

INCLUSIVE, TRANSFORMATIVE AGRI-FOOD SYSTEMS

For Sustainable Healthy Diets, Better Nutrition, and Health

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CGIAR
GENDER EQUALITY
AND INCLUSION

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BETTER DIETS
AND NUTRITION



Bean diversity helps farmers tackle climate change - Uganda ©2016 CIAT/GeorginaSmith

INTRODUCTION

Considerable progress has been made on nutrition research that informs efforts to enhance food and nutrition security of the most vulnerable and socially excluded populations.

Yet, gaps remain in ensuring that all have healthy diets that promote growth; physical, social, and emotional development; and wellbeing, while preventing nutrient deficiencies and non-communicable diseases (NCDs) [1]. While undernutrition remains a critical concern, NCDs like hypertension, type 2 diabetes, and obesity are becoming more prevalent globally. Additionally, food production challenges such as the aging and outmigration of farmers, climate change and variability, and the limited adoption of sustainable production practices hinders the ability to source a diverse, sustainable, and nutritious diet. These challenges are exacerbated by neglecting gender equality and social inclusion (GESI) [2,3]. Women, youth, and socially excluded groups – such as indigenous communities, displaced populations or people with disabilities – face additional barriers to achieving food and nutrition security, including restricted access to resources, limited decision-making power, and reduced economic opportunities. To achieve greater impact, research and implementation efforts must prioritize gender and social inclusion by addressing the specific challenges faced by women, youth, the poor, and other socially excluded groups, requiring a thorough understanding of their unique obstacles and the compounded consequences from belonging to multiple socially excluded groups.

The need to address undernutrition and basic food security continues to be one of the main priorities for research. Child stunting and wasting, and women's underweight and micronutrient deficiencies are persistent problems globally [4]. Additionally, the prevalence of overnutrition and NCDs is increasing, with unhealthy diets among the primary risk factors [5]. Industrialized agri-food systems are a key driver of these negative health outcomes. Overconsumption of ultra processed foods along with micronutrient deficiencies contribute to rising rates of NCDs while failing to alleviate undernutrition [6]. Problems with water availability, accessibility, and quality negatively impact agri-food systems and contribute to poor health, nutrition, and well-being [7]. The simultaneous manifestation of undernutrition and overnutrition is the **double burden of malnutrition** and can manifest at the individual, household, or country level [8]. **Triple burden of malnutrition** can also occur in individuals or households as underweight, micronutrient deficiencies, overweight/obesity, or NCDs [9].

Currently, the most prevalent NCDs are cardiovascular diseases, cancers, hypertension, and diabetes, which together account for 74% of deaths across the world [6]. Globally, 43% of adults are overweight and 16% are obese [10], 11% of adults have type 2 diabetes [11], and 33% of adults are hypertensive [12]. Nutrient deficiencies have also been linked to poor mental health [13]. Yet, little is known about the role of healthy diets in improving and promoting mental health [14]. With 13% of adults living with a mental health disorder, according to the World Health Organization (WHO), the large economic and social consequences that confront this challenge highlight the importance

of better diets and nutrition to avoid these consequences [3].

Women play a dual role in improving dietary outcomes. They serve as agents of change, driving better nutrition and food security for their households, while also being significantly impacted by food insecurity and nutritional challenges themselves [15,16]. The existing high involvement of women in agri-food systems is an opportunity for enhanced food security. However, achieving this potential necessitates empowering women through education, economic recognition, and equitable sharing of household responsibilities [17]. Addressing disparities in education, full-time employment, and household income could eliminate at least 57% of the existing food insecurity gap between women and men [18]. Additionally, women's empowerment influences dietary diversity, food security, nutritional status, and the use of antenatal and infant care services for women and children [2,3,27,28,19-26].

