



GENDER Impact
Platform



BOOK OF ABSTRACTS

FROM RESEARCH TO IMPACT:
Towards just and resilient agri-food systems

9–12 October, 2023 | New Delhi, India

genderagrifoodconf2023.org



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2.30-4.00

DAY 1 · Monday, October 9 · Parallel sessions

1.1A · FROM CRISIS TO CATALYST: WOMEN REDEFINING RESILIENCE IN AGRI-FOOD SYSTEMS

Gendered impacts of the COVID-19 pandemic on the food systems in the Philippines

Glory Dee Romo, University of the Philippines Mindanao

Jon Marx P. Sarmiento, Geraliza Wahing, Francis Levi Durano, Adonis Traje

All sectors have been introduced to vulnerabilities resulting in lower food availability and accessibility during the COVID-19 pandemic. This study aimed to determine the vulnerability drivers of food systems in the Philippines during the COVID-19 crisis and how the actors were able to adapt to this crisis through a modified resilience causal pathway. Data were gathered from 353 participants (181 farmers, 29 traders/wholesalers/retailers, 61 processors, and 82 who are involved in logistics) nationwide. Of this total number of participants, 143 were male; 207 were female; and three were Lesbian, Gay, Bisexual, Transgender, and Intersex (LGBTI). The findings show that food systems were highly disrupted due to the COVID-19 crisis. Gendered vulnerabilities in the food system were reflected in the following issues: (i) supply and quality issues, caused by increase in prices of material inputs, increase in operational costs, limited transportation, and decrease in human resource availability causing businesses to suspend operations; (ii) income and profit issues such as loss of jobs, decrease in food demand, and additional expenses for COVID-19 safety and prevention; (iii) financial issues such as the use of family/business savings and increase in formal and informal debt; (iv) biological and environmental issues of health concerns, and fear of getting and being exposed to COVID-19 virus; (v) management issues like adjustments made to adapt to the new normal; and (vi) policy and regulatory issues such as difficulty in purchasing and distributing food

products due to travel restrictions, working guidelines, and travel requirements. Consequently, various actions were taken by the stakeholders to adapt to these vulnerabilities.

Gender and social-inclusion impacts of climate change, COVID-19 shocks and stresses on agriculture and food systems in Tanzania: The case of Maasai women in Chalinze district

Elizabeth Lulu Genda, Mzumbe University

Consideration to gender matters is important for the equity of climate change adaptation programs and effective food security. The overlaying global socioecological emergencies of climate change and the COVID-19 pandemic have simultaneously impacted food security. The study assessed the impacts of climate change and COVID-19 outbreak on food security among Maasai using gender lenses. The paper is a result of mixed-methods research design that mainly relied on interviews, focus group discussion, and questionnaire. The findings shows that Maasai women were facing difficulties caused by climate change long before COVID-19 outbreak due to their nomadic nature, where men migrated with livestock to areas with better pasture and water for livestock—leaving behind women and children. This affected women because they depend on milk and its products for family consumption and income; consequently, absence of livestock triggered food insecurity. The study recommended that government and its agencies and stakeholders: increase their consideration to the climate change stresses on agriculture and food systems through gender programs; strengthen the integration of research into climate adaptation programs; increase advocacy for coping with climate change—related risks in relationship to nature and ecosystems and values that drive inequalities in development and resist social reforms.

Gendered challenges and coping strategies of women smallholder farmers during the COVID-19 pandemic in Nepal's Terai region: A feminist political ecology perspective

Dipika Das, Global Institute for Interdisciplinary Studies (GIIS)

This study addresses the knowledge gap regarding the specific gendered challenges faced by women smallholder farmers and the coping strategies deployed by them during the COVID-19 pandemic. The study investigates how power dynamics, gender norms and sociocultural practices at the household and community levels affected the women farmers' coping mechanisms from a feminist political ecology perspective. It reports a study carried out in the Terai region of Nepal using mixed methods that combined quantitative and qualitative tools such as household surveys, focus group discussions, and key informant interviews. The study found that mobility restrictions disproportionately affected women farmers due to prescribed gender roles, limiting their access to input supplies and hire of agricultural labor during the pandemic. Women farmers' ability to sell their produce in the market severely impacted their livelihoods. Gender played a critical role, as women farmers rely more than men on their social networks for livelihood support. As these networks became disrupted during the crisis, perceptions of bargaining power between female and male farmers differed. The findings emphasize the need for gender-responsive interventions and institutional support during crises. The state and supporting organizations must prioritize meeting the gender-specific needs of smallholder farmers, ensuring accessibility of essential inputs and improving market infrastructure. Information-sharing mechanisms and secure financial provisions should be established to assist farmers, particularly women, in making informed decisions and mitigating economic shocks. This study contributes to evidence-based policies and programs that promote resilience, inclusion and sustainable agricultural development.

