Land, Agriculture and Sustainable Food Systems

An Impact Learning Brief from CARE International in Tanzania

CONTEXT: Agriculture remains a dominant sector of the Tanzanian economy, generating 25% of GDP and supporting up to 80% of livelihoods[1]. But many households engaged in the sector live in persistent poverty[2], growing a limited number of food crops for subsistence. Climate change is exacerbating the vulnerability of the country's agriculture systems and predisposing these households to food insecurity, thus eroding their productive assets and exposing them to economic shocks, in turn weakening their coping strategies and resilience and compromising nutrition and health[3]. Degrading soil fertility, variations in the onset, duration and intensity of rains, and the frequency and intensity of drought and floods are having significant impacts. Yields have been mostly stagnant for ten years and productivity gains have been based more on the expansion of cultivated land – one of the major drivers of deforestation and land degradation. Recurring drought is also reducing pasture productivity and water availability, leading to challenges in animal husbandry[4]. Highly productive areas will continue to be

[1] Tanzania Agriculture Climate Resilience Plan, 2014.
[2] 80% of the country's poor lives in rural areas (National Nutrition Survey, 2014).
[3] Alliance for Climate Smart Agriculture in Africa, Tanzania, 2016.
[4] Models show that average annual temperatures will rise by 1°C by 2050, and changes in rainfall patterns will cause dramatic shifts in agro-ecological zones and increase the severity of droughts and floods. The emergence of pests and diseases in new geographic ranges are already suspected as indirect impacts of changing weather patterns (ACRP, 2014)

affected by declining rainfall, frequent droughts and significant increases in spatial and temporal variability of rainfall with long term implications for agricultural sector planning and resource allocation[5].

Under-nutrition remains one of the largest threats to human development in Tanzania. More than a third of children under five years are affected by chronic malnutrition (stunting). A myriad of factors contribute to this, including maternal malnutrition, inadequate infant feeding practices, low quality of health care, poor hygiene and inadequate caloric availability at the household level[6]. In addition, more than 10 million women in Tanzania are anaemic due to iron deficiency[7].Though national food self-sufficiency is high, localised food deficit and lack of access to, and intake of, adequate food are significant barriers[8], suggesting that the hunger challenge is closely linked to access and dietary diversity challenges. These concerns are expected to continue and intensify under increasing climate risk as productivity – and thus access and availability – will be further strained.

Over 90% of economically active women in Tanzania engage in agricultural activities, producing about 70% of national food requirements[9]. But despite improvements in legal and policy arenas, customary norms in rural areas persistently discriminate against women, limiting their ownership of and control over money, land and other household resources. In addition to a heavy labour burden (up to 15 hours per day, frequently unpaid), literacy levels among women are low and they lack decision-making authority. One in five women is in a polygamous marriage and two in five are married by the time they are 18. While women farm managers cultivate about 0.6 hectares of land on average, all other managers cultivate more than 1 hectare[10]. Beyond the unacceptable inequality reflected in this statistic, it is estimated that the cost of the gender gap in agriculture to the Tanzanian economy is $105 million per annum and that closing this gap has the potential to lift as many as 80,000 people out of poverty. This gain translates into a 0.7 percent reduction in the incidence of under nourishment (or 80,000 fewer people under nourished per year). Closing the gender gap could also result in other benefits, as these estimates do not capture all likely agriculture-nutrition linkages and other effects - increased income for women has implications for the intergenerational transmission of hunger and malnutrition, as they to spend more on children's health and education[11].

While the challenges that Tanzania faces are many and varied, the above scenario clearly points to a need to tackle climate change and food insecurity in ways that address natural resource sustainability, productivity gaps, inequality and socio-economic resilience concurrently. This paper briefly describes learning and evidence that CARE has produced in efforts to deliver precisely this; sustainable, productive, equitable and resilient agriculture systems for small scale producers.

