



Schweizerische Eidgenossenschaft
Confédération suisse
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Federal Department of Foreign Affairs

Swiss Agency for Development and Cooperation SDC
Swiss Cooperation Office Southern Africa

DRAFT Gender Strategy for Grain Post-Harvest Management in African Smallholder Farming Systems

March 2015

Acknowledgements

This strategy was developed under the Effective Grain Storage Project (EGSP II) which is funded by the Swiss Agency for Development and Cooperation (SDC). Perspectives shared herein do not reflect the views of the Swiss Agency for Development and Cooperation. The strategy is largely informed by findings from a comparative regional gender analysis study for maize post-harvest management carried out in Kenya, Malawi, Zambia and Zimbabwe. The International Maize and Wheat Improvement Centre (CIMMYT) is grateful to the men and women who shared their perspectives in ways that enabled us to understand gender issues around grain post-harvest management. A preliminary draft was shared at the EGSP Annual Meeting in Lusaka, June 2014. Authors gratefully acknowledge feedback from meeting participants. The strategy represents the commitment to gender equality by the Swiss Agency for Development and Cooperation, the Consultative Group for International Agricultural Research (CGIAR), the International Maize and Wheat Improvement Center.

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1. Introduction

Every year African smallholder farmers experience huge post-harvest losses of cereal crops, grain legumesⁱ. These post-harvest represent significant costs at household and at national level and have been at the center of research, policy, and development practice in the last 50 years. In the area of research, progress has been made in perfecting the art of quantifying the scale of losses and documenting their economic and welfare consequences. Research and development efforts have focused on two approaches for reducing post-harvest losses. In one approach, scientists attempted to reduce post-harvest grain losses by breeding for better insect pest tolerance during storage. But, this has met with limited success partly because of the grain quality – the grain becomes harder which brings new problems with processing and utilization. In the second approach, development agencies such as FAO, UNDP, and IFAD introduced different types of ‘improved’ post-harvest storage technologies across many countries in Africaⁱⁱ. Examples of the alternative storage technologies include brick bins, cement and mud plastered baskets. More recently, the Swiss Agency for Development and Cooperation supported the International Maize and Wheat Improvement Center (CIMMYT) to promote hermetic storage technologies such as metal silos and super grain bags in Kenya, Malawi, Zambia, and Zimbabwe. Rigorous evaluations demonstrated the potential of the hermetic storage technologies to reduce post-harvest losses in grains. They potentially assist households to buy cheaper grains at peak harvest time, and to use the grains throughout the year. However, new insights are, show that the potential gains associated with use of the improved storage technologies have not been enjoyed by small, poor farmers especially women. Evidence from a recent regional study covering Kenya, Malawi, Zambia and Zimbabwe suggests that the design and implementation of the improved storage technologies fail to take into account the cultural context in which adoption and utilization occursⁱⁱⁱ. The inability to understand gender and social cultural implications of the technologies means missed opportunity to respond to needs, preferences, and constraints of different social groups.

2. Goal of the Gender Strategy

This strategy aims to serve as a guide for integrating gender into programs and projects that aim to provide alternative post-harvest storage technologies within African smallholder farming systems.

3. For whom is this Strategy?

This strategy is a useful guide to all governments, NGOs, development agencies, research organizations, and individuals who are involved in post-harvest storage technology research, development and dissemination. Although this strategy focuses mainly on maize and grain legumes, most principles are largely relevant to other cereals crops.

4. Rationale for Gender Responsive Post-Harvest Management Interventions

A gender strategy translates the symbolic commitment to gender equality and women's empowerment into substantive and actionable entry points. It expressly states actionable guidelines on how to implement and manage gender activities and outcomes including tracking progress over time.

Maize and grain legumes historically played a pivotal role in social and economic life in Eastern and Southern Africa. Most maize and legumes are produced in one season each calendar year making post harvest management a critical aspect of household food security. At the centre of the maize economy in the region are women and men who provide food for home consumption. Improved storage technologies to reduce post-harvest losses of grain especially among women can represent a strategic objective towards achievement of gender equality and women empowerment in matters of food security in the region.