However, most of the literature connecting women's empowerment, health, and nutrition has been in the context of undernutrition. Many of the women's empowerment tools and metrics currently in use were designed in the context of undernutrition, with little clarity about how to leverage women's empowerment to improve diets and reduce overnutrition, micronutrient deficiencies, and NCDs [3]. Only a handful of studies explore the associations between women's empowerment and mental health [29-31]. Lastly, gender research on nutrition, and health needs to extend its focus beyond the individual

and look at how women relate not only to men, but also to other important individuals, their families, communities, and other layers of the food environment and food systems.

Attention to gender and social inclusion in agricultural research is essential to promote equity within agri-food systems by addressing structural barriers that prevent women and socially excluded groups from accessing resources, decision-making, and economic opportunities in food production and distribution [19]. Incorporating gender-sensitive and transformative approaches into agricultural development projects enhances productivity and improves food security outcomes [32]. Methods that incorporate gender equality, social inclusion, and intersectionality help to identify the specific needs and vulnerabilities of women and socially excluded groups in agri-food systems, leading to more targeted interventions [33-35]. The lack of gender-disaggregated data and consistent metrics to assess gender disparities in access to resources poses a challenge to evidence-based policymaking [36]. Driven by the current state of evidence, this brief describes existing methods, metrics, and tools and discusses emerging challenges related to achieving healthy diets that address all forms of malnutrition, mental health, and the role of women, youth, and other socially excluded groups in these challenges. Its goal is to emphasize the importance of integrating gender equality, youth, and social inclusion into research and development efforts for better diets, nutrition, and health.

KEY ESTABLISHED RESEARCH METHODS, METRICS, AND TOOLS

ESTABLISHED METRICS AND TOOLS

A variety of tools and metrics have been used to assess women's empowerment and understand the relationship between **women's empowerment** and their nutritional status, diet, and health outcomes [22,37].

The Women's Empowerment in Nutrition Index (WENI) was specifically designed to measure women's nutritional empowerment, defined as "the process by which individuals acquire the capacity to be well fed and healthy" [3]. WENI captures multiple dimensions of women's empowerment, particularly as they relate to nutrition [3]. An abbreviated version, A-WENI, simplifies the original WENI from 33 to 20 indicators, making it easier to apply in various contexts [38]. Although not initially developed to examine diet and nutrition outcomes, the most widely used tool to measure women's empowerment in agri-food systems is the Women's Empowerment in Agriculture Index (WEAI), its abbreviated (A-WEAI) and project-level (Pro-WEAI) versions, and most recently the Pro-WEAI for Health and Nutrition, which focuses on women's agency in health and nutrition

domains. Associations between WENI and WEAI and women's nutritional status and dietary diversity have been demonstrated in numerous contexts [3,19,38].

Nutritional status is most frequently determined through anthropometric measurements such as weight and height. For women, height and weight measurements are used to calculate body mass index (BMI) and subsequently categorize women as underweight, normal weight, overweight, or obese [39]. Additional indicators exist to measure central and abdominal adiposity in women; however, they require measurement of waist and hip circumference in addition to weight and height [40-42]. For children under five years of age, malnutrition is assessed using height/length-for-age Z-score, weight-for-age Z-score, and weight-for-height/length Z-score, based on the WHO's Child Growth Standards [43]. Child stunting, underweight, and wasting – indicators derived from anthropometric Z-scores – are used globally to track progress in reducing child undernutrition [44]. WHO references exist for older children (5-18 years of age), permitting the assessment of underweight, overweight, obesity, and stunting [45]. Mid-upper arm circumference (MUAC) can also be a useful indicator for women

and children's nutritional status alone or in combination with other indicators. Micronutrient deficiencies are often measured by blood samples to assess vitamin and mineral status.

The Minimum Dietary Diversity for Women (MDD-W) guide provides a standardized method to measure **dietary diversity** [46]. MDD-W assesses the variety of food groups consumed within a 24-hour period. Consuming at least five out of ten food groups is considered adequate dietary diversity. Although MDD-W was developed to measure dietary diversity, consistent evidence shows that it is a good proxy for micronutrient adequacy [47]. Recently, MDD-W has been validated for use in children, adolescents, and men [48-51]. The Global Diet Quality Score (GDQS) provides a standard metric to assess **diet quality** [52]. GDQS comprises 25 food groups: 16 healthy ones, seven unhealthy ones, and two food groups that are unhealthy when consumed in excessive amounts. GDQS is scored by assigning points based on consumed amounts and giving more points for higher intake of healthy foods and lower intake of unhealthy foods. Associations between GDQS and nutrient adequacy and nutritional status in women have been previously demonstrated in several contexts [53-55].

