

Framework Report for incorporating Gender Equality and Social Inclusion (GESI) elements in Climate Information Services (CIS)

Agricultural data hub, CIS training and flood and drought indicators

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Preface: Gender and Technology Citations

“Agriculture is sexist. Poverty is sexist. And certainly, technology is sexist. These are three tenets that anyone working at the intersection of development and technology should inherently know, without the assistance of a “gender specialist.” (USAID ICTWorks, 2021).

“understand technology as a social construct and a social practice — the product of a particular society’s history” (Stamp, 1989).

Gender equality and digital development are inextricably linked. Yet globally, men are 21 percent more likely to be online than women, a figure that rises to 52 percent in low-income countries (WorldBank, 2021) (Klingentalicia, 2021).

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1.0. Introduction

Gender is a socially constructed definition of women and men (Mapedza et al. forthcoming 2022). Gender is different from sex, which is the biological characteristics of men and women. Gender identities are based on the different roles, tasks and responsibilities for men and women in a given context. Gender relationships are shaped by social and cultural norms, which are context-specific and may change over time. Gender relations are also based on power relationships which reflect society's structures governing how men and women should behave in public/community and private/household spheres. Gender relations are intersectional in that they interact with other social attributes such as class, ethnicity, age, religion, caste, and others (Carastathis, 2014, Crenshaw, 1991, Nightingale, 2011, Pirtle, 2021). It is also important to note that gender relations may change over time as they are not static. Women, in some instances, have the agency to transform the unequal gender system, which is largely based on patriarchy (Autio, 2021, Farnworth, 2010, Lawless, 2019, O'Hara and Clement, 2018, Petesch, 2018).

Gender inequalities seem to be pervasive in that, even with the introduction of new agricultural and climate information technologies, the gendered fault lines still appear within the new technological settings. Such gendered technological inequalities can be traced back to as early as the 1960s, where it was clear that technological solutions are grounded within the society in which they are embedded (Sterling, 2021, Stamp, 1989, Chambers, 1989). Sterling (2021) observes that unless women are intentionally included in the design and development of agricultural technologies, there is a high risk that women will not benefit from agricultural innovations meant to ameliorate the impact of climate change and climate variability. According to Conway's law, any technology reflects the values of its creator (Sterling, 2021). Therefore, it is of paramount importance to understand the values of those who create technological solutions and innovations. Intersectionality, which takes into consideration vulnerabilities such as disability would double or treble the gender gap in mobile ownership in developing countries (Sterling, 2021). Therefore, it is important to get a better understanding of the gendered nuances of technological usage. Covid-19 has also shown the importance of digital information. Since digital access is gendered, it has also meant that women and other vulnerable groups have been further marginalized as they could not access information to the same level as men.

2.0. A brief overview of Gender in Zambia

Before the change of government in 2021, Zambia had a ministry specifically responsible for gender, which had been established in 2012. Under the new government, gender was moved to the Cabinet Office. Zambia is a signatory to about 22 regional and international conventions, including the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), the International Covenant on Economic, Social and Cultural Rights (ICESCR) and the International Covenant on Civil and Political Rights (ICCPR). The Gender Status Report is a flagship report to help track progress towards achieving the conventions, protocols and national policies and strategies (Zambia, 2020).

Nationally, the key policy instruments on gender are the Zambian Constitution of 2016 (Article 259(1)(b)), Gender Equity and Equality Act No. 22 of 2015, and the National Gender Policy of 2014 (Zambia, 2020). The Gender Policy aims at gender equality in the Zambian development trajectory through redressing the existing gender imbalances. The Gender Policy further provides for equal opportunities for both men and

women to engage in the transformation of the country (Zambia, 2014). The key aspects for the Gender Policy are summed as:

- gender audits and plans of action based on the identified issues;
- revision of policies, programs and legislation;
- awareness campaigns on gender issues in communities;
- empowerment of women by facilitating participation in education and economic activities;
- addressing issues that hinder women's rights such as Gender-Based Violence (GBV), forced early-child marriages and child-teenage pregnancies;
- tackling gender-related land issues; and
- adherence to reproductive health rights, especially for women and girls (Zambia, 2014: 2).

The gender policy clearly identified climate change as one of the key challenges negatively affecting women.

In addition, climate change adversely affects women whose livelihoods largely depend on natural resources for food, wood fuel and water. The impact of climate change on water resources ultimately results in household food insecurity and shortage of water (Zambia, 2014: 11).

