in Gender Relations in Upland Honduras

The Foundation for Participatory Research with Honduran Farmers (FIPAH) has worked for more than 15 years with women and men in upland Honduras to breed crop varieties that meet locally-defined needs in changing social and environmental conditions, including changes in local weather patterns. Among the qualities selected are ease of preparation and taste, resistance to drought and to heavy rains and, in recent days, resistance to Leaf Tar Spot, a maize disease brought on by more humid conditions. For our report, three key insights can be gleaned from FIPAH's work.

Women's involvement was limited initially by divisions of labor that largely kept women in the home and men in the fields. However, over time, women played a larger and larger role in testing new varieties. Women now make up 44% of the membership of FIPAH, though they are much better represented in indigenous communities than in the 'more mestizo' agricultural communities. Men and women report benefits from women's engagement with FIPAH. Promoting local innovation can thus help bring about changes in gender relations that are productive for the entire community. The process must be re-enforced as new issues arise – such as the desire to engage in tree planting and soil improvements that remain largely the responsibility of men to date.

The role of outside agencies has been critical, but not central to the participatory research focus. First, small but consistent aid from the Canadian government through a Canadian NGO, and more recently from the government of Norway via a Norwegian NGO has allowed FIPAH to make a long-term commitment to the Honduran communities they serve, with exemplary results. A shorter funding cycle would not have facilitated the change in gender relations, nor allowed the institutionalization of the local experimentation process. Second, the International Maize and Wheat Improvement Center, CIMMYT, and the Panamerican Agricultural School, El Zamorano working with CIAT, have supplied germ plasm for farmers to test and adapt, but have not directed the experimentation process, nor imposed time lines or

output targets. Accessing PES on FIPAH's terms, for activities local women and men are already undertaking, would fit the model FIPAH has already established for engaging with governments, market actors, and larger NGOs. Can FIPAH act as the monitor for carbon sequestration, and be the point organization for dealing with payments to either individual farmers or communities? Can it do so while continuing to support a productive transformation of gender relations?

Finally, CIALS have been allowed to wither for lack of consistent funding or adequate technical support in neighboring countries. Can CCAFS support FIPAH—letting FIPAH staff lead the way—in the revitalization of these groups to the standard set by FIPAH?

Appendix 3: Key Players in the Climate Change Finance

World

Ecoagriculture Partners provides a useful overview of the types of climate financing dedicated to agriculture and the scale at which the various types are supposed to operate (Shames and Scherr, 2011).

The Green Climate Fund of the UNFCCC is supposed to provide fast start financing worth \$30 billion by 2012 and \$100 billion by 2020, balanced between mitigation and adaptation funding. But little has been disbursed (less than 10% by late 2011), and there is evidence the money has been taken from development funds.

Climate Investment Funds managed by international development banks have \$6.4 billion in assets for mitigation and adaptation projects, though most of this will be spent outside of agriculture. More money might be available if agricultural land uses are folded into REDD + projects.

The Global Environmental Facility has over \$1 billion allocated for climate work, and agriculture is one of six priority areas for investment, but it's not clear what types of projects will be supported exactly.

The smaller Least Developed Country Fund and the Adaptation Fund of the UNFCCC does target agriculture (with much of the roughly \$200 million going towards developing national planning tools).

Carbon emission offset markets are another source of mitigation and adaptation funding, but the outlook isn't great for the near term. The money is large, over \$120 billion, but most goes for energy projects, and sequestration activities are not considered by the European exchange, and are considered difficult to manage by the Clean Development Mechanism.

The Voluntary Carbon Markets are again smaller, at \$420 million in 2010, but have been more willing to support agricultural projects.

Certification projects for Eco-agriculture are beginning to include more climate-related criteria for evaluation. The market is big, at over \$50 billion, so there is hope that this can fund projects that help women and men farmers mitigate and adapt to climate change.

Shames and Scherr (2011) note that mainstream, non-climate related agricultural financing is much larger than climate-related funding for farmers, and that integration of the two could “provide a full range of livelihood and ecological benefits (4).” Parties agreed to continue with these funding mechanisms at the Conference of the Parties in Doha, December, 2012.

Appendix 4: Placing Climate Change on the National Agenda in Ghana

Ghana was a carbon sink until the mid-1990s, but the country is now a net emitter of greenhouse gases. Ghana's government recognizes the importance of addressing climate change, and in 2010 it developed its first National Climate Change Policy Framework. The Government of Ghana (GoG) has argued that all sectors of the economy must be integrated into solutions to climate change, and its leaders have prioritized a low carbon development growth path. The country initiated its first investments in renewable energy in the mid-1990s, and its efforts toward climate change mitigation ramped up when the country was selected as a pilot program for the World Bank's Forest Investment Program.