Various tools exist to assess **food security** at the household level. Household Income and Expenditure Surveys (HIES) are a valuable tool for assessing food security. They provide data on income, expenditure, and other indicators of vulnerability. The food security scale, derived from HIES data, measures the severity of food insecurity experienced by households [56]. Other commonly used metrics to assess household-level food insecurity are the Household Food Insecurity Access Scale (HFIAS), the Household Hunger Scale (HHS), and the Food Insecurity Experience Scale (FIES) which assess the frequency of experiencing food access challenges over a set

period, usually four weeks [57-59]. Of these metrics, only FIES measures individual-level food insecurity.

Non-communicable diseases (NCDs) comprise several chronic conditions of long duration that result from numerous risks, including behavioral and environmental risks [60]. The WHO developed the STEPS framework for standardized measurement of NCDs and their risk factors globally [61].

Mental disorders (e.g., depression, anxiety, post-traumatic stress disorder) contribute to morbidity and mortality globally [62,63]. These conditions usually require a clinical diagnosis by a trained medical professional. However, multiple tools exist to screen for mental health problems in field settings. These tools consist of a set of questions on whether the respondent experienced depression, anxiety, stress, or psychosomatic symptoms over a set time (usually two or four weeks). Among the most frequently used tools are the WHO Self-Reporting Questionnaire (SRQ-20) [64], the Hopkins Symptoms Checklist [65], the Patient Health Questionnaire [66], and the Center for Epidemiologic Studies Depression Scale (CES-D) [67].

Water security is defined as sustainable and reliable access to adequate quantities of safe and acceptable quality water to meet all needs [68]. Water security comprises issues that relate to water availability (drought, flooding), accessibility (reliability, distance), affordability (cost), and quality and safety (e.g., presence of chemicals and pathogens). These issues can impact both agri-food systems, including aquatic and animal source foods, and human health. A commonly used tool to measure individual and household water insecurity is the Water Insecurity Experiences Scale [7,69]. Water and sanitation access and quality are also frequently assessed via self-reported questionnaires in population-level surveys.



ESTABLISHED METHODS

To effectively address malnutrition, it is essential to implement robust metrics for measuring its prevalence, severity, and impact on different social groups [70].

This involves conducting **nutritional risk assessments** and screenings using both clinical and non-clinical approaches and focusing on differences between different population groups (e.g., women, adolescents, men). Established approaches to measure health and nutrition in women of reproductive age and children under five years of age include the Demographic and Health Surveys (DHS) and the UNICEF Multiple Indicator Cluster Surveys (MICS). The WHO Global School-based Student Health Surveys (GSHS) is a standardized method to measure health and nutritional status in

adolescents. As mentioned above, the WHO STEPS framework is a standardized approach to measure NCDs, including nutritional status, in adults.

GESI assessments are also necessary to understand the state of GESI issues and how they evolve over time. Standardized gender assessment methods include the Food and Agriculture Organization (FAO) Country Gender Assessments, designed to understand gender issues in agriculture. The World Bank Country Gender Assessments take a broader perspective to examine challenges beyond just agriculture. Other tools to measure gender differences in food access and nutrition include the Household Dietary Diversity Scores (HDDS), Individual Dietary Diversity Scores, MDD-W, Children's Dietary Diversity Scores (CDDS), and the HHS [71].

FUTURE AGENDA - FRONTIER RESEARCH

The future agenda includes ten frontier areas: seven areas of innovation and three areas of policy and capacity (**Figure 1**). **Table 1** summarizes key research questions and objectives, evidence gaps, and solution approaches. Three of the seven areas of innovation are related to impact areas or outcomes that need more attention in the future. These are: (1) NCDs and mental health, (2) malnutrition - both undernutrition and overnutrition, and the triple burden of malnutrition, and (3) water security.