Does COVID-19 impact female and male farmers differentially? An insight from a study in Eastern Gangetic Plains of India

Soumyadeep Das, Uttar Banga Krishi Viswavidyalaya

This article aims to throw some light on the differential impact of COVID-19 and consequent coping strategies of women and men farmers, using household survey

data from the functional heads of 602 farming households of two northern districts of West Bengal, India. Studies showed that lockdowns induced by COVID-19 had far-reaching impacts on the rural agricultural sector, especially on women farmers. The pandemic had negative consequences on local food systems and supply networks. Now, the question is: How did it affect the farming folk regarding concerns, constraints, coping strategies, etc.? Our analysis found no significant difference between the female and male farmers regarding concerns and constraints faced, and the coping strategies adopted. About 70% of the respondents perceived market access limitation to be the topmost concern and about 71% of the respondents relied on their own savings as the topmost coping strategy. The study indicates an almost equal participating attitude of farm women along with the male in perceiving the concerns, working out the response strategies and others during this pandemic. We need proper planning and initiatives to foster this silent and positive change in the economy.

1.1B · GENDER EQUALITY AND SOCIAL INCLUSION IN AGRICULTURAL AND FOOD SYSTEMS: AN INNOVATIVE APPROACH TO EXAMINATION (CAPACITY STRENGTHENING)

ORGANIZER: Serena Stepanovic, World Vision

SPEAKER/CHAIR: Jedidah Ganira, World Vision Kenya

World Vision, in partnership with FAO, led the development of a framework bringing together food security, nutrition and livelihoods alongside gender equality and social inclusion (GESI) principles—all supportive elements for ensuring transformative, inclusive development—that built on past exploratory research using a gendered lens to mainstream nutrition into agri-food systems. The resulting agri-food systems and GESI assessment methodology that operationalizes this framework aims to identify critical impact pathways that exist at the intersection of GESI domains (access, decision-making, participation, systems, well-being) and agri-food systems (food supply chains, food environments, consumer behavior) and associated drivers of change. Through an assessment of agri-food systems and GESI, gender and inclusion barriers and opportunities within these systems are identified and leveraged (where needed) to ensure the activity is or works to become GESI transformative. Since summer 2022, this approach has been piloted in five sub-Saharan countries and this will be expanded to Southeast Asia. Through this interactive

capacity-strengthening session, we will first introduce the framework and assessment methodology, then through one of three distinct hands-on experiences, participants will then have the opportunity to apply the framework to their own activity/program (tailoring the assessment and queries that can support examination of these issues in their specific context and agri-food system) or through exploratory case studies involving select programs related to agri-food systems, climate, consumer behaviors and/or inclusive market-systems development

1.1C · PREPARING FUTURE-READY YOUTHS FOR AGRI-FOOD CHALLENGES

ORGANIZER: Seema Jaggi, Indian Council of Agricultural Research (ICAR)

CHAIR : Dr. R.C. Agrawal, Indian Council of Agricultural Research (ICAR)

*PANELISTS: P.S. Pandey, RPCAU Samastipur, Bihar
Laura Estelle Yeyinou Loko, Ecole Nationale Supérieure des Biosciences et Biotechnologies Appliquées (ENSBBA)*

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Neerja Prabhakar, SKLTSU, Hyderabad

The changing dynamics of the global economy and the increasing demands of our growing population require exploring innovative solutions to enhance agricultural productivity, sustainability and profitability. Agricultural education has a profound role to play in shaping the future of sustainable agriculture. The objective of the session is to share and discuss the issues related to the transformations and reforms in agricultural education to develop a skilled, adaptable and future-ready workforce that can tackle the challenges of a rapidly changing world—especially with regard to agricultural and food challenges—and to discuss how the next generation of agricultural professionals—women and men—can be equipped with the skills, knowledge and mindset needed to address contemporary agricultural challenges. As the world seeks solutions to address climate change, food security and rural development, future-ready agricultural professionals must emerge—individuals who are equipped not only with practical skills but also with a deep understanding of sustainable practices and global challenges. The session will also

provide a forum for delegates from different parts of the world to interact and exchange information about the agricultural education system being adopted in their respective countries.