In addition the former Minister of Gender and Child Development, noted the importance of women in Zambian agriculture and the challenges they face (FAO, 2018.).

....major facets of gender inequalities still exist, especially among rural women employed in the agriculture sector, who constitute 76 percent of the agricultural labor force. These include women's more limited access to and control over productive resources, services and markets (FAO, 2018: Preface).

In Zambia, the constitution and legal system are supreme. However, there is a challenge in the dualistic legal system; formal law on the one hand and the traditional governance systems based on patriarchal cultural beliefs and norms on the other hand (Zambia, 2020). The constitution's article 11 clearly acknowledges equal rights between men and women, while Article 23 accepts personal and customary law embedded within patriarchy and norms that treat men and women differently (Zambia, 2020).

The Zambian Land Policy through the Lands Act of 1995, Chapter 184, stipulates that for state land disposal, 50% of the land must be sold to women. The policy is a positive move, but it is also worth noting that the state in Zambia owns only 6% of the land. The remaining 94% of the land is under customary ownership and is allocated by traditional leaders through chiefs (Zambia, 2020). Therefore, for a transformation of land ownership in Zambia, chiefs would have to allocate land to women as well. Based on current statistics, few women own land in Zambia compared to men; in addition, about 32.7% of women in rural areas own land which is much higher than the 6.8% of women who own land in urban areas (Zambia, 2020).

The 2020 Gender report outlines some of the initiatives to empower women in Zambia which are highlighted below:

- Agriculture Development Through Value Chain Enhancement – (2015) – increase women access to land and agricultural value chains.
- Girls’ Education and Women’s Empowerment and Livelihood (GEWEL) – startup capital and entrepreneurial skills in 51 districts.
- Microcredit Scheme – Livelihood and Empowerment Support Scheme – targeting vulnerable women.
- Mechanized Farming Equipment Program – cooperatives and mechanical equipment support. Cooperatives must be 70% women to qualify.
- 50 Million African Women Speak Project (50MAWSP) - The aim of the platform is to empower women and youth to start, grow, and scale up their businesses, as well as to mentor each other through a real-time, one-stop comprehensive information hub. This project had 2,500 members by 2019. The only setback is that it depends on access to smartphones and the internet, which is a major challenge for most rural settings.
- Financial Assistance – This is a Bank of Zambia Gender Unit initiative to improve access to financing by women. Low literacy, lack of ICT knowledge, and lack of awareness of the scheme have limited women's participation.

The 2020 report further notes that technology is transforming societies such as Zambia through access to information and increased access to markets. However, the report cautions that Information Communication Technology (ICT) could further reinforce the gendered inequalities as well as inequalities between urban and rural areas (Zambia, 2020: 87). Access to and utilization of ICTs is skewed towards urban areas.

"There are many factors influencing ICT access and usage in Zambia. However, income, education (literacy), lack of awareness, and social position have been cited as some of the key factors in this regard. The main barriers to accessing Internet services include: lack of appreciation of a need for the internet, lack of skills to use Internet services, and the high cost of required equipment. Other reasons include: lack of knowledge of how to use the internet, lack of appropriate devices, lack of interest in Internet services, and lack of access to these services" (Zambia, 2020: 87).

Unequal access to and usage of both Internet and e-commerce services suggests that a significant majority of women and those in rural communities is cut off from certain information that is only accessible via the internet. It also means that this group is cut off from engaging in online trade (buying and selling), learning, as well as email communication. The same can be said of women with no access to the Internet (Zambia, 2020: 87).

Mobile phone ownership in urban areas in Zambia was 71% (ZICTA, 2018). In rural areas, ownership was 42%. Youth in the 10-34 age group accounted for 72% of internet usage (ZICTA, 2018). About 77% of the male-headed households owned a mobile phone, with about 65% of the female-headed households owning a mobile phone. Therefore, it is important that AICCRA's Climate Information Services (CIS) needs to consider such gendered dimensions as it designs solutions for communicating climate information that targets both female and male farmers using appropriate channels for communication.