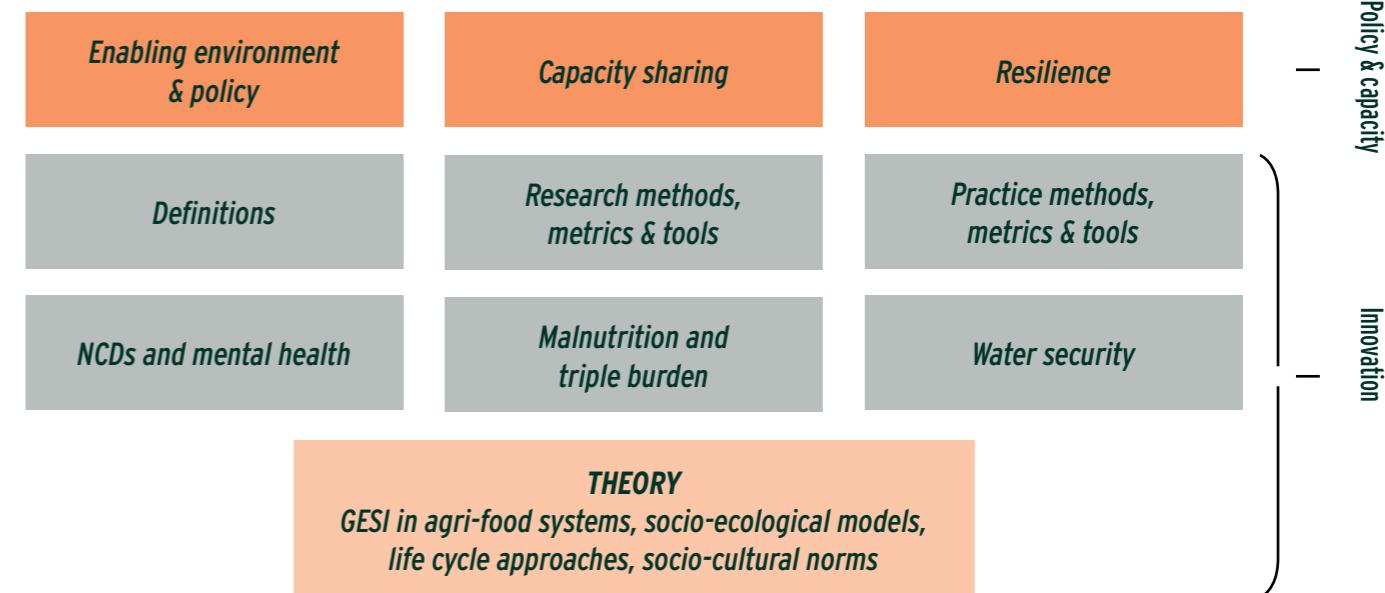


Figure 1: Frontier research on gender for healthy diets, nutrition, and health

FRONTIER AREA ON “THEORY”

Action-oriented theoretical or conceptual frameworks, socio-ecological frameworks, and life-course/cycle frameworks are needed to unpack the linkages between gender and frontier impact areas like “NCDs and mental health”, “malnutrition and the triple burden”, and “water security”. Theoretical frameworks should focus on how, why, and when women’s empowerment (and other GESI domains) is associated with frontier impact areas. These frameworks should be action-oriented, proposing solutions to leverage gender and transform gender norms to improve outcomes. Such action-oriented conceptual frameworks will help ground the future agenda, increase rigor of research, and design theory- and evidence-based interventions to improve outcomes.

FRONTIER AREA ON “DEFINITIONS”

Current definitions of youth and inclusion vary across countries, disciplines, and institutions. For example, while the CGIAR Gender Platform, United Nations, and WHO define youth as people 15-24 years of age, for the East African Community youth are 15-35 years of age.