1.1D · SEEDING GENDER EQUALITY

Exploring behavioral factors in varietal uptake through a gender lens: evidence from a multicountry, multicrop qualitative study

Martina Cavicchioli, International Institute of Tropical Agriculture (IITA)

This contribution presents the preliminary results of a qualitative study complementing an experimental design conducted in Nigeria, Kenya, Ethiopia, Uganda, and India under Work Package 3 of the One CGIAR Market Intelligence initiative. The aim of this multicrop and multicountry study is to understand the factors driving or hindering women and men producers and consumers in varietal adoption. By showcasing evidence collected through focus group discussions and interviews with farmers from various gendered social groups and seed-sector actors, this qualitative study aims to contribute a gender perspective to behavioral intelligence research that will ultimately inform both global and country-specific equitable seed promotion and delivery strategies and accelerate the uptake of gender-responsive varieties. Our results suggest behavioral attitudes such as risk aversion based on previous experiences with improved variety and knowledge gained through community seed-delivery channels or peer-to-peer exchanges are critical in driving decisions about varietal adoption for both women and men. However, if unpacked through a gendered, intersectional lens, behavioral attitudes appear as a composition of multiple barriers and drivers that are differently experienced and, most importantly, prioritized by women and men. Among the most reoccurring are trait preferences (as referred to local production and consumption habits as well as gender roles in crops' farming and processing), access to seed promotion and dissemination channels (radio, extension services, champion farmers), participation in community networks, availability of fertile soil, and income.

Designing gender-transformative interventions in the commercialized cassava seed system in Tanzania

Millicent L. Liani, International Institute of Tropical Agriculture (IITA)

Steven M. Cole, Emily Hillenbrand, Kiddo Mtunda, Chiedozie Egesi, and Hale A. Tufan

Research on gender inequality in seed systems has underscored the need to build more inclusive interventions. For gender-transformative (GT) interventions in seed systems to succeed, there is urgent need to test new models which should be guided by empirical evidence. We present findings from research that unraveled the underlying causes that prevent women and youth from actively participating and benefiting as cassava seed entrepreneurs (CSEs). This study underpins the designing and testing of GT interventions as part of the Muhogo Bora cassava seed systems project in Tanzania. We employed participatory action research methods to facilitate 10 co-creation discussions with CSEs and community leaders across two districts in Kigoma and Tabora regions. Key constraints identified included—women's and youth's lack of access to land, financial capital, and agricultural extension services; women's lack of decision-making powers and disproportionate involvement in unpaid care work, and gender-based violence—all of which are shaped by discriminatory formal and informal social institutions. CSEs and community leaders advocated for the use of interventions that create awareness of human and land rights, and the value of joint decision-making on the use of family income via community dialogues, local theaters, and radio stations. Youth capacities to run agribusinesses, and establishment of CSE associations for affordable credit were also emphasized. Local collaborators to support the GT interventions was proposed. Our study offers valuable insights for transforming cassava seed systems through community-led processes that aim to foster critical reflections about gender-based constraints, while establishing spaces and avenues for positive change.

Impact of gender on trait prioritization and food product profile (fufu) development in Nigeria: Guide to breeders

Tessy Madu, National Root Crops Research Institute Umudike

Solomon Nwafor, Nnaemeka Onyemauwa, Blessing Ukeje, Mercy Ejechi Benjamin Okoye

Cassava is a good source of dietary fiber and essential source of energy, and it is a food-security crop which

fits well into the farming systems of the smallholder farmers in Nigeria; especially for women providing sustained means of livelihood. Fufu a staple food in the South East and North Central regions of Nigeria, usually described as a “wet paste” food product that can be sold in wet form as an intermediate product or fufu dough ready to eat. Demand-driven breeding strategies are fast gaining prominence in the agricultural research centers globally. It has become important to consider specific user groups and their desired trait preferences in order to develop product profiles to inform breeding decisions. This study integrates RTBfoods project outcomes on fufu to identify gendered trait preferences among consumers in Nigeria. Consumer testing of fufu was carried out among 300 consumers (65.66% and 34.33% women and men, respectively, with 150 from each region) who were invited to test five fufu products made from cassava varieties with different quality characteristics. Results show that the improved clones compared favorably, or were better, than the local results for roots and fufu mash assessment. Smoothness and mouldability ranked high in terms of importance, followed by stickiness, stretchability and color, while hardness/softness and aroma were ranked the lowest. These are expected to guide breeders in trait prioritization and enhance the adoption of improved varieties.

Diverse pathways toward inclusive seed markets in sub-Saharan Africa

Eileen Bogweh Nchanji, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Lutomia Cosmas and Fredrick Ouya

Seed-systems development is crucial for enhancing agricultural productivity in sub-Saharan Africa, with a particular emphasis on inclusivity and prioritization of smallholder producers, especially women. Preliminary results from data collected in five countries in Eastern and Southern Africa reveal significant variations in seed producers' participation in institutional innovations. Zimbabwe exhibits high rates of contract arrangements (97%) and partnerships (100%), while Burundi and DR Congo show the least involvement (7% and 24%, respectively). These differences affect farmers' access to certified seed, seed production volumes, and market participation rates. However, gender-disaggregated results highlight potential disparities in the benefits of institutional solutions. On average, men tend to have higher participation rates in contract farming (49%) and partnerships (78%) compared to women (36% and 67%, respectively), potentially leading to gender disparities in market access. Although women farmers have a higher usage of improved seed (36%) compared to men (31%), a significantly higher

percentage of men (79%) participate in the output market compared to women (71%). Furthermore, women are more likely to focus on bean farming for household food security using improved seed (45%), while men prioritize market-oriented seed production (25%). These findings emphasize the importance of considering local contexts when designing and implementing institutional innovations to address gender gaps in seed systems. Prioritizing gender inclusivity requires developing policies that promote equal representation and participation of women in institutional arrangements. By doing so, seed systems can be better tailored to meet the diverse needs and challenges of men and women farmers.

