

**Identification of adaptation measures and
identification and assessment of agricultural practices and techniques**

**CARE International submission to the UNFCCC's SBSTA
Work Programme on Agriculture, March 2016**

Summary Recommendations for adaptation in agriculture and agricultural practices and techniques

1. Ensure that any decisions regarding agriculture under the UNFCCC reflect the priority of food security, human rights obligations, and gender equality, per the Paris Agreement.
2. Enact and enforce social and environmental safeguards, including for any mitigation action in the land sector and in the context of global initiatives on agriculture and climate change.
3. Promote efforts to deepen understanding of and address the impacts of climate change on *all aspects* of food security, not just food production, including in the context of global initiatives on agriculture and climate change.
4. Enact and enforce policies for secure tenure or user access, leveraging the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries, and Forests.
5. Integrate gender and prioritize women's empowerment in all approaches.
6. Prioritize capacity building and investments that support small-scale food producers as vital contributors to food security.
7. Ensure small-scale food producers' and women's participation in planning, policy, and budget processes.
8. Scale up finance for effective approaches to address the impacts of climate change on all aspects of food security, to ensure that agriculture and food systems are sustainable, productive and profitable, equitable, and resilient.

INTRODUCTION

CARE appreciates the opportunity to make the following submission regarding the SBSTA 44 workshops on agriculture. We welcome the focus on adaptation, including socioeconomic, environmental and gender aspects, as well as the emphasis on food security as a frame for examining agricultural practices.

We face a greater challenge than ever before: ending hunger and malnutrition in the face of environmental degradation and climate change. Almost 800 million people are chronically hungry and over 161 million children stunted. At the same time, every year, we use 1.5 times the planet's resources, depleting them faster than they are naturally regenerated. The impacts of climate change have already reduced agricultural productivity and threaten to reduce it further – and drastically in some areas.

Our collective ability to meet the new Sustainable Development Goal of ending hunger and malnutrition by 2030 demands that we take a fresh look at solutions on the table, a look that recognizes the drivers of hunger, poverty, and vulnerability to climate change. The dialogue on how we end hunger and malnutrition in the face of climate change has focused heavily on food production and increasing yields. Yields may be important where there is not enough food or among small-scale food producers for whom farming is a livelihood. Lack of food is not the sole cause of hunger; and vulnerability to climate change is not uniform. Hunger and poverty are not accidents but are the result of social and economic injustice from household to global levels. Inequality shapes who has access to food and the resources to grow it and buy it, and who can adapt more readily to a changing climate. The cumulative reality of hunger, climate change, and poverty is proof that we need a new response grounded in sustainability and equality.

REFLECTIONS ON SBSTA 42 WORKSHOPS

CARE welcomed the workshops held last year at SBSTA 42 on early warning systems and risk and vulnerability assessment.¹ These were critical opportunities for open dialogue and sharing of experience on what has been a politically contentious issue. Parties' presentations enabled them not only to learn from one another but to identify areas of commonality, rather than emphasize differences.

While the workshops added value, they fell short of the potential they might have realized. The tightly scripted format left little time for rigorous discussion not only about different approaches but also about the way forward on agriculture in the UNFCCC. There was insufficient space for what could have been a relatively de-politicized exchange of views on those areas where Parties have disagreed, on how priorities may differ among countries, or on the needs that Parties believe the UNFCCC and its Parties must meet. A workshop – by virtue of stepping back from the deliverable of an agreement on a way forward – is an opportunity for such an open dialogue. The workshops, then, seemed largely disconnected from ongoing negotiations.

Similarly, the emphasis on commonality left some critical issues inadequately explored, particularly the experience of small-scale food producers, food insecure households, and women in particular. Agriculture is far more than a sector – it is a livelihood, a source of food, and a part of cultural identity. Yet, there was little discussion of the need to ensure that these groups fully participate and drive action from planning and assessment to implementation and evaluation. Enabling a richer discussion of the role of agriculture for different populations might have facilitated a more nuanced conversation about different groups' needs and of the ways in which climate action related to agriculture can contribute not only to climate outcomes but to reductions in poverty and hunger.