FRONTIER AREA “RESEARCH METHODS, METRICS, AND TOOLS”

Although validated metrics and tools exist, there is a need to further improve them to help diagnose GESI issues in the context of agri-food systems (shortcomings described above). This will also help to determine if actions to improve GESI are working. Frontier areas include adapting women’s empowerment metrics for use in analyzing overnutrition and agri-food systems, including GESI domains in food

Socio-ecological and socio-cultural models could be a useful starting point to expand gender research beyond the focus on the individual. These models capture different levels that influence gender and outcomes, e.g., individual, household, family, community, and built environment. Nevertheless, there is a need to expand these models to be action oriented and grounded in agri-food systems with clear GESI domains that define the levels where action and research are needed. These models should recognize the evolution of gender norms and gender differences in diet, health, and nutrition over the life course and identify and suggest actions for gender transformation in a holistic and sustainable way throughout the life course.

FRONTIER AREA “PRACTICE METHODS, METRICS, & TOOLS”

New methods, metrics, and tools are needed to deliver innovative GESI research and solutions for improved nutrition, diets, and health. These methods should build on the established tools for inclusive digitalization and the use of artificial intelligence and information technology (IT) to deliver gender-responsive, gender-transformative, and inclusive innovations to promote sustainable healthy diets, nutrition, and health outcomes. This area focuses on how to incorporate digital tools in programming and how to make them more inclusive and gender transformative.

There is urgent need for research and interventions that involve men, boys and communities, to **transform gender norms** to improve nutrition, diets, and health. Interventions and policies need

Better understanding of how definitions differ, how they influence research and implementation, and how they should be harmonized will improve the design of actions and policies to apply GESI.

environment and food systems metrics, developing food security and diet quality metrics across socio-ecological levels (**Table 1**). Assessments to characterize other GESI dimensions (regarding youth and socially excluded groups in agri-food systems) are also needed. Looking ahead, there is a need to use these new or adapted tools in GESI assessments of agri-food systems interventions.

to tackle gender barriers, social inequities, and norms that restrict the participation of women and young people.

Another frontier area is the **co-creation of solutions** through program design for improved nutrition, diets, and health that are inclusive and gender transformative. Co-learning between programs and policies to leverage their various strengths is also needed. This will radically improve **intervention design**. Rigorous impact evaluations on the effectiveness and cost-effectiveness of potential solutions can guide efforts for **scaling them up**. Mixed-methods studies, operations research, and process evaluations can help improve the implementation of gender-transformative solutions.

FRONTIER AREA “CAPACITY SHARING”

Capacity strengthening and institutional change are needed to enhance **research and implementation of inclusive, gender-**

FRONTIER AREA “RESILIENCE”

Improved nutrition, diets, and health must be resilient to climate change, humanitarian crises, urbanization, conflict, and displacement. To improve resilience to climate change we need: (1) research on alternative food sources, including GESI principles for production, consumption, processing and marketing; (2) effective and scalable interventions to reduce food waste and food loss; and (3) and inclusive and gender-transformative interventions for shifting dietary behaviors and patterns towards climate-friendly foods.

Resilience depends on gender-transformative interventions, as well as collaborations with all stakeholders and disciplines to comprehensively address agri-food systems issues. Nutrition-sensitive social protection programs which work to build resilience and improve nutrition can be leveraged and their design improved to include GESI principles. Resilient behaviors should also be promoted. For example, holding onto assets during climatic shocks may enable households to meet their long-term food needs. The effectiveness of different approaches to building and maintaining resilience should also be assessed.

LINKAGES WITH SCIENCE PROGRAMS AND ACCELERATORS

Integrating research on nutrition, health, and food security with other Science Programs and Accelerators is crucial for establishing an evidence base that enables transformative and inclusive agri-food systems.