APPROACH TO AGRICULTURE UNDER CLIMATE RISK: In the face of the significant challenges above, delivering just and sustainable food systems that support small scale food producers, and women in particular, is difficult. While there are merits and limitations to paradigms such as climate smart agriculture, sustainable intensification, and agroecology, the cumulative reality of the challenges we face means that we need to constantly look for a better way. Responses must not only build upon, but go

[5] Tanzania Climate Smart Agriculture Programme 2015-2025. Rainfall decreases of 10% have been correlated with a 2% decrease in national GDP, and temperature rise of 2°C could reduce maize yields by 13% and rice by over 7% - both scenarios are probable in Tanzania over the next century.
[6] Tanzania Human Development Report, 2014. Chronic malnutrition is estimated to be an underlying cause of over one third of under-five year old deaths. According to NNS results, there were more than 2,700,000 children under five who were stunted in Tanzania in 2015.
[7] Global Nutrition Report, Tanzania, 2014.
[8] Ibid
[9] Tanzania Climate Smart Agriculture Programme 2015-2025.
[10] *The cost of the gender gap in agricultural productivity*; UN Women, UNDP, UNEP, and the World Bank Group, 2015.
[11] Ruel, Alderman, and the Maternal and Child Nutrition Study Group, 2013; Smith, et al, 2003; both cited in ibid.

beyond what have been largely technical, production-centered approaches and begin to focus on interlinked goals. CARE seeks food systems that: ensure dignified livelihoods, especially for small scale producers and women; that deliver food and nutrition security for all; are resilient to the impacts of climate change; and operate within planetary boundaries[12]. CARE has developed a set of principles - Sustainable, Productive, Equitable, and Resilient (SuPER) - in order to establish new benchmarks for programming and seek outcomes that deliver social justice. Our approach moves beyond how and how much food is produced, to incorporate crucial and often neglected elements that are necessary to alleviate hunger and poverty, while protecting and enhancing ecosystems, improving gender equity, and creating more just food systems in which small scale producers are empowered actors.
In line with this, CARE Tanzania's goal is to realise vibrant, equitable and resilient rural communities where women are empowered to realise their social, political and economic rights and where natural resources are sustainably managed in a changing climate.

SUSTAINABLE agriculture systems must address climate and environmental impacts as well as be grounded in healthy ecosystems, be driven by stable, accountable and enduring institutions and policies, and be based on sustainable social and economic policies and investments that prioritise the redress of gender inequality. A broad definition of sustainable agriculture systems implies the promotion of a set of farming practices[13] that includes, but is not limited to: diversified cropping systems; crop rotation, including grasses to improve soil structure; use of cover crops and trees; integrated pest management; use of manure to increase soil organic matter and legumes to boost soil nitrogen; improved storage of crops and seeds; soil and water conservation practices; and minimum or no-till agriculture. Many of these practices fall under broad headings such as agro-forestry, community-managed natural regeneration, or conservation agriculture; research has shown that such approaches can raise small scale farm incomes and more than double yields.[14]

Beyond the imperative of environmental sustainability in agriculture (and the co-benefit, when not compromising land use or the interests of already vulnerable farmers, of capturing carbon in the landscape), CARE also prioritises the importance of the socio-economic sustainability of small scale agriculture. If farmers have no access to inputs or can only access them on unfavourable terms and become indebted, or if they are unable to find markets[15] or forced to sell their crops at low prices, then agriculture for them, is unsustainable[16]. Women engaged in agriculture, experience significant additional constraints through discriminatory practices and social norms; social networks and community safety net structures become stressed and often break down. Interventions to enhance access of producers to markets on favourable terms, or work on village enterprise groups, are thus among critical approaches to protect and enhance socio-economic capital. Since farmers lack market power, group formation is critical, such as through farmers' cooperatives, natural resource user groups or village savings and loan associations (VSLAs).