It is also crucially important to recognize that maize and grain legume storage is simultaneously as much an economic as it is a social enterprise. People often recognize the economic importance of reducing post-harvest losses - effective grain storage signals improved capacity to store, market and consume when the time is right. However, what is less appreciated is that at household level, grain storage and management is very much a social enterprise that is deeply nested in existing cultural norms. Evidence from our recent study suggests that cultural norms dictate gender roles, distribute rights and privileges, and locate power to own, manage, access, and control grain within specific individuals at household as well as at community levels.

In other words, gender norms simultaneously include and exclude. Therefore, technology centered projects must *understand* how and in what gender norms constrain and or facilitate ownership, access to, and control over assets. Gender responsive post-harvest storage technology focused projects ultimately seek to (I) understand the context in which the technologies are to be used (ii) appreciate the needs, preferences, constraints, and opportunities that men, women, and youth of different socio-economic status (iii) be intentional, strategic and ambitious about providing equal opportunities for men and women to learn about, access, and adopt effective post-harvest technologies (iv) foster a culture of experiential learning on gender equality outcomes. Therefore, this strategy goes beyond looking at gender from a perspective of numbers of men and women to start to understand the implications of each and every step in the procedures, processes and practices and their impacts. For instance, what does it mean if a metal silo is provided to a married woman to help sustain her traditional role in management of food maize? Or what are the implications for men and women if a committee managing a community metal silo storage facility comprises men or women only?

5. Approach

The formulation of this gender strategy is informed by a comprehensive regional gender analysis study on maize post-harvest management^{iv}. The regional study sought to (i) understand gender roles in post-harvest management and how they have changed over time (ii) investigate the experiences of individuals within households that have experienced improved PHM technologies (iii) assess the capacity of NGOs, government agencies and artisans to implement gender responsive promotion and business development programs (iv) evaluate the knowledge gap in gender and PHM. Some of the key findings include the following. Men and women play important complementary roles in post-harvest management. Cultural norms ascribe the roles played by men and women and those roles shift due to technological and demographic changes – with implications on labor and drudgery; and on patterns of access to and control over assets. With regards improved storage technology design men and women’s preferences converge on some aspects (security, cost, calibration, accessibility), but, women also have other unique design preferences (height, easy maintenance, ability to store multiple crops etc.). Both men and women in the study communities do not follow recommended protocols for hermetic storage.

Community storage models are rare. Where they exist, they tend to reproduce gender roles and gender gaps in access to and participation. Value chains for hermetic storage technologies such as metal silos are largely male dominated and have limited capacity for operating viable businesses, or for market segmentation. Organizations involved in storage technology development and deployment have limited gender awareness, skills, and resources.

6. Guiding Principles for this Strategy

Six key principles informed the development of this strategy:

- (i) Teamwork - success of gender integration ultimately depends on the collective efforts of everyone who is involved PHM projects within and across agencies
- (ii) Equal opportunity – providing equal opportunity, while not sufficient, is a necessary condition for closing or bridging gender gaps in technology adoption
- (iii) Intersectionality – there is no universal ‘men or women’s experience’ and as other scholars have argued^v, men and women come only in different socio-economic classes, cultures, educational status and so forth. Therefore, research, policy, and development partners need to go beyond counting the number of women, but also asking, which women – and understanding the interaction of gender and other social categories and identities.
- (iv) Banishing Silences – individuals and institutions need to proactively seek and amplify women’s voices, and those of other vulnerable groups
- (v) Critical Perspective – individuals and institutions need to understand, examine, and challenge the status quo. Gender integration is not about ‘bringing women into the mainstream or balancing men and women’. Rather, also should be about questioning the mainstream – because perhaps it may not meet the desires and expectations of women.
- (vi) Accountability – individuals and institutions need to set reasonable gender equality targets, track progress, adjust approaches, and be accountable to men and women whom we serve.

7. Key Elements of the EGSP Gender Strategy

The strategy is organized around nine key elements as follows: Implementing Framework, Capacity and Coordination; Technology Design and Testing; Technology Development; Business Development and Branding; Training – Technology Awareness and Promotion; Technology Dissemination; Communication; Socio-Economic Research; and Government Policy. Under each of these elements, the strategy distinguishes between activities that can be done in the short term (1-2 years) and those that would require more time (2 years plus). Further, the strategy delineates individuals who can implement certain activities while highlighting relevant gender equality indicators as well as noting activities for which no extra budget may be required. Below, we discuss each of these in turn and also present the strategy in matrix format.