Zambia has an approved ICT for Development policy. The ICT policy recognize agriculture as a key target for digitization. For example, the national ICT's policy goal for Zambia is to improve productivity and 'competitiveness of the agricultural sector through the use of ICTs in the planning, implementation, monitoring and the information delivery process' (Ali et al., 2016). There is broad political support for digitization of agriculture and services in Zambia. Political will and support at high levels are prerequisites to scaling digital services in any African country. Fifty-six per cent of Zambia's population is rural and highly dependent on agriculture (World Bank, 2022). However, most rural farmers do not have access to modern agricultural knowledge and information. There is limited reach of extension agents that makes use of ICTs in addition to face-to-face meetings critical to spread Climate Information Services. However in Zambia, it has been suggested that the poor access of women to ICTs will limit their participation in climate smart agriculture and other "green economy initiatives" (Namukombo, 2016).

"Zambia had about 71% of the men listening to the radio compared to 45% of the women. For television, men almost double (48% against 26%) the number of women who are able to watch television. About 58% of the men were also found to own a mobile phone or active Subscriber Identity Module card as compared to 37% of the women" (Namukombo, 2016)

Access to mobile phones and other ICT services such as internet are also biased towards urban areas especially along the line of rail.

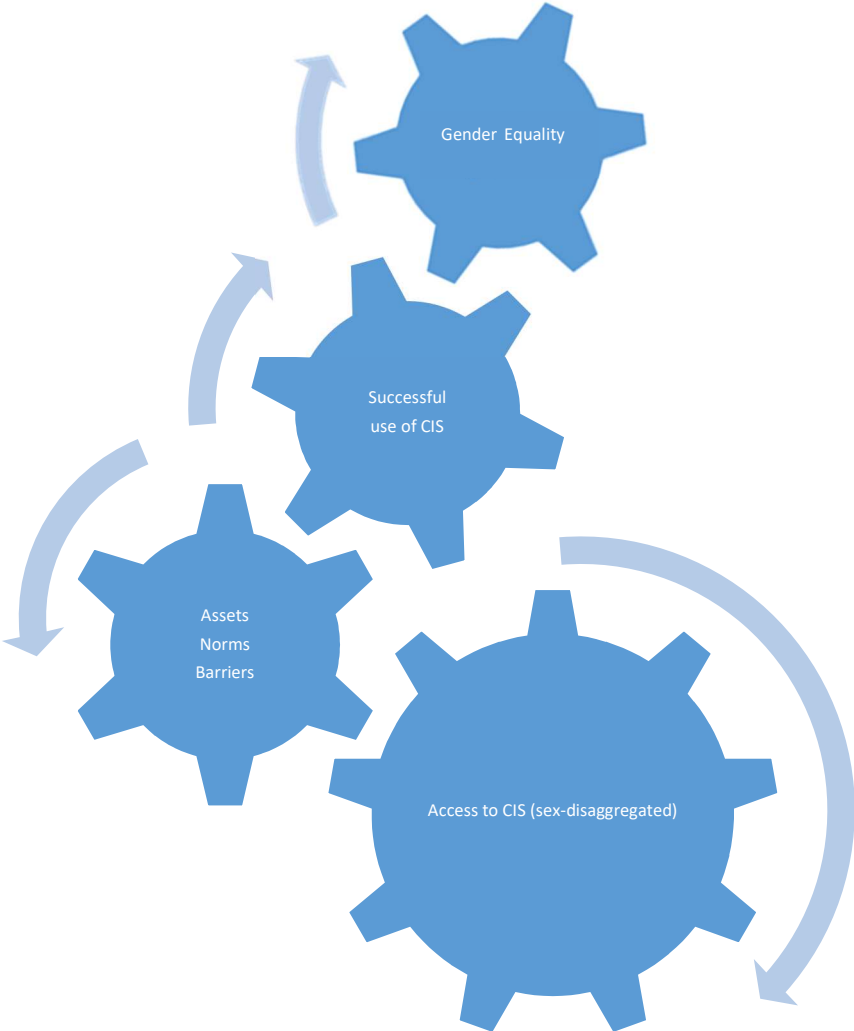
3.0. Why Gender Matters in CIS

Literature on gender and technology, more broadly, has demonstrated that women tend to benefit less than men do from technological innovations within the agricultural sector (Stamp, 1989, Amina Maharjan, 2012, Drechsel et al., 2013, Shrum, 2011). According to the big data platform, "the coming years will be characterized by unprecedented rates of innovation at the intersection of digital technologies and life sciences that—if harnessed and applied— can provide the tools humanity needs to adapt to or mitigate some of its most pressing challenges such as climate change (CGIAR, 2021).