The majority of Ghana's climate change projects are focused on forestry and REDD. REDD+ strategies in Ghana are focused in two areas: forest governance and agroforestry. Forest governance strategy is focused on broadening public participation in forest sector management, including strengthening operations, process, policies and laws in the forest and timber sectors. However, the strategy also touches on agricultural landscapes, and calls for improving tree tenure security; providing off-reserve farmers with incentives for tree planting and conservation; and strengthening land and carbon rights. This strategy is linked to the review of the National Forest Policy and Wildlife Bill, and the Forest Sector Master Plan. Agroforestry strategies prioritize carbon conservation, specifically targeting the cocoa production sector (FoEG).

A national analysis of knowledge gaps and research in Ghana was conducted in 2011 (Gordon, et al. 2011), to assess research gaps on climate change. Respondents to the survey overwhelmingly identified the agricultural sector as the highest national priority necessitating further research. A national priority outlined in the Ghana Shared Growth and Development Agenda (GSGDA) is the accelerated modernization of agriculture and natural resource management. This approach requires a transformation of current agricultural practices away from rain-fed agriculture and toward large-scale irrigation and mechanization.

A policy environment that is generally more participatory and focused on procedural and distributive justice than in many other nations should provide opportunities for poor women to protect and advance their interests. But will they be able to do so? The move to mechanized agriculture and low emissions development will generate opportunities and threats for rural women. So too will large-scale projects – such as biochar or biofuels – where a threat of land appropriation looms. How is policy implemented – drawing on various narratives about gender and about climate change, emerging from dense networks of social relations within government and civil society – and will implementation affect how poor women and men benefit from policies? What roles do intermediary organizations, such as CARE or ProInnova or AfricaAdapt play in making climate change policy work for women?

Resources:

Edjekumhene, Ishmael & Jacqueline C. Cobson-Cobbold. 2011. “Low Carbon Africa: Ghana.” United Kingdom: Christian Aid.

Friends of the Earth Ghana (FoEG). “REDD in Ghana: An Independent Monitoring Report by Friends of the Earth Ghana.” Climate & Development Knowledge Network.

Gordon, et al. 2011. “Diagnostic on Climate Change and Development Research in Ghana: An Analysis of Knowledge Gaps and Research Capacity in Ghana.”

GoG, 2010. “Ghana Goes for Green Growth: National Engagement on Climate Change Discussion Document.” Produced by National Climate Change Committee.

Appendix 5: What a narrative analysis can tell us about climate change mitigation

A narrative analysis, specifically one that follows a co-production framework, focuses on how different actors link narratives (dominant habits of thought that define what is accepted as reasonable, evident, or persuasive, and what is not), and then how linked narratives “...simultaneously reconfigure their ideas, their institutional forms, and the cognitive and social landscapes they inhabit.” (Miller 2004 p. 48).

According to Miller, the IPCC has been able to ‘globalize’ climate narratives in a way that was not given or natural. Before, nation-states took charge of weather-related hazards. Now we think of global climate as a whole, with interlinked global atmosphere, hydrosphere, biosphere and geosphere. Climate modeling helped drive the change, as scientists were able to see the climate as a global whole. But so too did problems of terrorism, global financial meltdown and others that seemed to suggest the need for global responses to more and more human problems (Miller 2004 p. 59—62).

Miller also argues that the IPCC has drawn its legitimacy from science and it claims to neutrality, but has had to invite in political people to gain legitimacy with those representing the global south. The IPCC set a boundary between science and politics by creating one workgroup for science, and two others for impacts and responses. But the IPCC didn’t like that groups 2 & 3 then had ‘special interest’ influence and set up science advisory boards for them. Poor countries continue to be skeptical of the ‘one world’ approach of the IPCC, and prefer not to treat every ‘global citizen’ the same, to focus on ‘local weather’ as a more important unit of analysis, and to build institutions around these principles. Many of these countries helped set up the Intergovernmental Negotiating Committee as an alternative to the IPCC.

This narrative frame for analysis of climate and/or weather changes is wed to a narrative that the market is the best institution for addressing problems (McAfee, 2012). The market, in turn, functions best when willing sellers and buyers can be clearly identified and where they structure their relationship through enforceable contracts.

Milne and Adams describe how these narratives led to harmful consequences for the women and men of a forest community in Cambodia (2012).