The **Gender Equality and Social Inclusion (GESI) Accelerator** plays a catalytic role for ensuring that interventions prioritize the empowerment of women and socially excluded groups and foster equitable participation in agri-food systems. The **Better Diets and Nutrition** Science Program focuses on targeted interventions to combat all forms of malnutrition, especially among socially excluded populations, by integrating gender-sensitive approaches that address the barriers faced by socially excluded social groups. The **Breeding for Tomorrow** Science Program, and the **Animal and Aquatic Food** Science Program, play a vital role in developing resilient, nutrient-dense crop varieties and livestock breeds, as well as enhancing aquatic food sources that can withstand climate change.

The **Multifunctional Landscapes** Science Program supports diverse diets while empowering women farmers. **Policy Innovations** are essential for developing frameworks that promote food sovereignty, sustainability, and equitable access to nutritious foods, ensuring that socially excluded groups have a voice in framing policies and supporting their implementation. Establishing a strong evidence base is further enhanced by the **Digital and Data** Accelerator, which leverages innovative technologies to improve data accessibility and inform decision-making, empowering households and communities to make healthier dietary choices. The **Capacity Sharing** Accelerator aims to build skills and knowledge among stakeholders, promoting the exchange of best practices to enhance local capacities. These programs and accelerators contribute to a comprehensive strategy that fosters robust food environments and systems, improving nutrition, diet, and health outcomes for the most socially excluded populations.



Interview with a woman farmer outside of Siem Reap - Cambodia
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Table 1 Key frontier areas: Research questions, objectives, evidence gaps, and solution approaches

Frontier area	Research questions or objectives	Evidence gap (existing methods and limitations)	Solution approaches we need and why	Link to Science Programs/ Accelerators	Priority (high/ medium/ low)
Theory	Develop action-oriented theoretical frameworks on the links between women's empowerment (and other GESI domains) and frontier impact areas (NCDs and mental health, malnutrition and the triple burden, and water security)	Existing theoretical frameworks have illustrated the role of women's empowerment in improving diet and nutrition outcomes. However, their definitions of empowerment, diets, and nutrition are too broad. As a result, they fail to elucidate the pathways through which empowerment can work to improve specific outcomes in specific populations [37]. These frameworks should more clearly reflect how socio-ecological levels influence these pathways across the life course.	Well-developed, action-oriented theoretical frameworks that clearly and comprehensively outline impact pathways will improve the design of interventions, and assessments that leverage women's empowerment. The roles of men, boys, and communities are clearly recognized.	Better Diets and Nutrition Animal and Aquatic Food systems	High
	Develop and test socio-ecological and socio-cultural food systems or with GESI in mind	Existing socio-ecological and socio-cultural models were not explicitly designed for agri-food systems or with GESI in mind	Gender Equality and Inclusion Socio-ecological and socio-cultural models grounded in agri-food systems models with GESI domains and proposed actions at each level will help programs, policies, and interventions consider all relevant levels and GESI domains. The roles of men, boys, and communities are clearly recognized	Gender Equality and Inclusion	High
How to integrate lifecycle and socio-ecological approaches within research and implementation?	Traditionally focus is on specific age groups (e.g., adolescents, women of reproductive age) without recognizing the evolution of gender issues over time and the need for gender transformative approaches with a lifecycle approach.	Result in lifecycle and socio-cultural approaches with a holistic and sustainable approach to gender transformation. The roles of men, boys, and communities are clearly recognized.	Result in lifecycle and socio-cultural approaches with a holistic and sustainable approach to gender transformation. The roles of men, boys, and communities are clearly recognized.	High	
Defining key concepts	Understanding how youth and inclusion are defined in the context of diets, nutrition, and health	Current definitions of youth and inclusion are very broad and not fully adapted to nutrition, diets, and health. Definitions often can vary across countries, disciplines, and organizations	Definitions of youth and inclusion that are particularly adapted to nutrition, diets, and health. These definitions may differ from the ones used in other disciplines. Collaboration across disciplines is necessary, especially given the physiological and biological requirements of different age groups. These are well-understood in the nutrition and health communities but not necessarily by other disciplines.	Better Diets and Nutrition Policy Innovations Gender Equality and Inclusion	Medium
	What empowerment metrics to use in the context of overnutrition and agri-food systems?	Existing metrics were developed for undernutrition contexts and specific livelihoods	Need to review and revise existing metrics or develop new ones to measure empowerment in the context of overnutrition and agri-food systems. This will help track program's impact	Better Diets and Nutrition Scaling up Gender Equality and Inclusion Capacity Sharing	High
Research methods, metrics, and tools	What GESI domains to incorporate in food environment and food systems metrics?	Need metrics that can be used to understand unequal access and unequal risks across the food system, including production and processing, diets, nutrition and health	Need to develop metrics because food systems are highly gendered and unequal. Determine which domains to add, why, and how. Will help to diagnose the problems, and to measure whether actions work.	Better Diets and Nutrition Animal and Aquatic Food systems	High
	Develop food security metrics across socio-ecological levels	The roles of men, boys, and communities are clearly recognized.	The roles of men, boys, and communities are clearly recognized.	Better Diets and Nutrition Breeding for Tomorrow Policy Innovations Scaling up	Medium
	Develop diet quality metrics across socio-ecological levels	Food security is measured at the household level. There is a need to understand it at the community and market levels as well as to understand interactions across levels Diet diversity is not as useful in the context of overnutrition and NCDs	Metrics should map to the socio-ecological and life course models developed under "theory". Will help not only to diagnose the problems, but also to measure whether interventions and innovations work.	Better Diets and Nutrition Policy Innovations Scaling up Gender Equality and Inclusion	Medium