Women, rural dwellers and the marginalized communities make up the majority of those without digital connectivity due to systemic barriers including affordability, access to digital skills and education, language and literacy obstacles and also perceived relevance and social norms" (Sarhani Banerjee Belur and Ingrid Brudvig, 2021). Female farmers, in general, tend to have limited access to agricultural extension information (Spielman, 2021). Some female extension staff also further re-enforce such patriarchal views as they also view the men as the farmers who have to be called to agricultural extension meetings (Mapedza, 2017).

Gender is central in shaping production, consumption and reproduction in any given society. Climate Information Services aim at providing information to smallholder farmers to be able to adapt and reduce their vulnerability to climate variability and climate change. Therefore, access to the information will be a first step on how a farmer could use that knowledge to adapt to climate change and climate variability. Figure 1 shows a simplified diagram on why gender matters in CIS from the household, farm, community, landscape/region, national, to the global level (Huyer, 2019).

Figure 1: Why Gender Matters in Climate Information Services (CIS)



The first gear is to understand who has access to Climate Information Services (CIS). Here it is important to understand how the information is tailored for both men and women. If the CIS is structured and delivered towards men as farmers, this will mean that women would have lost outright at the beginning of the process.

Gear 2 looks at assets. Having received the CIS information, what do you then do with that information? Here we review the importance of assets (capabilities) that are essential for farming such as land, technology, tools. In most studies, women do not seem to have access to key assets that are central for responding to climate change to improve their livelihoods.

Gear 3, is a successful application of the CIS information with the assets to be able to adapt to climate variability and climate change.

Gear 4, shows gender empowerment stage, where women who have been empowered through appropriate CIS have both access and control of the benefits from climate smart agriculture and are exercising their agency at the household, farm, community, national and global levels (Huyer, 2019).

Huyer et al. 2017, highlights reasons why it is important to take gender and social inclusion into account for Climate Information Systems (Huyer, 2017) as briefly summarized in the following section.

3.1. Differing roles, decisions and control of resources can influence the climate information needs of rural women.

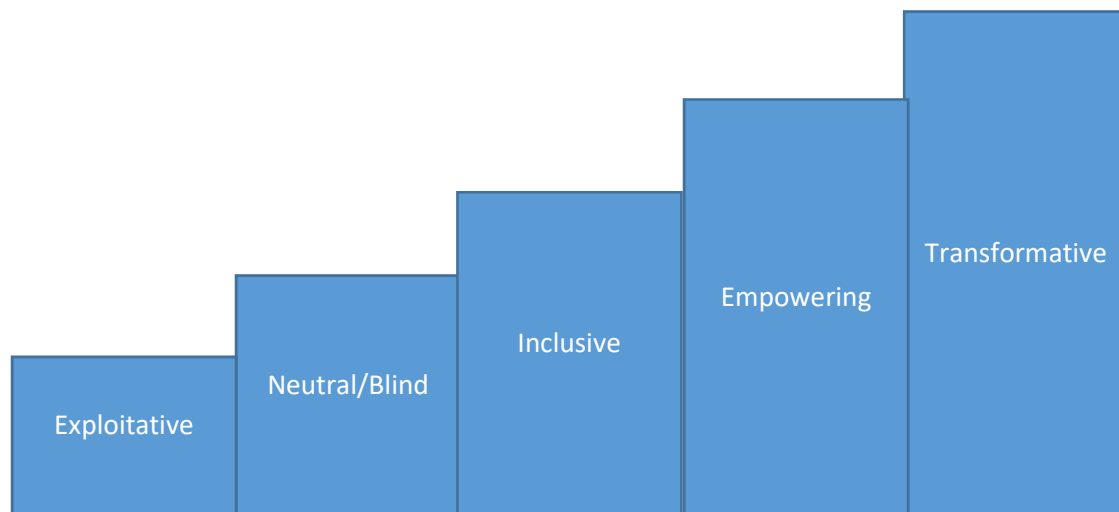
A good understanding of who does what, when and why will help target the recipients of the Climate Information Systems. Agriculture is often perceived as a preserve of men who own land, with women often perceived as helping the male landowners, especially within the patriarchal nature of most of sub-Saharan Africa (Peters, 2013, Peters, 2002). While there are fewer pockets of matrilineal societies, research in Malawi, for instance, highlights the importance of uncles' decision-making power on land allocation and transfer for women in matrilineal systems (Mapedza, 2017). Women tend to have an important role in farming in sub-Saharan Africa. However, when it comes to decision-making and control of resources, women face a major disadvantage (Ahlers, 2009, Drechsel et al., 2013, Dzanku, 2021, Fortmann, 1993, Leder et al., 2017, Quisumbing, 2014, Quisumbing, 2003, Sundberg, 2017, S., 2016, Carr, 2015, Carr, 2016a, Carr, 2016b).