The emphasis on the global and scientific nature of climate change problems meant that problem definitions were established before project personnel approached the community, and that the community was thought to have a moral obligation to participate. The need for identifiable buyers and sellers led project staff to treat the community as a homogenous entity, even though staff knew better. When representatives of the local community signed a contract, it was assumed that all local politics had been resolved by the 'willing' seller.

Predictably, local politics had not been resolved – and local elites captured the benefits of the contract while assigning the burden of lost forest access to poorer citizens of the community. Complex relationships between local women and men and the forest were ignored, and local people became 'service providers' within a carbon contract. Forests became singular commodities, and the informal access of many to forest products was lost to those 'saving' the forest for carbon – eventually the Forest Service that took over what had been community lands. Local resource management institutions were weakened, and the prospect for success with future forest-related projects that depend on local knowledge of the forest, cultural commitments to forest care, or local cooperation have dimmed.

What would a 'counter-narrative' look like? Perhaps something like:

- Rural people in the global south are not equally responsible for climate change or its mitigation;
- They have complex relations with their landscapes that involve much more than market transactions (or even livelihoods);
- They have complex relations with each other that influence who has what rights and responsibilities, and these relations change over time, including under pressure from climate change;
- Local women and men have important knowledge about how change should take place within their broad domains of technical and social expertise.

How would the Cambodia project have changed with this new narrative framework?

Appendix 6: GROOTS, leadership and gender-just climate change mitigation

Grassroots Organizations Operating Together in Sisterhood (GROOTS) is an international organization whose mission is 'to develop, over time, a movement giving voice and power to grassroots women's local visions and initiatives attracting long-term partners, and creating new policies, to expand and strengthen their leadership.' (accessed October 24, 2012 <http://www.groots.org/>). GROOTS Kenya works through peer learning exchanges, capacity building, advocacy, outreach and networking, and communication to promote women's leadership. Climate change adaptation and mitigation are only recently focal areas for the individual women and women's groups in Kenya, but successes have already been achieved in in supporting organic agriculture (and the soil carbon increases associated with it), improved manure management, agroforestry, water management and other strategies that impact livelihoods and environments. A site visit during a workshop on Collective Action and Property Rights in Nairobi (September, 2012) highlighted the role that building women's leadership capacity and sense of personal efficacy can play in a wide array of local initiatives, including those that promote low emissions development. Women and their organizations (which include increasing numbers of male participants) feel supported to experiment with new agricultural strategies, reach out for support to government and non-governmental partners, and protect interests from powerful neighbors who might undermine their efforts through land grabs or market manipulations. GROOTS role seems to be shifting now to facilitating contact with supportive national and international networks and advocating within government and non-governmental institutions, as leadership at the local level is already well-developed, and local women are themselves training up the next generation of leaders.

Appendix 7: Climate Airwaves, climate justice and long-term capacity building

In 2010, an alliance was formed among the following groups:

- Community radio stations, represented by the Ghana Community Radio Network;
- World Association of Community Radio Broadcasters, an international radio support organization;
- AfricaAdapt Knowledge Sharing Network, an African-focused network of climate change researchers;
- Institute of Development Studies of the UK.

The purpose of the alliance was to carry out a systemic action research project to facilitate dialogue among radio broadcasters, communities and climate researchers on climate change issues. The alliance focused on building the long-term, collective capacity of radio stations and their listeners to respond effectively to climate change AND the climate change mitigation and adaptation projects active in Ghana.

The project was framed explicitly as a climate justice project. The network promoted procedural justice by using locally meaningful communication forms (local languages, their metaphors and imagery) and local institutions (community radio combined with local mobile phones) to communicate climate change issues. Distributive justice was addressed by identifying global drivers of climate change, and linking the network to national and international partners that could address structural constraints and opportunities. Local gender inequalities in educational background were also addressed explicitly.

Broadcasters committed to audio-journaling (with community input and feedback), to provide frequent opportunities for single and double-loop learning. They mapped stories and experiences with community representatives to provide details on critical drivers of change and key relationships. Broadcasters then identified areas where they could intervene in the spirit of promoting climate justice. Once issues were identified, the partners attempted to link the broadcasters to researchers from AfricaAdapt working on climate change to see how

climate research could address locally-defined problems. Finally, appreciative inquiry inspired the alliance. Broadcasting teams and their partners went through processes of discovery, visioning, designing, defining destinies, and discerning what was becoming of their communities.