1.1E · TELL ME MORE: HOW TO TURN EVIDENCE AND EXPERIENCES INTO PERSUASIVE STORIES AND INFLUENCE POLICIES, PRACTICES AND BEHAVIORS (CAPACITY STRENGTHENING)

ORGANIZER/CHAIR: Marianne Gadeberg, CGIAR GENDER Impact Platform

PANELISTS: Nirmala Nair, Kaboom Social Impact Olamide Deborah Nwanze, International Institute of Tropical Agriculture (IITA) Namita Singh, Digital Green Shalini Singh, People's Archive of Rural India (PARI)

This capacity-building session is for researchers and practitioners interested in learning more about how to turn evidence and experiences into compelling stories that can influence policies, practices and behaviors for greater equality in food systems.

Storytelling has been widely acknowledged as a basic mode of communication and knowledge acquisition. Past research, particularly that focused on public health, has documented that, for example, using storytelling to communicate scientific evidence increases the likelihood of audiences recalling the evidence at a later point. Likewise, policymakers have been found to rely on narrative evidence for effective policy making. Lastly, long-established narratives dominate different policy and other decision-making spaces and determine which framing of evidence and experiences is likely to resonate with stakeholders in these spaces.

That is why organizations pursuing research for impact should consider how to use storytelling to influence decision-makers and affect change. However, some challenges must be carefully deliberated: How to ensure diverse, intersectional voices and not rely on singular

perspectives? How to weigh the complexity of evidence vs the power of a simple story? How to use storytelling to ethically persuade?

Session objectives include:

- Co-creating an understanding of what makes “a good story” when wanting to communicate facts, evidence and experiences for influence.
- Sharing knowledge and discussing how research organizations and other food systems actors can increase their use of storytelling as one pathway toward impact.

1.1F · CAN 2 + 2 MAKE 5? FROM ADDING UP TO INTERSECTIONALITY (CAPACITY STRENGTHENING)

ORGANIZER: Arwen Bailey, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

CO-ORGANIZERS: Cathy Rozel Farnworth, Independent Consultant

Diana E. Lopez, KIT - Royal Tropical Institute

The objective of this research is to shift participants away from potentially thinking of intersectional research as being additive, towards developing a shared understanding of intersectionality as about the ways identities combine to create specific sets of opportunities, and challenges, in an agri-food system. Taking an intersectional approach is a way of considering how interwoven dimensions of inequality affect groups of people (and individuals) in the context of a problem and can lead to constrained spaces for them to make and act upon decisions. Traditionally, gender researchers have started with ‘gender’ as a unit of analysis before addressing other dimensions: for example, identifying the structures that influence women, and then narrowing down within the category of women to young women, or landless women, or scheduled caste women. We call this an additive approach. This approach can result in a hierarchy of interventions (e.g., capacity development targeted at young women). Whilst there are some advantages to this approach, it can fail to analyze the most important ways in which these dimensions interact with, and reinforce each other (for instance, that young women may not be able to easily negotiate cultural norms that deny them agency). Introducing gender, social justice and equity into complex systems with the objective of creating gender-transformative change requires an understanding of how these different dimensions interact and play out. This is where intersectional research adds value.

4.30-6.00

DAY 1 · Monday, October 9 · Parallel sessions

1.2A · GENDERED PERCEPTIONS AND PRIORITIES IN AGRI-FOOD SYSTEMS

Gender-responsive nature-positive solutions for resilient agri-food systems

Dickson Kinuthia, International Food Policy Research Institute (IFPRI)

Nature-positive solutions (NPS) seek to address the negative effects of climate change, restore biodiversity, and sustainably manage land and water resources through strategies implemented at farm and community levels, drawing on both traditional and scientific knowledge, while ensuring that agriculture stays within planetary boundaries. Given gender differences in livelihood roles, control over resources, and influence over livelihood decisions, men and women have different needs from and preferences for nature-positive solutions. Moreover, production choices within agri-food systems have differential implications for men and women, including their labor burden and exposure to health hazards from unsustainable farming practices. The CGIAR Initiative on Nature-Positive Solutions is conducting a study in Colombia, India, Kenya and Vietnam using mixed methods to understand the gender-differentiated perceptions of NPS and the incentives for and barriers to their implementation. Preliminary results from Kenya indicate that women play critical roles in forest restoration and soil fertility improvement, among other practices. However, women continue to face constraints to accessing productive resources and services—such as land, finance and extension services—and have more limited decision-making authority over production and spending decisions despite their significant contributions. Accelerating the uptake of NPS requires addressing these gendered constraints to adopting these practices. This study suggests this can be accomplished by promoting solutions such as NPS gendered-training, and ensuring that women have the resources and services to support their uptake, leading to more resilient and sustainable agri-food systems.