3.2. Meeting rural women's service needs requires attention to communication channels that may differ from those used to reach men.

Most mediums used for communication have often assumed that farmers are all the same. This assumption has entailed designing generic solutions, which do not explore the differentiated interests and requirements for both women and men. The assumption is often that men are the farmers, so all solutions are tailored towards the needs of men. Such a perspective seriously disadvantages women. It is important to note that communication channels are gendered. Such an understanding will require that appropriate communication channels be used as well as the timing of the communication. When would it be convenient for women to get the CIS communication, in what format and in which language are all important considerations.

In the mission to address gender within CIS, the report provides different steps towards gender equality, ranging from gender exploitative to gender transformation, as shown in Figure 2.

Figure 2: Steps towards Gender Equality in Climate Information Services



Whilst the steps towards gender equality in CIS are visually “steps” this does not mean that they are sequential. The outlined steps only show the progression from a less desirable gender state to a more desirable state of gender inclusion. Different actors, projects, organizations or countries may pursue different pathways and trajectories as they move from an undesirable state towards the desired state of Gender Transformation. It is also possible to regress to a less desirable gender state. The different step descriptions, which builds on the Swiss Development Cooperation (SDC) gender guidance, are briefly outlined in the next section.

Exploitative gender – this approach does not take into account gender in the designing and planning of development interventions. In this scenario, women are not targeted by development interventions. This approach intentionally or unintentionally reinforce or exacerbate gender inequalities by planning development interventions which exploits rather than promote women’s interests (Nindi, 1994, Palumbo, 2018).

Neutral/Blind – this approach does not recognize the role of gender in influencing development outcomes. Such a view assumes that gender does not impact on development outcomes or interventions. For example, gender neutral development interventions on adaptation to climate change around Lake Faguibine created increased work burden for women (Djoudi, 2011).

Inclusive – This approach includes gender concerns in the designing and implementation of development interventions. This entails looking at gaps on women’s participation. Timu and Berber (2021) illustrates this with a focus on how agricultural insurance analyzing gender-gaps before identifying how to increase insurance uptake by women. Being inclusive might not address equity of outcomes (Timu, 2021).

Empowering – These interventions take into account women's agency to benefit from the designing and implementation of development interventions. The Women's Empowerment in Agriculture Index (WEAI) framework provides an effort on how empowering agricultural interventions are, across different

developing country contexts (Alkire, 2013, Aregu, 2018, Doepke, 2014, Elias, 2021, IFPRI, 2012, Kabeer, 1999, Meinzen-Dick, 2017, Murray-Rust et al., 2001, Myers, 2022, Njuki, 2021, O’Hara, 2018, Pyburn, 2021, van den Bold, 2013).

Transformative – this view realizes the importance of changing social norms, cultural practices and beliefs in order to have gender equality for positive development outcomes. A Transformative lens entails changing the unequal gender relations in order to promote shared power, control of resources, decision making and support for women's empowerment is central for this approach. According to IDRC (2018: 3), a Gender Transformative Approach is “striving towards changes that address the root causes of gender inequality, moving beyond the individual to the structural” see also (Archambault, 2016, Leder, 2019, Cole and Longley, 2014, Alkire, 2013, IFPRI, 2012, Jakimow, 2012, Kabeer, 2001, Mayoux, 2000, Meinzen-Dick, 2017, Njuki, 2021). IDRC further notes that a Gender Transformative Approach has to be based on a Feminist approach which addresses the following 4 principles which are summarized as (IDRC, 2018):

1. Meaningfully include and empower women and girls.
2. Understand diversity and consider context.
3. Challenge power and promote equality.
4. Design and use research for purposeful action.

3.3. Despite obstacles, women farmers who access climate information use and benefit from it

Whilst women are facing barriers towards accessing CIS, it is important to note that women are not victims in all instances, as some women are exercising their agency by accessing climate information and using it for their increased benefit (Huyer, 2017). Agency, which is an aspect of empowerment, can further be defined as capturing “conscientization—the emergence of critical awareness and action for change” (Yount et al. 2020:2).