7.1 Implementing Framework, Capacity, and Coordination

Like most interventions aimed at making positive contribution to lives of individuals and their communities, a gender strategy has to be fully supported by ensuring a conducive environment in which the gender activities are to be implemented. First, it is important to establish an institutional arrangement to coordinating and directing the implementation of the gender strategy including identifying gender focal points or units within organizations. Second, success largely depends on the level of gender knowledge, skills, sensitivity, and commitment among staff, partners, and leadership. After all, gender activities and outcomes do not depend on efforts of a single gender specialist or members of a gender unit. Investments in training and advocacy may be required to build and strengthen gender knowledge and skills among staff – especially on the application of gender concepts and ideals in development practice. Third, it is crucial to develop tailored, local level policy guidelines which can be applied in the development and promotion of improved post-harvest technologies. Most countries have national and sector level policies. What is often weak is the ability for individual organizations to interpret those policies and to tailor them to individual goals and circumstances. Fourth, strong systems of monitoring and evaluation are necessary for tracking progress on gender equality outputs and outcomes. Finally, human and financial resources need to be explicitly committed to gender responsive program development and implementation. It is important to recognize that it is not enough to provide

and centralize resources for the gender focal point or the gender expert in a team. Rather, as shown in the strategy matrix below, gender cuts across almost all PHM activities which suggests that informed gender priority setting and budgeting is crucial for success. It is equally important to recognize that some gender relevant activities require no additional resources. For instance, ensuring equal opportunities for men and women's access to and participation in training and information sharing events may require a change of mindset rather than a bigger budget.

7.2 Technology Design and Testing

Reducing post-harvest losses requires sustained investment in research on alternative storage technologies and management practices. Technology design should be preceded by an understanding of end user needs and their contexts. Smallholder farmers often consider post-harvest storage within the realities of their complex farming systems where they grow multiple crop types such as cereals and legumes. Preferences for design aspects such as quality of material, shape, height, width, calibration, compartments, etc. often differ between men and women. Moreover, installation of movable technologies often has differential impacts across individuals of different social groups. The goal of engineering research investments should be to broaden the basket of storage technology options available and accessible to men and women farmers.

Entomology research often provides the foundation upon which technology development and testing activities are built. Teams of entomologists test the effectiveness of alternative post-harvest technologies both on station and on farm. Clearly, gender is not relevant for the design of on station trials. However, gender sensitive approaches should be adopted whenever there is interaction with farmers. For instance, teams should deliberately ensure careful and balanced selection of women and men who participate in on station observation of experiments. Similarly, teams should develop careful protocols for selection of individual participants or hosts for on farm demos and experiments. Farmer selection takes time and resources as it requires careful and systematic local level participatory processes that involves local leaders and local extension partners. Positioning women managed demos creates space for learning not only for the host, but also for other women within her particular network and sphere of influence. Where both spouses

co-reside then household approaches that target all individuals can be considered for knowledge transfer.

7.3 Technology Development

Once research identifies effective alternative post-harvest storage technologies, bringing them to scale requires a viable and competitive manufacturing base. Fostering gender equity in technology development requires well-thought out along two dimensions (i) value chains, and (ii) individual business strategies. The first dimension – nurturing gender equitable value chain suggests that development practitioners need to be intentional about providing men and women equal opportunities to participate in storage technology value chains. These value chains include raw material supply, manufacturing, distribution, and retail. In other words, women’s role should not be limited to being adopters of technologies. Rather, women need to be seen as potential entrepreneurs within post-harvest technology sectors across countries. For instance, the dominant school of thought argues that the business of metal fabrication does not appeal to women. Admittedly, bridging structural gender gaps that are deeply rooted in national normative systems and cemented through educational systems may be beyond the scope of individual projects or agencies. However, our gender analysis study revealed that it is possible, as a long term gender equality strategy, to identify and promote talented female entrepreneurs. What is key is to not only include women in training, but supporting them by providing post-training technical visits as well as offering them opportunities for business growth. For instance, donor funded agencies can commission female artisans to manufacture research and demonstration storage technologies. Another entry point could be profiling good female entrepreneurs on posters and fliers for ‘recommended lead artisans’. Last, it is crucially important to avoid reinforcing gender biases in storage entrepreneurial training. Training curriculum and approaches need to recognize women as leaders and co-leaders of training. Moreover, symbols and images that are used in training manuals need not reproduce societal gender norms by failing to include women in any aspects of design, manufacture, and utilization of technologies. The second dimension – fostering equitable adoption- requires market segmentation and product targeting skills. First, the content of training must include gender issues that inform individual entrepreneur’s future product targeting and promotional strategies.