In five years of CARE's **Forest Management Project** in Zanzibar[17] the total area of community forest brought under sustainable management increased by 67% from 27,650 to 84,754 hectares (upland and mangrove forest). A total of 45 village communities in Unguja (27 Shehias) and Pemba (18 Shehias) produced Community Forest Management Areas/Agreements (COFMAs), approved by the government and operationalised. The COFMA management arrangement resulted in increased women's participation in

[12] *Cultivating Equality – Delivering Just and Sustainable Food Systems in a Changing Climate*, Rawe, T., et al, 2015.
[13] *Mainstreaming Environment and Climate Change*, IIED, 2011.
[14] *Resource-conserving agriculture increases yields in developing countries*, Pretty, J., et al, 2006.
[15] Productivity emphasizes the necessity of increasing yields, but increasing incomes also requires access to input and output markets on favorable terms, and interventions in this area are an essential element of a comprehensive strategy.
[16] *Climate Change, Smallholder Agriculture and Food and Nutrition Security* - CARE Discussion Paper, Henry K., 2013.
[17] *Hifadhi ya Misitu ya Asili* (HIMA – 2010-2014).

forest conservation from 5 percent to 36% during life-of project; with 39% of leadership positions in conservation committees taken by women (the Carbon Aggregation entity for the entire Zanzibar (JUMIJAZA) is chaired by a woman farmer). The total carbon stock of community forest area increased from 146,483 tonnes in 2010 to 951,284 tonnes in 2014 (549% increase) with a potential of generating USD $4,756,000 for the community if sold on international markets. The project focus of reducing unsustainable wood consumption also proved successful with the adoption of improved cook stoves among rural households increasing by 20%.

In the **Global Water Initiative**, CARE and its partners' interventions on rural livelihoods through conservation agriculture boosted both staple (maize) and cover crop seed production. In Same District (Kilimanjaro Region) maize harvests for all groups from conservation agriculture (CA) plots were 4,870 kg/ha, compared with 3,216 kg/ha realised from farmer practice plots. In villages where rains were better, harvest from CA plots was also higher. Additional observed outcomes included: reduced erosion; improved soil structure; improved infiltration and moisture efficiency; improved soil health and nutrient retention; lower soil temperatures; increased planting opportunities and flexibility; and lower machinery, labour, and maintenance costs.[18]

In the **Where the Rain Falls Project** (also Kilimanjaro Region), improved soil and water conservation practices were promoted by 60 champion farmers (42 of whom were women) and this cascaded to 263 fellow farmers (144 of whom were women). 42 demonstration plots were established on champion farmer fields and high adoption rates of soil and water conservation practices were observed. Improved local coordination with District government resulted in improved local budget allocations (including USD $40,000 for improvement of irrigation channels in Vudee and Bangalala villages). Strengthened linkages with government extension staff – including the creation of Learning and Practice Alliances (LPAs – local learning alliances comprising farmers, agro-dealers, extension officers, District officials etc.) led to successful generation of evidence and learning for improved practices, increased confidence and greater transparency.

CARE has learned that agro-ecological approaches including agro-forestry can and do result in increased yields and incomes for small scale producers and that significant governance dividends are also possible when community structures are connected with local authorities.

Much more than 'triple win' of productivity, resilience and mitigation can be achieved if projects and programmes adopt an inclusive governance dimension and link community collectives with the organs of the state.