3.4. Climate Information Services have potential to empower women

Gendered Climate Information Services offers an opportunity to transform agricultural production and contribute to the transformation of agrarian communities. In the long term, they contribute towards changes in positive gender norm changes.

3.5. Evidence of positive example of the use of CIS by women

The recently concluded Climate Change Agriculture and Food Security (CCAFS) Program has clearly demonstrated that it is possible to use gendered CIS to empower and transform women's livelihoods. Some experiences from the field are summarized based on the literature review by Gumucio et al, 2020. This was one of the most extensive covering 14 sub-Saharan countries, 4 countries from South and South East Asia, one country from Oceania (Papua New Guinea) and one country from the Near East Africa (Egypt).

3.5.1. Gender differences in access to CIS

Most of the studies showed the differences in accessing CIS based on the communication channels. This was more of a response to the provided CIS without basing on the gendered demand for the information (Gumucio, 2020, Gumucio T, 2018, Huyer, 2017).

3.5.2. Gendered rates of access to CIS

Gumucio et al. 2020 further demonstrate that access to CIS was gendered based on literature review for focusing on weather forecast, seasonal forecast, onset forecast, pest and disease early warning, extreme event forecast, drought early warning and historical data in Kenya, Malawi, Senegal, Tanzania and Uganda (Coulibaly, 2017, Coulibaly, 2015b, Coulibaly, 2015a, Ngigi, 2017, Twyman, 2014). These studies, for instance, demonstrated that there were some CIS that men had statistical significant figures in accessing with also some CIS with statistically significant access by women (Gumucio, 2020). In Rwanda, for instance, Coulibaly et al. (2017) notes that women had significant access to historical data than men. In 6 districts in Kenya, women had statistically significant better access to weather forecast data than men.

3.5.3 Access to information through media and ICT

Gumucio et al. 2020 note that there is increased access to information through interactive radio and ICT as a mechanism of communicating agriculture and climate information to farmers (Davis, 2014, Hampson, 2014, Mittal, 2016, Tall, 2014a). Whilst radios and mobile phones are important, men tend to own such communication channels which further marginalize the women (CICERO, 2017, Coulibaly, 2017, Hampson, 2014, Kyazze, 2012, Owusu, 2017, Tall, 2014a, Tall, 2014b, Tall, 2015a, Tall, 2015b, Partey, 2020, Stats4SD, 2017). In instances where women access the radios and mobile phones, some studies have shown that women are more likely to face technical challenges due to low levels of literacy (Caine, 2015, CICERO, 2017, GSMA, 2012, Partey, 2020, Owusu, 2017, Scott, 2004) .

3.5.4. Gendered rates of use and benefit

Gumucio et al. 2020 note that the CCAFS study sites in Climate Smart Villages in Kaffrine, Senegal, showed that women and men had similar rates of use of the types of climate and weather information with the exception of early drought warning where more men made use of that information to inform agricultural decisions (Twyman et al., 2014).

4.0. Barriers to gender equality and inclusion in CIS

There are a number of hindrances, which makes it more difficult for women to access climate information services. This section is informed by the IWMI (2020) conceptualization, which was more on gender and agriculture more broadly, but neatly speaks to the Climate Information Services as well. According to Sterling (2021), who tried to understand why women are not using agricultural applications, "for digital technologies to be part of any development solution, practitioners must first address the myriad of real-life barriers and inequities surrounding technology use" (Sterling, 2021).

4.1. Entry Barriers

Entry barriers stop women from accessing Climate Information Services. Such barriers could be illustrated by the unequal access to assets, such as land and water resources, lack of capabilities to pursue investments using CIS and the lack of agency. Lack of agency for women is usually a result of unequal power dynamics that undermine women's agency. Whilst, some women might still exercise agency, such agency is exercised within very restrictive conditions – which are significant barriers.

The second set of entry-level barriers include socially-defined roles, identities, responsibilities and opportunities which are complex and further compound inequalities through the intersection of gender, age, class, race, ethnicity, religion and caste (IWMI, 2020). The socially defined roles as a barrier are in the

form of time poverty where women have domestic chores demand on their time in addition to other demands on their time (Simelton, 2019). One female farmer, cited by Henriksson et al. (2021: 509) in Malawi remarked “I am busy working in the household or out in the field, and not always where my radio is or where the car with the speaker drives around” (Henriksson, 2021).