Frontier area	Research questions or objectives	Evidence gap (existing methods and limitations)	Solution approaches we need and why	Link to Science Programs/ Accelerators	Priority (high/ medium/ low)
Practice methods, metrics, and tools	Develop capacity in implementers and researchers for delivery and assessment of inclusive and transformative digital innovations	Access to information and communication technology (ICT) is unequal by gender and wealth groups, among other characteristics. Use of digital tools is not fully inclusive. There is limited capacity in implementers for delivery of inclusive and transformative digital interventions and in researchers for evidence generation	Equitable and inclusive access to ICT. Digital tools that are gender-inclusive, responsive, and transformative. Inclusive interventions to promote sustainable healthy diets, nutrition, and health outcomes	Digital and Capacity Sharing Accelerators	Medium
	Develop capacity to deliver gender-transformative intervention that include men, boys, and communities	Nutrition and diets research and implementation are gendered. They often focus mostly on women and girls, perpetuating norms that women and girls are responsible for nutrition.	Impact assessment, particularly causal ones, of potential solutions using quantitative and qualitative methods to inform replication and scaling up	Digital and Capacity Sharing Accelerators	Medium
Capacity sharing	Co-create solutions through a strategic and systemic program design for better diets, nutrition, and health that are inclusive and gender transformative	All individuals deserve equal opportunities to thrive and have a voice in the decisions that shape their households and communities' food security.	Solutions designed to pivot around the everyday experiences of individuals and communities, and foster equitable and inclusive norms around diets, nutrition, and health	Better Diets and Nutrition	Medium

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ABOUT THIS SERIES

This brief produced jointly by the CGIAR Gender Equality and Inclusion Accelerator and the CGIAR Science Programs, is one in a series of agenda-setting briefs that aim to further develop an agenda for strategic areas of gender and social inclusion research within the new portfolio of CGIAR Science Programs and Accelerators, and inform the development of gender and inclusion strategies for these moving forward. The briefs are the culmination of a collaborative work that started during the CGIAR GENDER Science Exchange 2024 that convened 72 gender researchers from across the CGIAR to bring together experiences, ideas and insights from across centres, that can help in developing a gender strategy for the SP in the future.

About CGIAR Gender Equality and Inclusion (GENDER Accelerator)

CGIAR Gender Equality and Inclusion is CGIAR's Accelerator working to put equality and inclusion at the heart of food systems research and development. The Accelerator leads strategic and innovative research that advances gender equality, opportunities for youth, and social inclusion across CGIAR's Food, Land and Water Systems portfolio.

Cover: Dolakha district in the area affected by the earthquake - Nepal. Photo Marcel Crozet / ILO