Furthermore, as workshops designed to enable an exchange of views to inform negotiations, an opportunity was missed to include the valuable voices of civil society, from small-scale food producers and women's groups to social movements and NGOs partnering with food insecure communities. Civil society organizations bring not only the perspective of populations who may not have a seat at the table; they also bring a wealth of experience working with vulnerable, chronically hungry populations and small-scale food producers on the front lines of climate change. Previous conclusions by SBI regarding observer participation in workshops both "requested ... additional efforts [be made] to promote transparency and observer participation"² and, going further, "encouraged the chairs ... to invite, time permitting, observer organizations to make presentations."³ These conclusions cited previous workshops during which observers were able to make presentations.

CARE thus offers the following recommendations for the workshops to be held at SBSTA44, to ensure a valuable exchange *and* facilitate the way forward.

RECOMMENDATIONS ON THE STRUCTURE AND FOCUS OF THE WORKSHOPS

1. **Pose guiding questions to introduce particular issues or challenges, to probe for varying solutions or approaches, and to highlight the experience of particularly vulnerable populations and small-scale food producers.** Given the wide array of issues that may be addressed within the topics at hand, a set of questions can provide structure for the dialogue and focus attention on issues that require more exploration or have traditionally not be discussed. CARE offers suggestions for these questions further below.

¹ See also this published article: <http://news.trust.org/item/20150609111618-si8t4>

² FCCC/SBI/2002/17

³ FCCC/SBI/2011/7

2. **Provide space for presentations from Parties and civil society.** At least one representative from each of the official constituencies should be invited to give a presentation and actively participate in the discussion. The views and experience of civil society are imperative to the discussions to be held at the workshops, and the workshops should be designed to enable adequate time for observers to contribute.
3. **Provide a meaningful link between the workshops and the negotiations with adequate time for discussion of next steps the UNFCCC may undertake.** The workshops are a critical opportunity for Parties and civil society to share views and learn from one another. However, they and the related SBSTA discussions on agriculture are also a critical moment to surface issues to be negotiated, to begin to identify potential next steps for the UNFCCC. In the course of the workshop on agricultural practices and techniques, Parties have a chance to begin to articulate the parameters of agricultural models that may be promoted under the UNFCCC, models of agriculture that are demonstrative of a more sustainable way forward. SBSTA 44 negotiations on agriculture must begin the discussion on the content of a conclusion on agriculture to ensure a meaningful COP decision in Marrakesh.

The issue of agriculture in the UNFCCC has been a difficult one on which to deliver progress. These challenges reflect the complex and critical nature of agriculture, as a livelihood, a source of food, and a source of cultural identity. Agriculture plays a vital role not only in the climate crisis – as an impacted sector and a source of greenhouse gas emissions. Agriculture also has direct links to efforts to eradicate poverty and end hunger and malnutrition. The multiple roles that agriculture plays – particularly for the almost 800 million chronically hungry people around the world – must inform the workshops.

As such and given the contribution that the SBSTA 44 workshops can make to the global dialogue on adaptation and agricultural practices and techniques, to contribute to food security and resilience, CARE offers the following suggestions for guiding questions for the workshops.

Workshop 1: identification of adaptation measures, taking into account the diversity of the agricultural systems, indigenous knowledge systems and the differences in scale as well as possible co-benefits and sharing experiences in research and development and on the ground activities, including socioeconomic, environmental and gender aspects.

1. What are the biggest adaptation needs or challenges as they relate to different agriculture systems? How does vulnerability among different populations and small-scale food producers shape adaptation needs and approaches? How do the drivers of vulnerability inform adaptation measures?
2. Where are the gaps in capacity and information to support adaptation, especially among particularly vulnerable populations and small-scale food producers? What approaches ensure capacity is built among vulnerable populations and that information is accessible to and actionable among people who need it most?
3. What adaptation measures have been most successful at building the adaptive capacity and resilience of small-scale food producers or at promoting participatory approaches to planning, implementation, and evaluation?
4. How can the Convention process (UNFCCC) support adaptation in agriculture, particularly for women, small-scale food producers, including through its financial institutions such as the GCF and others? How does the Paris Agreement advance action for adaptation and agriculture? What institutional mechanisms, guidance to Parties, and support (finance, capacity building, and technology) are available and where do gaps remain? What measures can ensure that those mechanisms, guidance, and support are available to and prioritize the needs of vulnerable small-scale food producers?

Workshop 2: identification and assessment of agricultural practices and technologies to enhance productivity in a sustainable manner, food security and resilience, considering the differences in agroecological zones and farming systems, such as different grassland and cropland practices and systems.