The third aspect of entry-level barriers is the complex and intersecting barriers. Most of the societal roles in sub-Saharan Africa are organized around patriarchy. Therefore, by virtue of being women and not based on their capabilities, women will already be disadvantaged. The impact of patriarchy also varies and is differentiated even amongst women in an intersectional manner with the interplay of factors such as age, level of education, place of residence (rural vs urban), race, ethnicity and religion.

4.2. Structural Barriers

These are more deeply ingrained barriers. The first set of barriers are on “gender inequalities across institutions (households, community, local to global market, state and civil society entities)” (IWMI 2020: 5). From households, community, local to global markets and state and as well as civil society institutional arenas, the gendered rules of the game are tilted against women. Therefore, disadvantages for women are multiple and multi-sited and re-enforce each other. This makes it more difficult for women to access Climate Information Services. For those who exercise their agency, this will largely be an uphill fight as barriers have to be removed at various levels from the household to the global level.

The second structural barriers are “cultures of privilege, hierarchy and exclusion at scale and lack of tools to assess and act on dimensions of power” (IWMI, 2020: 5). Cultures of privilege, which are ingrained in patriarchy, will mean that the men who are enjoying the privileges would want to maintain the status quo. In some instances, even women who received the brunt of such cultural privileges would help enforce the same system for their daughters and daughters-in-law.

4.3. Systemic Barriers

Systemic barriers are barriers that are established based on existing ways of governance or cultural practices. The first systemic barriers are “climate challenges, agro-ecological specificities and markets that do not consider the needs and realities of the most marginalized” (IWMI: 2020: 5). Climate Information Services is a response to climate challenges, which might target those who are best positioned to make the practical changes to adapt to climate change and climate variability. Such recipients for the solutions tend to be exclusionary as they do not take into account the requirements of the poor, vulnerable and the marginalized amongst whom women are the majority.

The second systemic barrier is “knowledge, technology and economies that assume homogeneity, or ignore further inequalities” (IWMI: 5). Lack of differentiation of the recipients of the climate information services needs to be sex-disaggregated based on knowledge, technology and economies. The Climate Information System needs to differentiate customers so that it is based on a differentiated understanding of men, women and other vulnerable groups. A differentiated understanding will enable tailoring solutions for the different target groups. This will be an inclusive approach as it looks at the different actors and identifies solutions built on their existing opportunities and limitations, instead a blanket solution that will not be appropriate.

The third systemic barrier is the “distance, disconnect, language, skillsets and other exclusion barriers that disable individual and/or collective initiatives to transformative change” (IWMI, 2020: 5). Women, who are far away from the capital, who cannot speak English, and do not have the skillsets to use and apply

Climate Information Systems cannot benefit. The geography of the farmers could render them less accessible by those providing climate information services. Chambers' seminal work on rural development articulately notes of the biases by development practitioners towards easily accessible by road – roadside biases, for example (Chambers, 1983). These challenges, coupled with other barriers at individual and collective levels, will further prevent women from accessing CIS and make them less likely to transform their lives and livelihoods in the face of climate change and climate variability. These systemic barriers clearly reflect an intersection of several systemic barriers that create a vicious cycle of poverty for women. Unless development interventions have a grounded understanding of such barriers, well-meaning attempts will not transform livelihoods for women, youths, and vulnerable communities.

Table 1 summarizes the opportunities for including Gender Equality and Social Inclusion within the Climate Information Systems within the three CIS components, namely the Agricultural Data Hub, Training and Flood and Drought Indicators. The table looks at gender considerations in column 1, which is linked to the assumption. The specific gender activity questions are then paused under the respective CIS activities.