PRODUCTIVE, including profitable and nutrition-sensitive agricultural intensification, that specifically addresses the needs of women producers, increases return on investment by farmers and is climate 'smart' is critical. CARE's concept of productivity includes both quantitative and qualitative dimensions, requiring attention to closing yield gaps, ensuring a diverse and nutritious food basket and generating income. Malnutrition is widespread, so efforts to increase productivity must explicitly address the quality of food produced in terms of calories, protein and micronutrients - cereals, pulses, fruits and vegetables, and animal protein are all required for a diverse food basket. But climate change also requires consideration of new foods to meet nutritional needs. Home garden and vegetable plot diversification, including the cultivation of micronutrient-rich vegetables like orange-fleshed sweet potatoes, and the keeping of small livestock are examples of agricultural interventions particularly accessible to women and likely to enhance household nutritional outcomes. Nutrition-sensitive

[18] *Water Smart Agriculture in East Africa,* Mdeke, et al, 2015.

interventions and programmes in agriculture can enhance the scale and effectiveness of other interventions. Inclusive market systems also play a critical role in the transformation of livelihoods, as they empower producers to effectively generate income. Engaging marginalised groups in roles ranging from producer, service provider and entrepreneur to employee with a job that provides a dignified living, will benefit those who are often excluded from the benefits of agricultural market systems.

Over a three-year period, the **Mitigating of Climate Change in Agriculture Pilot** was implemented by CARE in collaboration with FAO and ICRAF in eight villages in the Uluguru Mountains through 22 farmer groups with 44 farmer trainers, and 100 demonstration plots. Outcomes included the establishment of 12 communal and institutional tree nurseries (with more than 100,000 seedlings) including one central nursery located at the Center for Sustainable Learning, the construction of 786 energy saving cook stoves and the construction of six hectares of terraces on 204 farms. Over 600 farmers began practicing conservation agriculture[19]. All farmers who participated in project activities adopted at least one climate smart agriculture (CSA) practice. Maize yield increased from 900 kg/ha to 1,200 kg/ha where only one CSA practice was used (an increase of 33%); on average, maize productivity increased from 1,440 kg/ha to 3,241 kg/ha (125%), increasing the daily number of meals per family from one to three. Likewise, tomato productivity increased significantly from 32 tins (20-litre) of tomatoes (c.TZ Shillings 160,000) per acre on slopes, to 128 tins (c.TZ Shillings 640,000) per acre on terraces[20] (300% increase).

In the **Hillside Conservation Agriculture Project**[21] 2,319 farming households adopted conservation agriculture and 75% reported positive change in soil fertility status. The evaluation (which focused on months where food is available) found that food security had improved by 78%. The average yield of maize crop for a farmer employing conservation agriculture was 8,629 kg (192% higher) compared to 4,479 kg for conventional farmers. Qualitative evidence from farmers in all three intervention wards - Kalore, Kasanga and Bungu – indicated that CA resulted in increased yield compared with traditional agriculture. This work was introduced and facilitated through Farmer Field Schools which were the nuclei for knowledge building, for technical innovations and for information sharing and dissemination. At the end of the project cycle, there were 62 field schools operating, comprising 1,593 members (766 men and 797 women) with 94 demonstration plots established.

In these projects, CARE has learned that engaging and working through farmer field schools or other farmer-centred collectives, is absolutely essential to driving the sustainable adoption of climate resilient practices.

Farmer-led learning is key to successful uptake of sustainable practices and techniques and investments that neglect this will fail.

EQUITABLE outcomes in agriculture are imperative if we are to tackle poverty and this means: supporting the realisation of the Right to Food and other rights for the most vulnerable; enabling equal access to opportunities, resources, services and rewards for women farmers as well as men; and promoting access to affordable nutritious food. Gender inequality is particularly pervasive in agriculture, and women are generally not recognised as farmers – often even by governments, donors, NGOs or agribusiness. Patriarchy, stereotypes about men and women's rights and roles, traditional values and cultures, and prevailing economic models combine to reinforce an impression that women are not equals on the farm. This is compounded by policies, legislation and practice – among the consequences

[19] *Planning, implementing and evaluating climate-smart agriculture in smallholder farming systems. The experience of the Mitigation of Climate Change in Agriculture (MICCA) Programme*, FAO, 2016.
[20] Ibid
[21] HICAP – implemented by CARE, ICRAF and FAO (2009 – 2013), under the MICCA programme.