1. What criteria – covering social, environmental, biophysical, and economic considerations – should be used to assess agricultural practices and technologies to ensure they address all three aspects of sustainability, enhance food and nutrition security and resilience, and build adaptive capacity?
2. What are the contributions and shortcomings of prominent approaches put forward (e.g. climate-smart agriculture, agroecology) as it concerns not only sustainably enhancing productivity, food security, and resilience (per the workshop focus) but also all three pillars of sustainable development (social, economic, and environmental)?
3. What are the contributions and shortcomings of different scales of agriculture, as it concerns not only sustainably enhancing productivity, food security, and resilience (per the workshop focus) but also all three pillars of sustainable development (social, economic, and environmental)?
4. How can the Convention process (UNFCCC) promote sustainable agriculture, including all three pillars of sustainability, including through its financial institutions? What is the Convention’s role in articulating guidelines for sustainable agriculture? What does the Paris Agreement offer or leave unanswered regarding agriculture?

GENERAL REFLECTIONS FOR SBSTA 44 WORKSHOPS

CARE offers the following reflections on the challenge of hunger, poverty, and climate change, drawing upon “[Cultivating Equality: Delivering Just and Sustainable Food Systems in a Changing Climate](#),”ⁱ released in October 2015.

Excerpt from Cultivating Equality:

Climate change amplifies the risks already poor and marginalized people face—and the impacts are hardest on those least responsible for causing it. Vulnerability to climate change is shaped by an individual’s, household’s, community’s, or country’s ability to access information, resources, support and alternatives to livelihoods made less and less viable by global warming. Women and men will experience climate change impacts differently due to their different socially constructed roles and responsibilities. It is thus vital that the impacts of and the solutions to climate change are examined through the gender lens.

Globally, 475 million small-scale farmers work fewer than two hectares of land.ⁱⁱ Small-scale fisheries employ more than 90 percent of the people engaged in the sector.ⁱⁱⁱ And 600 million smallholder farmers directly depend on raising livestock in sub-Saharan Africa and South Asia.^{iv} For these populations, hunger, environmental degradation, and climate change are daily threats to livelihoods and lives.

Small-scale producers already struggle to grow, catch, or buy enough nutritious food because of degraded soil, small land plots, depleted fish stocks, water scarcity, lack of diverse foods in the market or low incomes. They often lack access to secure land tenure or access to natural resources, financial and extension services, information about weather, post-harvest storage, and markets. Higher temperatures, shifting seasons, and erratic rainfall pose significant challenges for small-scale food producers, who are already often one bad harvest away from crisis.

These challenges are greater still for women. Up to 79 percent of economically active women spend their working hours producing food through agriculture, and worldwide, women comprise an average of 43 percent of the agricultural labor force.^v Yet too often, women are not viewed as

equal players in the household and community. So when they are not consulted on use of household income or community plans for natural resources, their knowledge is not captured, their priorities are not reflected, their needs are not addressed—and their rights are not respected.

Smallholder farmers—and especially women—deserve a new strategy to support their agricultural efforts in the face of climate change.

In response to these challenges, CARE has developed a set of principles entitled **SuPER: Sustainable, Productive & Profitable, Equitable, and Resilient**. A SuPER approach to agriculture and food systems:

- Promotes **sustainable** agriculture systems that address climate and environmental impacts and are grounded in healthy ecosystems; are driven by stable, accountable and enduring institutions and policies; and are based on sustainable social and economic policies and investments that prioritize the redress of gender inequality in agriculture.
- Promotes **productive** and **profitable** climate-sensitive intensification that increases yields and returns on investment by farmers, specifically addresses the needs of women producers, and provides greater quantities of affordable nutritious food to rural and urban consumers.
- Promotes **equitable** outcomes in smallholder agriculture by supporting the realization of the Right to Food and other rights for the most vulnerable; enables equal access to opportunities, resources, services and rewards for women and men farmers; and promotes access to affordable nutritious food by farm laborers and rural and urban consumers.
- Builds **resilience** for communities and systems to withstand and recover from climate-induced shocks and stresses and other risks by supporting community-based adaptation, connecting institutions and collectives for better governance, and using market, technical and climate information to support farmer-led analysis, planning and risk management.