7.4 Business Development and Branding

Related to manufacturing and supply of improved post-harvest storage technologies, it is beneficial for entrepreneurs to be organized. Establishment of strong networks and associations as well as promotion of recognizable brands partly drives industry growth. Therefore, it is important to foster equal and effective participation of women and men entrepreneurs in the establishment of Trade Associations and in the creation of recognizable brands. Finally, like any other business, improved storage technology development requires financial investments. Therefore, a long term gender equality strategy should include mapping sources of business finance for women and men metal silo artisans.

7.5 Farmer Capacity Building

Knowledge transfer is central to any technology adoption scaling strategy. As such, it is to provide equal opportunity for women and men to effectively participate in learning and training opportunities. The history of development practice reminds us that women's effective participation as well as that of other vulnerable groups does not happen effortlessly. Many cultural factors constrain the participation of women including, but not limited to; time constraints due to the triple roles in economic, caring and community commitments, limited mobility and resources to facilitate, relatively higher need for personal safety, views and attitudes on women as carers and not active participants in their own and their families economic activities, limited decision making power, attitudes and cultural norms on asset ownership.

In order to overcome some of these culturally based constraints, technology deployment teams need to carefully and deliberately target specific social groups especially women in training needs assessments, in training, exchange, and monitoring visits. Adequate time and resources need to be committed to developing equitable and participatory selection processes at local level – and ensuring that women also have a voice in choosing who, among themselves, should attend trainings. While women's groups may be a good entry point into communities, it is important to recognize that not all women belong to groups. In fact, groups are inherently a

locus for inclusion and exclusion of certain types of women. Therefore, the idea is not only to foster equity between men and women, but also, to nurture the culture of equity among women themselves. Moreover, targeting women's groups if taken as the only approach, potentially excludes men and that is equally problematic.

Beyond counting numbers of women, what is crucial is to create a conducive environment for women to effectively engage. This may involve locating trainings nearer to women, convening trainings in time frames that allow women to get back home safely and in time to undertake their other responsibilities, ensuring women's safety. Even more crucial is the commitment to ensure effective participation of women during training. This involves providing supplementary support – such as childcare – to enable nursing mothers to effectively engage while resisting the tendency to appoint some women to cook and provide meals for training participants – while training is underway.

Finally, lasting change will largely be driven by addressing cultural norms that dictate the status of women in homes and communities. One entry point for EGSP is to include gender in community dialogues with men. This should be fairly easy given that most improved storage technologies require a 'household-centered' knowledge dissemination approach. Take hermetic storage technologies, for instance, if other household members are unaware of the need to maintain hermetic conditions, huge amounts of grain could be lost. Teams need to strengthen their capacity to document progress by collecting sex- disaggregated data on participants – and also documenting processes taken to facilitate effective participation of women – which ones worked, in what contexts, and why?

7.6 Technology Promotion and Awareness Creation

Providing equal opportunity to information and resources determines patterns of technology access and adoption. Simply put, men and women customers purchase products they know from sources they trust. Therefore, teams need to develop tools for effectively targeting women and men with information. Part of this requires carefully mapping out pathways through which women and men access information and exploiting those for awareness creation. Also, it may partly require tailoring activities to foster effective participation of women. A wide range of