of which are that women are denied secure and adequate land, tools, credit, appropriate infrastructure and technology etc.[22] Agricultural extension and advisory systems (and climate information) are overwhelmingly gender-blind, and inequitable control of productive inputs is a persistent problem stifling adaptive capacity. Addressing gender inequalities requires an approach that works toward gender-transformative outcomes. This goes beyond gender relations among individuals or households, and critically examines institutions and structures in agriculture and the ways in which they determine disadvantage and privilege. Crucially, the approach considers social diversity and the multiple social roles and power relationships, which, together with gender, shape climate vulnerability.[23] Addressing such gender inequality is a question of social justice and requires sustained efforts to prioritise women's access to services to enable improved ownership and control resources. Beyond redressing social injustice, empowering women in agriculture leads to improved nutritional outcomes – central to achieving the goal of food and nutrition security.[24]

In the **WE-RISE Project** positive impacts on women's livelihoods can be demonstrated through cassava and sesame value chain interventions. By promoting improved agriculture practices such as mulching, minimum tillage and planting in rows, and the use of quality seeds, women increased sesame production from 213.6 kg/ha to 569.3 kg/ha (166%) between 2012 and 2015 – and their average annual income increased from US $165 to US $215 (30%). Cassava yields also increased (573.3 kg/ha to 648.6 kg/ha). Critically, more women are now accessing agricultural extension services and output markets. 80% of women now report control of household and agricultural assets whereas 54% reported to do so at baseline in 2012. Further, 73% of women in male-headed households have greater control over income and expenditure compared to before the project (42%), demonstrating that the project is influencing household dynamics to foster a more equitable domestic environment[25]. But the learning from this project is that yield increase alone does not contribute to increased equity. The project engaged directly with district agriculture extension officers and carried out training for extension paraprofessionals (two from each village, one male and one female), to engage farmers and this is considered critical (all Farmer Field and Business Schools were under the guidance of these paraprofessionals). Strengthening village saving and loans associations in parallel and supporting the dissemination of seasonal weather information through application of participatory scenario planning[26] are also considered key contributing success factors.

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[22] The Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology for Development states; "there is a world of asymmetric development, unsustainable natural resource use, and continued rural and urban poverty. Generally the adverse consequences of global changes have the most significant effects on the poorest and most vulnerable, who historically have had limited entitlements and opportunities for growth." Security of tenure is a critical motivator for farmer investment in sustainable land management practices. The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forest in the Context of National Food Security (CFS 2012), paragraph 23.1: "States should ensure that the legitimate tenure rights to land, fisheries and forests of all individuals, communities or peoples likely to be affected, with an emphasis on farmers, small-scale food producers, and vulnerable and marginalized people, are respected and protected by laws, policies, strategies and actions with the aim to prevent and respond to the effects of climate change consistent with their respective obligations, as applicable, in terms of relevant climate change framework agreements."

[23] *Making Sense of Gender, Climate Change and Agriculture. Creating Gender-resposive Climate Adaptation Policy*, Okali and Naess, 2013.

[24] *Agriculture's Contribution to Better Nutrition*. "The key lessons are that agricultural interventions are most likely to affect nutrition outcomes when they involve diverse and complementary processes and strategies that redirect the focus beyond agriculture for food production and toward broader consideration of livelihoods, women's empowerment, and optimal intra-household uses of resources. Successful projects invest in improving human capital, sustain and increase the livelihood assets of the poor, and focus on gender equality." Wiggins and Keats, 2012.

[25] Across all households, the number of women reporting decision-making control over household and agricultural assets increased by more than 26 percentage points. Since increased economic independence of women often precedes other improvements in gender equity, it is expected that more progress will be made if similar activities are sustained.