Gender perspectives of rice farmers' livelihood strategies in a time of climate change: The case of Ndop Plains, Cameroon

Ntam Fidelis, Institute of Agricultural Research for Development (IRAD) Bambui

Malaa Dorothy and Agboh-Noameshie Rita

A study on livelihood strategies of rice farmers in this time of climate change from a gender perspective was carried out in Ndop, Cameroon. The study characterized local climate conditions and the impact on rice production. It assessed farmers' perceptions of the changing climate and its effects on their livelihoods. It highlighted constraints and coping strategies to ensure sustainable livelihoods. Participatory rural appraisal tools were used to collect information. Participants were men and women who had resided within the communities for over 20 years. A household survey was used to collect information on gender roles, climate change and rice production. In each village, 10 households were selected randomly: each having two respondents, a knowledgeable male and a knowledgeable female. A total of 60 households and 120 respondents were selected for the study. Both qualitative and quantitative tools were used to analyze the data. The results show that men and women perceive climate change and its consequences differently. The main impact on rice production is low yields and food insecurity. Rice production as well as that of other crops dropped between 40% and 70% during stressed years. The effect of rainfall on rice production was very significant for the period evaluated. Although the resilient communities have used various coping measures, they were not primarily targeted for reducing the impact of climate change. Although indigenous adaptive and mitigation strategies exist, better policy measure to combat climate change are desperately needed because the study showed that the smallholders are unprepared for the environmental disasters which accompany climate change.

Scaled citizen science participatory variety selection provides socially inclusive feedback to the cassava breeding in Nigeria and opens the way to emancipate women and men crop users within the breeding process

Béla Teeken, International Institute of Tropical Agriculture (IITA)

Martina Occelli, Kaue de Sousa, Joost van Heerwaarden, Tessy Madu, Samuel Onwuka, Jacob van Etten, Olamide Olaosebikan, Gospel Edughaen, Durodola Owoade, Afolabi Agbona, Hale Ann Tufan, Peter Iluebbey, Elisabeth Parkes, Peter Kulakow

This study investigated varietal and trait preferences of cassava farmers and the processors in their households and how they differed by value chain actor, gender, region and typologies of users. New breeding lines and popular varieties among users were evaluated with 320 farmers across Nigeria using the tricot citizen science method. Varieties were evaluated at 11 timepoints from planting to processed food products. Agronomic evaluation was done with the farmers. Processing evaluation was done with experienced processors: often a woman in the farmer's household. RHoMIS and 1,000 minds surveys provided further characterization of farmers' households. Next to root-yield-related traits, agronomic traits like weed competitiveness, processing and food-product quality traits such as food color and texture correlated strongly with the farmers' households' final variety choice. From planting to food processing, variety and trait preferences changed differently for several intersections of social segments. For instance, the intersection "women farmers that also did the processing" showed a consistent preference for specific varieties and traits during the postharvest processing stage. Women's expertise is crucial to consult to identify varieties and traits that drive the efficiency and profitability of the value chain as a whole, and for women in particular. Doing consultation that is deliberately rather than performative/participatory to crop users provides key information for breeding. Such approaches can be integrated in breeding practices by using tricot for on-farm testing within the variety release procedure. Working with women and men users as citizen scientists institutionally opens the way to emancipate users within the breeding process.

Unveiling gendered perspective on farmers' climate risk perception, and adaptation strategies: A systematic review

Soniya Ningombam, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

Abhishek Das, Shalander Kumar, Kavitha Kasala, Ranjitha Puskur

Climate change poses a significant challenge to farmers worldwide. It affects men and women differently due to their diverse roles, responsibilities, resource access and sociocultural norms. Understanding the gender perspective would help policymakers to develop evidence-based strategies that address unique vulnerabilities, promoting equitable, inclusive adaptation and resilience policies to climate risk. Hence there is a need to evaluate the available evidence base on gendered perspectives in this domain to design effective adaptation policies as well as future research. This systematic review—utilizing Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) technique using three databases (Web of Science, PubMed and CABI review) and analyzing 152 studies from 32 countries—unveils nuanced gender perspectives and evidence gaps on the subject. The insights from the study show variations among men and women farmers in their perceptions of climate risk attributes in agriculture. For instance, men's perception of temperature predominantly revolves around its immediate consequences on crop growth and farm management, while women farmers consider broader implications on household food security and community resilience. These varied gendered perceptions arise from divergent roles, responsibilities, and social and economic status. Adaptation strategies also differed, for example, with men adopting advanced approaches while women often rely on traditional knowledge as their primary means of adaptation. This study not only identifies the literature gap on climate change impacts and adaptation with a gender lens, but also highlights the need for recognizing and incorporating gender-responsive climate adaptation strategies into policy and practice for promoting climate resilience, sustainable livelihoods and agri-food systems.