options exist for information sharing including demos, field days, printed material (leaflets and banners), television, community radios, chiefs forums, apparel, fairs, agricultural shows, mobile units etc. Given limited resources, teams need to develop frameworks and tools for deciding how to distribute resources across all these options. What is important is to use local knowledge to rank awareness promotion options based on their capacity to reach women, men, youth of all socio-economic status. No single method will work for all social groups. But, strategies should be grounded in local realities and explicitly demonstrate how they make it possible to not only reach women, but also, to provide space for their effective participation. Where metal silo technology is adopted as part of group asset ownership, it is imperative to facilitate not only the entry of women into these group arrangements, but also, their participation in leadership positions. Evidence from Malawi suggests that this is an area that is worth strengthening. Teams have an opportunity to deliberately target women and increase their visibility as champions for improved post-harvest technologies. Additionally, teams can create synergies and partnerships with other government ministries, for instance the Ministries of Women Affairs or Gender, who often have local level gender officers. The latter may be more knowledgeable on gender issues in the local area and could provide technical guidance to the EGSP teams. Finally, as a long term strategy, teams should participate in local, regional, and international conferences to widely share perspectives and best practices on gender and post-harvest management.

7.7 Communication

Communication is an indispensable tool for fostering awareness on improved post-harvest technologies as well as in celebrating success and best practices. Often communication unites serve two purposes three purposes – fostering internal communication, communicating with the media and outside audiences about project accomplishments, and producing communication materials that are, in turn, used by other partners for awareness creation. Teams need to develop project specific gender responsive communication strategies that are centered on the following core principles. First, communication approaches and materials should be informed by an awareness of how best to reach certain social groups such as women and youth. Therefore, aspects such as the language, symbols, images, medium of communication, timing etc become imperative. Projects often produce apparel materials for promotional purposes. T-shirts and caps

which appear to be the ‘gold standard’ are seldom appropriate for or desired by women. Teams can engage women to brainstorm and select appropriate promotional apparel. If teams recognize women as an important segment of the improved post-harvest storage technologies, they can enhance awareness creation by adopting and sharing materials and artifacts that have utility value for women. Moreover, as a long term strategy, communication teams must include gender in awareness campaigns on improved post-harvest management while strengthening local capacity for reporting on the same. Overall, to the extent that targeting women may require alternative and innovative approaches, gender responsive communication requires sustained human and financial investments.

7.8 Socio-Economic Research

Socio-economic research is incredibly valuable for building the evidence base for post-harvest management, including gender. We recommend a strategy that builds on and strengthens socio-economic research capacity in general, and gender in particular. The core idea is to generate evidence that reflects the lived realities of both women and male farmers in the various contexts. It is about moving beyond documenting ‘women’s experiences’ towards allowing women to openly share their views – just like men – on their preferences, challenges, and opportunities.

First, with respect to the way socio-economic research is carried out, the key element is to ask the right questions. For instance, gender is partly about power in the home, community, and the market place. Therefore, it is important to have the culture and commitment to investigate themes around access to, ownership, and control over resources; labor and time use; leadership and effective participation in activities and processes– and their implications on wellbeing. How do gender roles shift due to storage technology change? What implications does that have on access and control over storage assets and gran? How about intra-household labor and drudgery?

Some of these aspects may lend themselves to quantitative inquiry, but also, it takes discernment to distinguish those which are best addressed through qualitative approaches. It is often helpful to include a gender expert in the design and implementation of socio-economic studies. In addition, it is imperative for research teams to adopt good practices for data collection including,

but not limited to, recruiting and selecting balanced data collection teams, providing space especially for women in male headed households to share their opinions and experiences with post-harvest issues. Relatedly, socio-economic research has potential to generate benchmarks against which progress on gender can be tracked therefore it is crucial to collect, analyze, and present sex-disaggregated data.

Second, a long term strategy for building a strong evidence base for gender in post-harvest should include a capacity building component. More research is needed on issues of gender in grain post-harvest management. This requires a systematic effort to develop a research agenda and implement it with local academics and gender specialists – including training graduate students. Knowledge sharing can be enhanced through establishing a community of practice around issues of gender in post-harvest management.

7.9 Government Policy

Among other activities, improved technology focused projects must engage policy makers in dialogues on post-harvest management. While some aspects such as the reduction of taxes on metal sheets may be gender neutral, it is important to raise awareness among policy makers of the potential benefits, especially for women, of supporting post-harvest management technology adoption as well as research. As shown in Malawi, the government is able allocate resources and rapidly increase adoption levels for improved post-harvest technologies.