This approach goes beyond how and how much food is produced to incorporate crucial and often neglected elements, such as social justice, nutrition, and governance, that are necessary to alleviate hunger and poverty, protect the environment, improve gender equality, and create just and sustainable food systems.

AGRICULTURE IN THE UNFCCC: THE FUNDAMENTAL PRIORITY OF FOOD SECURITY

The preamble language of the Paris Agreement makes clear that human rights and gender equality are foundational to actions to tackle climate change. At the same time, Parties recognized “the fundamental priority of safeguarding food security and ending hunger....” Reflecting on the Paris Agreement and on SuPER agriculture and food systems, it is vital that discussions of agriculture in the UNFCCC, including in the SBSTSA 44 workshops, reflect principles of justice, gender equality, and all aspects of sustainability.

To deliver what small-scale food producers and women in particular need in the face of hunger and climate change, beyond increased productivity, adaptation and agricultural approaches must prioritize gender and social justice; local ownership of, control over, and secure access to natural resources; improved nutrition; and empowerment of small-scale food producers and their livelihoods. The following is adapted from the Cultivating Equality report.

Women’s and Girls’ Empowerment: Empowering women is a powerful tool for bringing sustainable institutional change to agricultural systems in the face of climate change. Women must be given greater access education, inputs, and other resources in order to have greater control and influence over their households. Women must also be valued for their roles and their knowledge. Empowering women requires addressing women’s capacities, skills, and confidence; power relationships from

household to global level; and the structures, policies, institutions, and social norms that govern their lives.^{vi} It also demands engagement of men and boys.

As climate change impacts are felt, women's and men's roles are shifting. CARE has learned through its community based adaptation programs⁴ including the **Adaptation Learning Programme** that changes in livelihoods strategy create space for women and men to engage differently in livelihoods activities, which in turn shifts expectations and perceptions of roles. In Mozambique, for instance, women and men had very specific roles in agriculture, but these divisions are changing, as men now work alongside women in weeding, harvesting and processing. In Ghana, women are playing a greater role in income generation, while some men are beginning to share household duties like childcare, food preparation, and fetching water to accommodate this. In Kenya, women who previously sold non-perishable goods (e.g., salt and soap) are now, with support for more organized group savings and loans, investing in capital and assets to enable engagement in value addition activities for milk and meat products. With increased resources and income, their resilience in times of floods and droughts has been strengthened. Communities have acknowledged and begun to value women skills – including business, money management and leadership skills – and their ability to be active agents of change.^{vii}

Good Governance, Effective Institutions, and Participatory Approaches: Institutions from local to global level must promote and ensure sustainability and social justice in the context of food security and climate change. Participatory approaches from the household to the global level are essential. For policies and resources to deliver for the people who need it most, more and different voices need to be at the table when decisions are made about the future of climate change and agriculture. Effective governance helps ensure that the people most impacted and most in need are part of the solution and that their priorities and needs are heard and addressed.

CARE has found success in the **Participatory Scenario Planning model**, which brings together local communities, farmers, scientists, and officials to develop plans for multiple weather scenarios. The process not only ensures inclusion of farmer and community voices but also connects them to local officials, builds all parties' capacity to collaborate, and disseminates important and relevant climate information back to community farmers. The process provides small-scale food producers with equitable access not only to information and resources but also to local government and planning processes.

Access to resources: Productive, profitable and resilient livelihoods require access to resources and practices, such as land and water management practices, improved inputs, skills, climate and weather information, and markets. Empowering farmers with information and knowledge, particularly through farmer-led learning such as Farmer Field Schools, lies at the heart of context-appropriate solutions. It builds their confidence to explore alternative techniques and crop varieties and their capacity to work together – increasing their resilience to climatic shocks and stressors. Access to climate and weather information builds the capacity of small-scale food producers to manage increased uncertainty and to plan not only what they plant and when but also the risks to prepare for, when to harvest, and when to market. Building resilience, however, is also about diversifying risk, including through access to off-farm income. Alternative income generating activities as well as new varieties and crops can enhance resilience to climate variability.