1.2B · EMPOWERMENT AND MASCULINITIES IN AGRI-FOOD SYSTEMS

A critical focus on men and masculinities in a feminist pedagogy: Lessons from the Gender-responsive Researchers Equipped for Agricultural Transformation (GREAT) training course

Amon Ashaba Mwiine, Makerere University

Margaret Najjingo Mangheni, Elizabeth Asiimwe Martha Businge, Losira Nasirumbi Sanya

Masculinities (just like femininities) are socially produced in varying agricultural contexts and are closely interconnected with men and women farmers' everyday lives; hence critical reflection on these interconnections should be part and parcel of gender training in agriculture research to ensure sustainable gender transformation. Building capacities in gender analysis that includes a focus on men and masculinities is core to transforming deep-rooted social norms and practices that limit attainment of gender equality, yet there is insufficient empirically tested pedagogical models for this purpose. In this paper, we focus on the Gender-responsive Researchers Equipped for Agricultural Transformation (GREAT) capacity-building model that introduced sessions on men and masculinities in its training curriculum in the context of feminist pedagogy principles. Using selected experiences from transformative gender training for non-gender-specialist biophysical and social science agricultural research practitioners from sub-Saharan Africa and Southeast Asia, we take stock of the GREAT model's motivation to include masculinities, the pedagogical approach used, and participants' reactions and feedback on the value of understanding masculinities in gender-responsive agricultural research and their experiences with the sessions. We use systematic evidence from internal and external monitoring evaluation and learning data to draw lessons learned through these pedagogical practices and the implications training on masculinities and agriculture has for transforming agricultural food systems.

Empowerment among women and men in monogamous and polygynous households in Northern Ghana

Janelle Larson, Penn State University

Edward Martey, Kaitlin Fischer, Leland Glenna and Leif Jensen

A number of studies have linked women's empowerment (often measured by a version of the Women's Empowerment in Agriculture Index, WEAI) to various development outcomes, especially related to nutrition and well-being among children. However, there is less exploration of how empowerment varies among wives in polygynous households. Furthermore, it is unknown how various domains of empowerment, as measured by the A-WEAI, differ among wives in such households. We surveyed household heads (husbands and all wives) in 68 households in two communities in Northern Ghana. Of these, 35 households were polygynous and 33 monogamous. Among the women in polygynous households, 35 were first wives, 34 were second wives (one was traveling) and four were third wives. Using the 5DE A-WEAI, we found that women are significantly less empowered than men in these communities across all domains other than group membership. A key driver of disempowerment among women was time poverty—nearly half of the women (47%) worked more than 10.5 hours per day, compared to 21% of the men. Interestingly, there was no significant difference in empowerment between wives in monogamous households and those in polygynous household, indicating that the larger culture (in these two communities) plays a more significant role than household structure in determining opportunities to women to have agency in their lives.

Women in aquaculture: Unleashing gender-transformative change through household-level gender exercise

S M Faridul Haque, International Fertilizer Development Center (IFDC)

Social norms, values, and practices at the household level in most cases create barriers for women to be involved in income-generating activities. The aquaculture sector is one of the examples of such a field where women's limited participation is determined by a set of negative perceptions and discriminatory practices. However, household-level gender exercise could be an effective tool to break these barriers due to its participatory and bottom-up nature. This paper focuses on the effectiveness of household-level gender exercise as a tool of a gender-transformative approach. It examines

the efficiency of household-level gender exercise to enable people to identify and adopt alternatives to the existing gender-biased practices within the family. A qualitative study was conducted in July 2022 with the members of 15 households where 20 men and 20 women were respondents in the northwestern part of Bangladesh. The findings show that household-level gender exercise creates an enabling environment for both men and women to be agents of breaking the gender biases by challenging existing harmful norms. This article illustrates the importance of household-level gender exercise as a gender-transformative tool to ensure women's participation and benefit from the aquaculture sector.