[26] *Decision Making for climate resilient livelihoods and Risk Reduction; Participatory Scenario Planning*, CARE, 2012

Women participants in the **Pathways Project** have also seen sesame production increase - and are reporting that they are acquiring the financial means to buy land, either individually or in groups, through their village savings and loans groups. Women's reported mean annual net income from agricultural production in all households increased by 34%, from US $206 to US $276, between 2012 and 2014 and female-headed households increased their mean annual net agricultural income by nearly 70% over the same period. The project, promoting greater gender equity among farmers through dialogues and behaviour change (working also with men) has resulted in women reporting gains in control of income, expenditure, and use of household assets. Project endline data demonstrate a significant shift towards more gender-equitable decision-making in male-headed households, where the percent of women with sole or joint control over decisions around household income and expenditure is 74.5%, up from 56.5% at baseline. Women in male-headed households are exercising even greater control over decisions around agricultural income and expenditure (51.8% at baseline compared to 70.9% at endline), and agricultural assets (68.1% at baseline compared to 86.1% at endline) than in 2012. The greatest increase in gender equity is seen in decision-making over household expenditure.

The **Ardhi Yetu Programme** has supported local partner HAKIARDHI to prepare land use plans and produce more than 500 Certificates of Customary Right of Occupancy (CCROs) with communities in Kilolo District. In Mbarali, community based organisations were trained and media engaged to advocate for the (successful) return of 1,780 ha of farm land. The publication of media articles on land rights issues increased from 181 articles in 2014 to 358 articles in 2015. The project also participated in the Universal Periodic Review as part of its work with UN mechanisms and other human rights channels to advocate for land rights. Project staff visited nine UN missions and provided questions on land and women's rights, and land policies to put to the Tanzanian state during the review. Out of 226 recommendations made to the state, 129 were accepted. The project has also brought 13 civil society bodies working on land and natural resources together to become active partners in the Social Feeder Group of the Southern Africa Growth Corridor of Tanzania (SAGCOT). The organisations advocate for the rights of small scale farmers in areas were land based investments are made.

Learning from these projects has taught CARE in Tanzania that the inclusion of activities that specifically address power dynamics at household and community level will deliver empowerment for women. The success of these projects has also reaffirmed that working with men is paramount in these activities.

We have learned that the persistent challenge that many farmers, especially women, face regarding land tenure can be resolved through reform that is driven by civil society.

RESILIENCE for small scale food producers and local food systems means being able to withstand and recover from climate-induced shocks and stresses and other risks. Supporting community-based adaptation in agriculture communities, connecting institutions and collectives for better governance, and using market, technical and climate information to support farmer-led analysis, planning and risk management are key aspects of this. Enhancing the resilience of agriculture and food systems to climate change requires new approaches to building the adaptive capacity of farmers. Some of the characteristics of a resilient system include: a high level of diversity; connectivity between institutions and organisations at different scales; the blending of different forms of knowledge; redundancy within the system; equality and inclusiveness; and high social cohesion and capital.[27] CARE's approach to resilience in its agriculture work therefore is informed by market, technical and climate information (including long-term climate projections and shorter-term weather information[28]); employs

[27] *Resilience: A Risk Management Approach*, Mitchell and Harris, ODI, 2012.
[28] There are various initiatives to translate and interpret climate information into usable advice for decision-making.

analysis, planning and risk management strategies (particularly focusing on gender and power analysis); embedded in systems for disaster risk management and productive safety nets; and is supported by learning, flexibility, diversity and innovation.[29]

Building the analytical and decision-making capability of farmers and their organisations is critical, since the challenges they face will vary and evolve over time as the impacts of climate change intensify. CARE builds the capacity of farmers and governments to manage variability and change in their livelihoods by offering a range of options together with the tools needed to choose among them.[30] Developing scenarios of how livelihoods would be affected by probable climate futures can contribute towards reducing the effects of climate change for example. Farmer Field and Business Schools can help to build local adaptive capacity by encouraging and strengthening farmers' awareness of the value of their own knowledge, and by enhancing confidence in decision-making, willingness to innovate and ability to organise to access resources and services.