CARE prioritizes a range of interventions promoting sustainable ecosystems, building social solidarity, creating and supporting systems for inclusive governance, facilitating access to markets, and focusing on how programs can build sustainable local food systems. CARE works closely with farmers through **Farmer Field Schools** to promote conservation agriculture (an agroecological and

⁴ <http://careclimatechange.org/publications/community-based-adaptation-in-practice/>

'climate smart' approach). Conservation agriculture⁵ improves soil fertility and quality; reduces erosion, saves labor, and— combined with improved varieties—increases yields without intensive use of external inputs. In a CARE project in Mozambique, after just 3 years, improvements in soil health enabled rainfall to be absorbed nearly twice as quickly into the soil, ensuring more precious moisture for crops and protecting existing soil carbon. This healthier soil has also made crops more resistant to flooding—providing a buffer against both extremes of climate change.

Secure Tenure & Sustainable Management of Natural Resources: Small-scale food producers' livelihoods are directly reliant on healthy natural resources. As such, they must be recognized as vital partners in protecting biodiversity and ecosystems and advancing sustainability. They must be empowered with secure tenure over resources. Whether through traditional or title deed systems, secure tenure incentivizes food producers to invest in restoring the health of soils. Small-scale food producers cannot realize productive, profitable livelihoods and food and nutrition security without the assurance that they can invest in their land and reap the benefits, that they can have reliable access to water sources, or that they will not compete with more powerful interests for fish catches.

Women face particular challenges – legal, political, and social – to secure access to land. CARE's programming thus seeks to empower women through (among other ways) clearly establishing resource – including land – ownership and access. In CARE's **Pathways to Empowerment** program, in fact, CARE supported women to gain access to almost 3800 hectares of land, roughly half the size of Manhattan. Training and dialogues at community levels with elders (religious and traditional leaders, chiefs and landlords) have promoted gains in women's access to land and corresponding increases in decision-making authority. In Ghana, gender sensitization sessions provided the opportunity for men and women in the communities to openly deliberate on women's access to land. As a result, women were able to negotiate for an average of 1 acre each despite previous resistance of men to allocate land to women. And a result, more women participate in community level meetings and in leadership positions. In Lambussie, Ghana, most of the men who initially expressed fear of losing respect from their wives if they gave them land to farm subsequently joined their spouses for inspections by the project team, after seeing the contribution their wives' income to the family's welfare.

Improved Nutrition Outcomes: Increased food availability and higher incomes are not enough if they do not deliver improved nutrition outcomes. According to the IPCC, climate change will affect all aspects of food security: it have a substantial impact on per capita calorie availability, malnutrition, and related child deaths in developing countries.^{viii} Efforts to increase productivity and resilience in agriculture systems must also explicitly address the quality of food produced in terms of calories, protein and micronutrients.

REFLECTIONS ON CLIMATE-SMART AGRICULTURE AND AGROECOLOGY

The global community's awareness of the challenge we face—of tackling hunger and malnutrition in the context of scarce natural resources and climate change—has grown substantially in recent years. The solutions dialogue, however, is often heavily focused on how we produce food (to address resource scarcity and climate change) and especially on how we produce more food (to tackle hunger). Various solutions, labeled sustainable, have been put forward, including climate-smart agriculture (CSA) and agroecology, among others. In putting these approaches forward as solutions to hunger and climate change, however, it is imperative that they address not only production but all aspects of sustainability – all the facets of a SuPER approach to agriculture and food systems.

⁵ Conservation agriculture helps farmers to mimic – rather than control – nature through minimal soil tillage, year-round soil cover with organic matter, and increased diversity of planted crops.

Climate-smart agriculture, in particular, is widely touted as a solution, and garners significant attention through various international initiatives like the Global Alliance for Climate Smart Agriculture and the Alliance for Climate Smart Agriculture in Africa. Recognizing that the most appropriate techniques and practices are context specific, given the context-specific nature of climate impacts and agro-ecological zones, the term “climate-smart” is applied very widely without the benefit of clear parameters to ensure a shared understanding of what “climate-smart” must entail and what it cannot. The lack of parameters leaves scope for any model and scale of agriculture, including unsustainable, industrial, large-scale, and chemical- or energy-intensive models, to be deemed “climate-smart.” A common understanding of what is climate-smart would avoid misuse of the term for practices or models that are not truly climate-smart – and safeguard the integrity of those models and approaches that may warrant the term.