Farm managers or unpaid laborers? Women farmers in male-headed households of Central India

Vijesh Krishna, International Maize and Wheat Improvement Center (CIMMYT)

In the context of agricultural research and development (AR&D) in the global South, there is a growing recognition of the role of women farmers and the relevance of targeting them. The level of women's participation in agricultural activities is influenced by factors such as male outmigration from the agricultural sector, and prevailing social norms. This participation varies both temporally and spatially, thereby influencing the strategies for targeted technology development and dissemination. This empirical study draws farm-household survey data from eastern Madhya Pradesh, India, where the rate of male outmigration from agriculture has been marginal. The objective is to assess the relationship between the involvement of women in labor provision and decision-making in wheat production. The findings reveal variations in women's roles and their extent of participation in different agricultural activities. Concerning access to credit and soil fertility management, women are predominantly categorized as *nonparticipants*. Conversely, women commonly engage in weeding, irrigation, and harvesting activities, but their roles are typically limited to 'unpaid family labor.' Only in postharvest operations do women actively participate in labor provision while having decision-making power comparable to that of men, thus approaching the function of 'farm managers.' It is important to note that women's active involvement in agricultural decision-making is closely linked to their participation in decision-making within other domains as well. By recognizing and promoting women's participation in decision-making processes, AR&D programs can foster inclusive and sustainable agricultural development.

1.2C · MEASURING GENDER TRANSFORMATIVE CHANGE IN THE CONTEXT OF FOOD SECURITY, NUTRITION AND SUSTAINABLE AGRICULTURE (CAPACITY STRENGTHENING)

ORGANIZER: Steven Cole, International Institute of Tropical Agriculture (IITA)

SPEAKERS: Steven Cole, International Institute of Tropical Agriculture (IITA)

Mariola Acosta, Food and Agriculture Organization of the United Nations (FAO)

CONTRIBUTORS: Cathy Rozel Farnworth, Independent Consultant

Hajnalka Petrics, Food and Agriculture Organization of the United Nations (FAO)

Ana Maria Paez-Valencia, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Marlène Elias, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Afrina Choudhury, WorldFish

There is growing recognition of the significance of gender transformative approaches (GTAs) in promoting lasting change towards gender equality and women's empowerment. GTAs complement, and diverge from, other gender-aware approaches that focus on addressing the symptoms of gender inequalities, without paying sufficient attention to the structural causes of these inequalities. While GTAs have the potential to address structural causes, there is limited guidance on how to measure gender transformative change.

This session will present *Guidelines for measuring gender transformative change in the context of food security, nutrition and sustainable agriculture*—a joint publication from FAO, IFAD, WFP and the CGIAR GENDER Impact Platform—and will provide a hands-on learning experience for participants.

The first part of the session will include the presentation of a framework for measuring gender-transformative change (including key dimensions and spheres of influence), points to consider when developing gender transformative change indicators, and a step-by-step process to develop gender-transformative

change indicators. The second part of the session will allow participants to use the framework and process to engage in practical activities related to measuring gender-transformative change, including the development of indicators. Participants will be exposed to key theoretical concepts surrounding gender transformative change and gain valuable insights into the indicator development process.

The session is intended for gender researchers, officers and practitioners working in agri-food systems.

1.2D · WOMEN IN ACTION: LEADERSHIP AND COLLECTIVE AGENCY IN COMMONS GOVERNANCE (PANEL)

ORGANIZER: Khanjan Ravani, Foundation for Ecological Security (FES)

CHAIR: Miranda Morgan, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

SPEAKERS: Devki Bai Uikey, Gram Mitra, Manikpur Ryt village,

Madhya Pradesh Mamata DV, Community Resource Person, Talakayalabetta village,

Karnataka Khanjan Ravani, Foundation for Ecological Security

Madappa PS, Foundation for Ecological Security

The session aims to bring out voices from the community-lived experiences and leadership journeys of women leaders through a qualitative study. Focusing on the dynamics between individual leadership and collective agency, this study explores the enabling and hindering factors to women's leadership, motivations for rural Indian women to take up leadership roles and the role of leadership in enhancing the collective agency of women.

Through personal interviews and focus group discussions in 15 villages across four Indian states, it finds that women's leadership can lead to gender equality and social inclusion by improving women's participation in decision-making across local institutions, including those for the management of common pool resources. The lived experiences of women leaders point to the role of women's collectives as their key motivation and their leadership journeys bear testimony to their contribution in supporting these collectives. The study, carried out in varied

socio-economic contexts and with women leaders of various caste and ethnic backgrounds, highlights the qualities required for leadership for social change, the challenges faced and the processes leading to effective leadership. Literature suggests that membership of an organization boosts the confidence of women, enabling them to voice their concerns and influence decisions in mixed groups, as well.

This research adds to and furthers the understanding of women's transformative leadership, thus helping to design strategies that support and enable more women to take on formal and informal leadership roles, in order to move towards gender-inclusive and transformative institutions at local levels.