The alliance faced challenges related to personnel turnover among volunteer broadcasters, training needs for talking about climate science effectively, and challenging local politics in the form of herder/farmer conflicts. It is important to address this final point – not all community radio is socially progressive. ‘Hate radio’ is not a good fit for climate justice.

The alliance continues its work, based on key lessons gleaned from the first years:

- The complexity of climate issues – in terms of scale, aspects of agriculture, and actors involved - must be addressed head on;
- The climate issues should be framed in terms of rights and responsibilities, procedural and distributional (and perhaps restorative) justice. This fits well community radio’s purpose;
- Partnerships need to be sustained, and local partners free of short-term project cycles are key;
- The work must be integrated with the broadcasters’ and communities’ long-term visions for social and environmental change.

The use of radio, particularly when combined with means for improving listener interaction with stations, is a monitoring, evaluation and learning technology that starts from the grassroots, and could help create socio-culturally relevant metrics for climate change mitigation and adaptation that also ‘speak’ to national and international audiences.

Appendix 8: What is social learning?

Social learning stands in contrast to linear push models of technology transfer. It emphasizes the ‘co-production’ of knowledge by various actors brought together on multiple occasions through the life of a collaborative effort to solve a particular problem. Proponents of social learning argue that it is a) more democratic in giving voice those often excluded from decision-making regarding agricultural change, especially the rural poor, and women and youth in particular and b) more effective in generating useful ideas because it benefits from the knowledge of those situated very differently in the change process: professional scientists, to be sure, but also, for example, NGOs with policy knowledge and women embedded in agricultural communities who are keenly aware of local ecological and social systems. Social learning is based on the assumption that everyone has only a partial perspective on a problem, and that the most robust solutions will emerge if these partial perspectives can be combined and synthesized in some way. An additional assumption is that we often learn best by doing, and that building in frequent opportunities for reflection and analysis (and a change in plans) will improve the ultimate outcomes of any effort. Finally, social learning depends on a willingness on the part of all involved to challenge pre-conceived ideas: how ideas are conceptualized (sometimes referred to as double-loop learning) and even what the purpose of an undertaking or organization should be (triple-loop learning).

Social learning faces substantial challenges in the context of climate change mitigation and low emissions agricultural development. The broad differences in power, mental frames, language and cultural values and norms among the key actors – from private companies and development banks, to large scientific labs and international NGOs, to agrarian movements and even isolated women working in kitchen gardens – make weaving partial perspectives together very challenging. In this context, we are likely to require strong facilitation by knowledge brokers and intermediaries to make multi-stakeholder dialogues democratic and productive. Facilitators will need a well-crafted strategy for whom to bring together, how and when. There may be good reasons to start from below – with farmers and their trusted organizations, before bringing in outside actors. No matter who is involved, part of the strategy will involve building trust and creating a shared language. That language should include not just scientific terminology, but creative narratives and imagery, delivered through

a range of media, from community theater and civic radio to mobile telephone networks. There may also be a need to build capacity among the various actors before entering into dialogue: capacity of scientists and financiers to listen carefully and respect other ways of producing knowledge, capacity of farmers and grassroots organizations to take a leadership role and act with confidence in the process of social learning, and to manage new sources of information.

Appendix 9: Interviewees

The authors would like to thank those who took the time to provide their insights into the role of gender in pro-poor climate change mitigation.

Suraya Afiff, University of Indonesia

Edidah Ampaire, University of Pretoria, South Africa

Jacqueline Ashby, CGIAR

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Patricia Biermayr, Georgetown University

Eleanor Blomstrom, WEDO

Robin Buruchara, CIAT

Liz Carlile, IIED

Judith Carney, University of California, Los Angeles

Rucha Chitnis, Women's Earth Alliance

Cathy Farnworth, Consultant to CIMMYT

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Jeannette Gurung, WOCAN

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James Kinyangi, ILRI

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Melissa Leach, IDS

Jean Lee, CCAFS

Robin Marsh, University of California, Berkeley

Sarah McKune, University of Florida

Kate McMahon, Tufts University

Ruth Meinzen-Dick, IFPRI

Richa Nagar, University of Minnesota

Jemimah Njuki, CARE

Lars Otto Naes, IDS

Cate Owen, WEDO

Agnes Otzelberger, CARE

Nancy Peluso, University of California, Berkeley

Agnes Quisumbing, IFPRI

Sandra Russo, University of Florida

Mia Siscawati, University of Indonesia

Jennifer Twyman, CIAT

Ann Waters-Bayer, ProInnova

Chesha Wettasinha, ProInn



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