At the same time, within global dialogues on climate-smart agriculture, there remains too little discussion of the social and economic aspects of food security and agriculture. The objectives of climate-smart agriculture, broadly speaking, focus on agricultural productivity and income, adaptation and resilience, and mitigation (where appropriate). Delivering on the adaptation and resilience objective requires examination of the underlying drivers of vulnerability. Yet, too little attention is paid to the importance of addressing gender inequality. Nor is there any articulation of the basic social and environmental safeguards needed. In a food system dominated by powerful actors, these issues are critical as a minimum benchmark to protect the rights and interests of small-scale food producers and to ensure efforts do not erode their resilience.

Given differential vulnerability to climate impacts among different populations, and given the role that inequality plays in driving hunger and vulnerability, an approach should not be considered “climate smart” unless it includes rigorous efforts to address drivers of vulnerability, take into account social, political, environmental, economic, and gendered power dynamics, and safeguard against violations of basic human rights. Otherwise, we risk the implication that climate-smart agriculture can be achieved simply by increasing yield with fewer resources, a seemingly simple but incomplete solution for policymakers facing urgent need for answers. Without more attention to inequity and gender inequality—without adequate attention to the barriers to smallholders’ and women’s ability to access practices or climate information services or shape policies and investment decisions—these vulnerable populations, will continue to be left behind.

Agroecology, on the other hand, emphasizes equitable approaches and the empowerment of small-scale food producers, focusing on enabling food producers to access options and make decisions about their livelihoods and prioritizing local knowledge and resources over reliance on external inputs. As an approach that views agricultural areas as ecosystems and is concerned with the ecological and social impact of agricultural practices, agroecology has tremendous potential to deliver for small-scale food producers. Agroecology can be an example of what agriculture should be to face the double challenge we have: climate change and food insecurity. It addresses equity issues often missing in discussions of climate-smart agriculture. Agroecology can sustainably intensify yields, help with dramatic recovery of degraded soils, make better use of scarce water, reduce emissions and help significantly increase the ability of resource-poor farmers to increase output and income. Agroecology need not be framed as an alternative to other approaches; rather agroecology can be looked to as a gold standard, to which other practices and approaches must aspire.

Conclusion

As Parties to the UNFCCC explore agricultural practices and techniques, it is imperative that the discussion be seen through a social justice and gender equality lens, as well as one that applies all aspects of sustainability. The workshops are an opportunity to explore these dimensions and to inform the next steps on agriculture in the UNFCCC. Workshops might begin to identify the basic

criteria that agricultural practices and techniques must be measured against or the parameters that define what constitutes “climate-smart” agriculture. Further, and particularly as mitigation action be undertaken in the land sector, the development of principles and guidelines for such action can ensure the protection of the rights and interests of local communities, indigenous peoples, and food insecure households.

Whether action is for adaptation, mitigation, or to achieve co-benefits, first and foremost, it must be recognized that for chronically hungry people and small-scale food producers living in poverty, the first priority is to enhance food security – and protect the right to food.

ⁱ CARE (Rawe, T., and Deering, K.) and Food Tank (Echols, W., Nierenberg, D., Nink, E., Ahern, C., and Small, S.). *Cultivating Equality: Delivering Just and Sustainable Food Systems in a Changing Climate*. (2015). www.care.org/cultivatingequality

ⁱⁱ FAO. (2014) *The State of Food and Agriculture 2014: Innovation in Family Farming*. Rome.

ⁱⁱⁱ cited in Porter, J.R., L. Xie, A.J. Challinor, K. Cochrane, S.M. Howden, M.M. Iqbal, D.B. Lobell, and M.I. Travasso, 2014: Food security and food production systems. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L.White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 485-533.

^{iv} Thornton PK, Boone RB, J Ramirez-Villegas. 2015. Climate change impacts on livestock. CCAFS Working Paper no. 120. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark.

^{xxvii} FAO. (2012) *The Female Face of Farming*. Rome. (citing Smith and Haddad 2000). cited in WFP women: <https://www.wfp.org/stories/10-facts-about-women-and-hunger>.

^{vi} CARE Women’s Empowerment Framework. (2014). www.care.org/our-work/womens-empowerment/gender-integration/womens-empowerment-framework. accessed September 24, 2015.

^{vii} Webb, J. Gender dynamics in a changing climate: how gender and adaptive capacity affect resilience. CARE - Adaptation Learning Programme. (2015)

^{viii} IPCC, 2014. Summary for Policymakers. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B et al.] Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32.