10. Conclusion

This strategy should be taken as a living document that can and *should* be adjusted as circumstances shift. While it provides overall guidelines, individuals should adapt the recommendations to suit their contextual circumstances. Ultimately, the strategy is as good as its level of implementation.

11. Gender Strategy Matrix for Post-Harvest Management Oriented Projects

Thematic Area	Gender progress indicators	Responsibility	Resources
1. Implementation framework, capacity and coordination			
<i>What can be implemented in the short term (1-2 years)</i>			
1. Establish an institutional arrangement for coordinating and directing the implementation of the gender strategy	<ul style="list-style-type: none"> · Guidelines for managing gender within an organization 	- Management and project leaders in partner organizations	Contingent. Teams determine
2. Develop system for monitoring, evaluating and reporting gender progress and outcomes	<ul style="list-style-type: none"> · M&E system with clear gender equality indicators · Sex disaggregated data 	Implementing partners	
<i>What can be implemented in the long term (2 years plus)</i>			
3. Build capacity of implementing teams in gender programming (knowledge and skills) of post-harvest management	<ul style="list-style-type: none"> · Number of gender experts employed at institution level · Number of gender focal points · Level of Knowledge and skills · Budget on capacity building · Level of gender budgeting · Resources invested in skills training · Institutional gender competency framework 	Project Leaders of partner organization Gender specialists	

4. Repackage relevant gender policy guidelines for application in development and promotion of post-harvest technologies	<ul style="list-style-type: none"> · Institutional Strategy · Project level strategy or guidelines for managing gender 	Project leaders and gender focal points in partner organizations	
2. Technology Design and Testing			
<i>What can be implemented in the short term (1-2 years)</i>			
1. Develop or adopt existing gender guidelines for on-station observations of scientific experiments by farmers	<ul style="list-style-type: none"> · Targets for men and women participation · Ratio of men and women participants present during on- station observation <ul style="list-style-type: none"> - Qualitative narratives of how men and women are given opportunities to independently observe and assess technologies - 	Entomologists	
2. Develop or adopt existing gender guidelines and protocols for on-farm participatory evaluation of improved post-harvest technologies	<ul style="list-style-type: none"> · Tools for selecting participants · Proportion of experiments managed by women · Proportion of women participating in field days or demos 	Entomologists	
<i>What can be implemented in the long term (2 years plus)</i>			
3. Continually develop and test alternative post-harvest technologies that meet women and men's preferences	<ul style="list-style-type: none"> · Budget for engineering research · Number of technologies developed and evaluated on-farm 	Project Leaders	

3. Technology Development			
<i>What can be implemented in the short term (1-2 years)</i>			
1. Incorporate gender aspects in the training curriculum of post-harvest technology entrepreneurs	<ul style="list-style-type: none"> · Gender module in the training manual · Gender sensitive training manual e.g. representation aspects 	Gender Specialists and Partners	
<i>What can be implemented in the long term (2 years plus)</i>			
2. Promote recruitment, training, participation, and retention of female entrepreneurs	<ul style="list-style-type: none"> · Ratio of male to female trainees · Number of practicing female entrepreneurs · Number of follow up visits to women and men · Number of female entrepreneurs that are directly supported e.g. in manufacturing technologies for demos. · 	Teams that train storage technology manufacturers	
3. Raise profile of female entrepreneurs	<ul style="list-style-type: none"> · Number of female entrepreneurs who are featured on posters, fliers as recommended or lead entrepreneurs · 	Teams that train storage technology manufacturers	
4. Promote gender responsive organization and delivery of training	<ul style="list-style-type: none"> · Number of women leading training 	Teams that train storage technology manufacturers	

5. Promote demand driven (and not supply-led) design and development of improved post-harvest technologies	<ul style="list-style-type: none"> · Level of knowledge on technologies desired by different social groups · Number of technologies designed to order · Record keeping on sales and demographic aspects 	Teams that train storage technology manufacturers	
4. Business Development and Branding			
<i>What can be implemented in the short term (1-2 years)</i>			
1. Scale up training of women and men entrepreneurs in business skills, manufacturing, distribution, utilization and dissemination improved post-harvest technologies	<ul style="list-style-type: none"> · Ratio of male to females in business training courses 	Implementing partners	
2. Promote participation of women in trade associations (FTAs)	<ul style="list-style-type: none"> · Number of men and women in FTAs · Number of men and women in leadership positions in FTAs 	Economists and Entomologists Implementing partners	
3. Promote participation of women and men in brand creation	<ul style="list-style-type: none"> · Number of men and women in brand creation committees 	Economists and Entomologists	
<i>What can be implemented in the long term (2 years plus)</i>			
4. Identify and facilitate establishment of business development services for women and men entrepreneurs improved storage technologies value chains	Number and value of business development services for women	Economists Local Partners	