Table 1: Framework for incorporating Gender in CIS

Gender consideration/Indicator	Agricultural Data Hub in Zambia <i>This aims to provide a consolidated data hub on agriculture, weather, climate and commodity markets data.</i>	CIS Training <i>This encompasses training on Climate Information Systems which will be provided to government department who will further train the farmers.</i>	Flood and Drought Indicators <i>These are indicators to be developed with the government of Zambia so that they will be used for planning and for the implementation of an Early Warning System.</i>
<p>1. Gender Targeting by Design</p> <p>Assumptions Who is targeted (men/women)? Who benefits? Who is systematically excluded? (power dynamics between various social & ethnic groups)</p>	<ul style="list-style-type: none"> • How was gender consideration taken into account? • What are the differential preferences for women, youths and men? 	<ul style="list-style-type: none"> • Was a gender training needs assessment conducted (lectures, exercises, hands-on practical, project work)? • What are the preferred training needs for women, youths and men? • What are the preferred training modalities for women, youths and men? 	<ul style="list-style-type: none"> • Are the indicators designed taking into account women, youths and men's interests into account? • What was the role of women, youths and men in deciding on the indicator focus?
<p>2. Sex disaggregated data collection</p> <p>Assumption <i>Intentionality must be demonstrated to collect sex-disaggregated data.</i></p>	<ul style="list-style-type: none"> • Does the Data Hub have sex-disaggregated data? • If no sex-disaggregated data is being collected, what are plans to ensure that sex-disaggregated data is collected? 	<ul style="list-style-type: none"> • Is gender-segregated data being kept for both the short term training and embedded in the educational systems? • If there is low participation by women, what is being done to rectify this? 	<ul style="list-style-type: none"> • Are the indicators sex-disaggregated? • Are we able to understand the differential impact of drought on women, youths, and men?
<p>3. Analysis of sex-disaggregated data</p> <p>Assumption <i>Sex-disaggregated data needs to be analyzed to inform CIS activities and decision making.</i></p>	<ul style="list-style-type: none"> • Is the sex-disaggregated data being analyzed as part of the Analytics? • How is gender data being visualized? • How are the automated decisions reflecting gender analytics? • 	<ul style="list-style-type: none"> • Is sex-disaggregated data being analyzed for climate-sensitive training? • If yes, what decisions are being made by agricultural extension based on the training analysis? 	<ul style="list-style-type: none"> • Is sex-disaggregated data being analyzed? • What drought and flooding decisions are being informed by the analysis?

<p>4. Dissemination technological options</p> <p>Assumption <i>The technological options selected to disseminate CIS has implications on gendered access.</i></p>	<ul style="list-style-type: none"> • How is the agricultural data hub going to be accessible to the different users? • What is the accessibility of the technology for women, youths and men? 	<ul style="list-style-type: none"> • What are the medium for the different training modules? • What are the considerations for women, youths, and men regarding technological options? • What is the language used for training, especially at the local level? • When is the training conducted? (suitable for women, youths). • Where is the training conducted? (gendered convenience) 	<ul style="list-style-type: none"> • What are the technological choices for disseminating drought and flood indicators? • What language is used? • What is the most appropriate technology to reach women, youths and other vulnerable people?
<p>5. Ongoing Gender Monitoring, and Empowerment Evaluation</p> <p>Assumption <i>Monitoring and empowerment evaluation offers an opportunity to assess gender performance and learn to make adjustments of the ongoing activities.</i></p>	<ul style="list-style-type: none"> • Is there use and access of the data hub by women, youths and men? • What is being done to encourage women and youths – if they are not using the data hub? • What are the potential complementary pathways for increasing women, youths and men? • Do women have knowledge, resources and agency to make use of the Agricultural Data Hub? 	<ul style="list-style-type: none"> • How is training impacting on women and men? • What are the emerging demands from women and men? • What changes need to be made to ensure that the interests of women, youths and men are differentially addressed? • Are we tracking sex-disaggregated data over time? • Do women have knowledge, resources and agency to participate and benefit from the CIS Training? 	<ul style="list-style-type: none"> • What are trends of drought on women, youths and men? • How are women, youths and men being differentially impacted by floods? • What are the coping mechanisms for drought and flooding for women, youths, and men? • What are the possible solutions specifically for women, youths and men? • Do women have knowledge, resources and agency to make use and benefit from flood and drought indicators information?

Conclusion

Climate Information Services have an opportunity to increase smallholder farmers' resilience against climate change and climate variability whilst enhancing their livelihoods. The AICCRA Zambia project through the agricultural data hub, training and drought and flood indicators provide solid evidence for enhancing smallholder farmer households. For the CIS to be gender inclusive and promote resilience for male and female farmers, development practitioners must ask questions at different stages to ensure that gender considerations and barriers are removed. The removal of barriers will enable women, youths, men and people with other vulnerabilities to have equal access to CIS to climate-proof their agricultural production. Climate services have great potential for transforming women's agricultural production in Zambia. If the CIS is built on a patriarchal ecosystem, this will further reinforce gender biases and stereotypes, which will reinforce further marginalization of women.

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