CARE's **Pastoralist Programme**, an initiative delivering advocacy and capacity building for pastoralist rights, has contributed to government allocation and/or re-allocation of 605,565 hectares of grazing land in various locations in the programme area including Kiteto, Simanjiro, Mvomero, Bunda, Serengeti and Kilindi Districts. At community level, farmers and pastoralists have reported reductions in conflict[31], and 107 livestock-routes have been opened or re-opened (two of which were also widened). Opening these routes has substantially increased access to grazing land, livestock auctioning areas, and watering and mineral licking points for livestock. In parts of Babati and Gairo Districts, bylaws with defined penalties have been established to protect livestock routes from farm encroachments. Further, the programme has contributed to improved capacity among village land tribunal committees in handling land dispute cases and conflict resolution, law and bylaw enforcement, and increased community awareness and understanding of Village Land Law # 5 (1999), all of which has led to reductions in land conflict case referrals to higher courts.

The **Mobile Application to Secure Tenure (MAST) Pilot**, delivered across three villages in southern Tanzania, responds to endemic land rights challenges faced by rural households. Through use of mobile technology, MAST maps household 'parcels' of land using GPS coordinates, which along with other household data, is uploaded to a cloud database; in partnership with the District Land Office, this data is turned into a Certificate of Customary Rights to Occupancy (CCRO) for the household, securing their tenure and thus underpinning their resilience. 3,914 CCROs were issued throughout the pilot, with the first 910 parcels mapped in just three weeks, demonstrating that the use of mobile technology considerably accelerates the process. There is a striking gender equity dividend in this work; 47% of CCROs generated by the project are held by women (where 20% is the national average). More than 400 villagers have been trained on land laws and rights to date and women feel more empowered as a result of acquiring formal rights to land and land rights trainings.

In these projects, CARE in Tanzania has learned that rights**-based approaches are critical for building resilience among the most vulnerable agricultural livelihoods.**

Conflict can be transformed, equity can be improved and governance can be made more responsive when communities are made aware of the responsibilities and duties that all stakeholders have.

[29] The ACCRA Local Adaptive Capacity Framework defines adaptive capacity in terms of: asset base; institutions and entitlements; knowledge and information; innovation; and flexible, forward-looking decision-making and governance.
[30] Such as Participatory Scenario Planning (PSP); now carried out increasingly in CARE projects.
[31] In Msingisi, Mamboya and Idibo wards of Gairo District, reported conflicts fell from 33 to six between 2011 and 2013.

CONCULSION AND KEY LEARNINGS: As Tanzania faces increasing climate risks, agriculture and food systems must be sustainable and productive. But they must also be profitable for those for whom it is a livelihood; equitable, to facilitate a level playing field in the market, to secure rights to resources for food producers, and to ensure access to nutritious food for all; and resilient to build the capacity of those vulnerable to economic shocks, and climate-induced hazards to recover and lift themselves out of poverty.[32] This paper has described some evidence and learning that can contribute to realising the above;

- If we are to achieve the new Sustainable Development Goal of ending hunger by 2030 (goal two), we must address the underlying inequalities in food systems. Enabling food insecure populations to access – through growing or buying – adequate and nutritious food, demands an honest examination of power and control in food systems. This includes household power dynamics.
- Hunger, environmental degradation, climate change, and inequality must be addressed concurrently; simplistic focus on productivity – or even productivity with resilience and mitigation – will simply fail to deliver just and sustainable food systems.
- Approaching the challenges we face with an emphasis on equity and rights will help shape small scale food producers' ability to access and benefit from the resources and options they need to adapt to the impacts of climate change, grow their incomes, improve their nutrition, and lead secure and dignified lives.
- Our programming must further integrate this focus on equity because outcomes can be dramatically improved with attention to dismantling the barriers that women farmers face.

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