5. Farmer Capacity Building			
<i>What can be implemented in the short term (1-2 years)</i>			
1. Develop protocols for selection of women and men participants for all training activities including training needs assessments	<ul style="list-style-type: none"> · Existence of selection protocols · Budget allocated to key personnel involved in selection e.g. local extension officers · Amount of time allocated to participants selection within communities · Ratio of women to men in local level selection committees 	Teams that train farmers	
2. Foster conducive environment for women's participation in trainings including exchange visits	<ul style="list-style-type: none"> · Number of trainings undertaken closer to women's communities · Engagement of catering services that do not include women participants · Processes undertaken to accommodate nursing mothers and young children · Processes undertaken to ensure women's security · Timing of trainings and events · Dialogues with men and community leaders on the importance of women participation in PH management activities 	Teams that train farmers	

3. Maintain sex disaggregated data of all training	<ul style="list-style-type: none"> · Ratio of men and women in trainings 	Teams that train farmers	
4. Train women and men users on correct use and management of metal silo technology	<ul style="list-style-type: none"> · Ratio of men and women · Easy to follow instructions 	Teams that train farmers	
5. Foster women's access to and adoption of improved PH technologies	<ul style="list-style-type: none"> · Number of loan schemes supported e.g. merry-go-rounds · Number of PH technologies adopted · Value of PH technologies acquired through loan schemes and or targeted grants 	Implementing partners	
6. Include women in farmer to farmer visits and in monitoring visits	<ul style="list-style-type: none"> · Ratio of men and women · Sex disaggregated data showing ratios of men to women farmer homesteads visited · Narratives showing the extent to which knowledge sharing involves all household members 	Entomologists; extension workers	
7. Target women when conducting trainings for extension workers	<ul style="list-style-type: none"> · Ratio of men to women extension workers trained · Narratives on efforts made to reach female extension workers 	Teams that train extension workers	
<i>What can be implemented in the long term (2 years plus)</i>			
8. Conduct Training of Trainers (ToT) for women leaders for effective dissemination of information to other women	<ul style="list-style-type: none"> · Number of ToT · Statistics of outreach 	Entomologists	

6. Technology Promotion and Awareness Creation

What can be implemented in the short term (1-2 years)

1. Articulate and justify choice of approaches and resource allocation across alternative awareness creation options	<ul style="list-style-type: none"> · Framework /strategy for gender responsive awareness creation · Proportion of resources allocated to awareness activities that target specific social groups, especially women 	Communication Team; Gender specialist	
2. Target all individuals within households with information on improved PHM technologies including brand awareness	<ul style="list-style-type: none"> · Number of women and men reached 	Implementing local partners	
3. Map out and effectively use women's and men's networks and platforms for effective dissemination of PH technologies	<ul style="list-style-type: none"> · Maps of networks and platforms for men and women · Resource distribution for targeting men and women · 	Implementing local partners	
4. Develop tools for tracking attendance and effective participation of women in events	<ul style="list-style-type: none"> · Tools for tracking attendance · Sex disaggregated attendance sheets 	Implementing local partners	
5. Establish and promote women and youth champions of PH technologies	<ul style="list-style-type: none"> · Number of women and youth champions · Number of follower women and youth reached through champions 	Implementing local partners	

<i>What can be implemented in the long term (2 years plus)</i>			
6. Promote gender visibility and participation of women in leadership structures (e.g. farmer groups, marketing groups)	<ul style="list-style-type: none"> · Ratio of women and men in community PH groups · Ratio of women and men in leadership positions · Effective participation of women 	Implementing local partners	
7. Establish partnerships, at local level, with relevant gender officers from other ministries	<ul style="list-style-type: none"> · Types of partnerships · Activities carried out 	Implementing local partners	
8. Organize annual local and regional conferences on gender and PHM to share experiences and best practices	<ul style="list-style-type: none"> · Number of conferences attended · Number of papers presented · Partnerships and networks developed 	All team members	
7. Communication			
<i>What can be implemented in the short term (1-2 years)</i>			
1. Develop and implement a gender responsive communication strategy	<ul style="list-style-type: none"> · Communication strategy · Operationalize strategy with partners 	Communications and gender specialists	
2. Develop promotional literature, in contextually appropriate language, that highlights positive role and image of women, men and youth in post-harvest	<ul style="list-style-type: none"> · Gender sensitive literature 	Communications expert	

3. Develop promotional material (e.g. bags, clothing) materials that are suitable for women and youth	· Proportion of budget allocated to suitable promotional materials for women and youth	Communications expert Project leaders	
4. Document and share gender based best practices in post-harvest management (e.g. case studies of women who are successful in improved storage of crops)	· Best practices and case studies on gender and PHM	Communications expert	
<i>What can be implemented in the long term (2 years plus)</i>			
5. Disseminate information using platforms such as farmer to farmer exchange, mobile phones, farm radios, documentaries	· Diversity of platforms used · Proportion of resources allocated to platforms that are likely to reach women and youth	Communications expert	
6. Include gender in awareness campaigns on improved storage technologies	· Number of awareness campaigns · Budget allocated to gender responsive campaigns	Communications expert	
7. Strengthen capacity for reporting on gender and post-harvest management	· Number of reports/radio/TV shows that cover gender in PHM	Communications expert	

8. Socio-Economic Research			
<i>What can be implemented in the short term (1-2 years)</i>			
1. Incorporate gender analysis in socio-economic research	<ul style="list-style-type: none"> · Sex disaggregated data · Documentation capturing women's voices · Gender relevant research questions and themes 	Scientists	
2. Use qualitative approaches to document gender in PHM issues	<ul style="list-style-type: none"> · Number of qualitative studies · Budget for qualitative approaches 	Scientists	
3. Develop gender sensitive approaches for data collection	<ul style="list-style-type: none"> · Sex ratio of research enumerators and facilitators · Training programs that include gender · Processes taken to include voices of women and other disadvantaged groups 	Scientists	
4. Include gender specialists in the development of survey tools	<ul style="list-style-type: none"> · Number of publications that include gender 	Scientists	

What can be implemented in the long term (2 years plus)

5. Incorporate gender sensitive approaches in monitoring and evaluation	<ul style="list-style-type: none"> · Sex disaggregated data · Women's empowerment indicators · 	Scientists	
6. Collaborate with local gender scientists	<ul style="list-style-type: none"> · Number of collaborative studies 	Scientists	
7. Build local capacity for gender research	<ul style="list-style-type: none"> · Number of students trained · Number and quality of reports and scientific papers published on gender and post-harvest · Budget for capacity building on gender · Community of Practice on gender and post-harvest management 	Scientists	

9. Government Policy

What can be implemented in the long term (2 years plus)

1. Include gender in policy dialogues and PH awareness programs	<ul style="list-style-type: none"> · Inclusion of gender on agendas 	Project leaders and Economists	
2. Advocate government for increased resources for promotion of improved post-harvest management particularly for women	<ul style="list-style-type: none"> · Advocacy activities · Gender budgeting in national programs and projects on improved post-harvest storage technologies 	Project leaders and Economists	

ⁱ See for instance the African Post Harvest Losses Information System (APHLIS) www.aphlis.net. Aphlis estimates maize post-harvest losses for 2014 at 18.6%

ⁱⁱ See Mulunga, M. (2015) and Maliro, D. (2015) document the historical support for alternative storage technologies in Zambia and Malawi respectively.

ⁱⁱⁱ See Kandiwa et al (2015) Gender Analysis for Maize Post Harvest Management: insights from Kenya, Malawi, Zambia, and Zimbabwe. CIMMYT Working Paper.

^{iv} This was carried out in Kenya, Malawi, Zambia and Zimbabwe, See Kandiwa *et al* (2015) above.

^v See for instance Sandra Harding (1987) *Is There a Feminist Method*, in *Feminism and Methodology*, Indiana University Press, Bloomington and Indianapolis