1.2E · RE-EXAMINING GENDER GAPS IN PRODUCTIVITY

Does the landowner's gender affect self-cultivation and farm productivity? An analysis for India

*Bina Agarwal, University of Manchester
Malvika Mahesh*

Land ownership has long been argued to enhance farm productivity by improving tenure security. But does this hold for both female and male owners? Few studies have empirically examined the relationship between gender, landownership, and productivity globally, and even fewer have done so for Asia. Gender differences in the likelihood of landowners self-cultivating as opposed to leasing out their land are even less explored. This paper uses a unique household-level dataset for nine states of India to first assess gender differences in the likelihood of landowners self-cultivating, and then analyse differences in farm productivity between female and male owners who self-cultivate. The effect of caste disadvantage is also explored, as is the veracity of existing assumptions about intrahousehold farm decision-making. The study finds that women owners are significantly less likely than male owners to self-cultivate their land, especially due to family labor constraints. However, among those who do self-cultivate, the annual farm productivity per hectare does not differ significantly by the gender of the owner-cultivator, with or without controlling for other factors. Caste matters, however: Scheduled Caste owner-cultivators of both genders have significantly lower productivity than upper-caste ones. The presentation will also explore if group approaches to accessing and cultivating land can help women overcome their individual-level resource and social constraints, to enhance farm productivity and food security.

Gendered division of family and hired labor and agricultural productivity in India

Kajal Gulati, Purdue University

Koustuv Saha, Travis Lybbert

Studies on the gender gap in agricultural productivity rarely consider differences arising from the differential use of women workers on the farm. Yet, gender-based norms and frictions in the rural labor markets of women may lead to skill-based differences between hired and family labor—differences that are more distinct for women than men. This study examined agricultural productivity differences based on the differential use of hired and family women's labor in India. Using plot-level, input-use data collected from rice-cultivating households, we classified households into three groups: households that exclusively use family women's labor, households that employ both family and hired women workers, and households that only use hired women workers. We identified agricultural productivity differences after controlling for plot- and household-level characteristics and using village-level fixed effects, as well as estimating these differences based on machine learning and propensity score matching methods. We found that, on average, households that use only family women's labor have a lower agricultural productivity compared to households that also use hired women workers. These differences appear to be driven by skill-based differences between hired and family women workers; the agricultural productivity gap exists in households where family women work exclusively on their own farms and not outside. The results provide suggestive evidence that expanding women's experience and skills in farming could contribute to closing the agricultural productivity gap, especially in agricultural production systems where men and women farm jointly and participate in specific tasks.

Investigating women's agency and achievements in agriculture: Insights from the Agribusiness and Rural Transformation Project (APART), Assam

Lisa Mariam Varkey, International Rice Research Institute (IRRI)

Prakashan Chellattan Veetil, Kanwar Singh, Rupam Borgohain, Ashok Bhattacharya, Sudhanshu Singh

Women play an important role in agriculture and account for around 50% of the agricultural labor force in Asia. Strong evidence exists to prove that women farmers have less access to land, inputs, labor and information compared to men, which, in turn, can influence technical

efficiency in farms, that is the effectiveness with which a given set of inputs is used to produce output. Strong reasons indicate that women's empowerment may contribute to enhancing technical efficiency, most notably through improvements in women's access to human, physical, and social capital. In this study, using plot-level data from the 2022 impact evaluation study under Agribusiness and Rural Transformation Project (APART), we first measure women's empowerment under six dimensions for the beneficiary women farmers using Abbreviated Women's Empowerment in Agriculture Index. Thereafter, we proceed to estimate a stochastic frontier production function model, which includes women's empowerment in agriculture as an exogenous determinant of technical inefficiency. We find that the women-operated paddy plots in our study exhibit 66 % efficiency whose productivity is significantly influenced by all labor and material inputs. Our study also finds women empowerment as a strong predictor of technical efficiency. With lower technical efficiency reported in plots owned by the households where women hold unequal rights, our results also subtly point to the occurrence and impact of hidden gender disparities within a household, existing in the form of land titles. Our study supports the idea why women empowerment should be pursued for its intrinsic value as a developmental goal in itself and instrumental value for furthering other developmental outcomes.

Women's empowerment, productivity, and food security: Nationally representative panel data analysis in Malawi

Ning Ma, International Food Policy Research Institute (IFPRI)

Catherine Ragasa, Lucia Carrillo

This paper provides new evidence on the relationship between intrahousehold dynamics, agricultural productivity, and dietary diversity using a nationally representative panel household dataset in Malawi (two waves: 2019 and 2021, with 5,067 female and male respondents per wave). We used the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI) indicators, complemented by intrahousehold dynamics in access to extension services and technology awareness and adoption. Panel data were analyzed using household fixed effect models. Results show that the majority of farms were jointly managed by women and men; jointness in plot management has been increasing over time, highlighting the critical need to look at jointness in decision-making. Of rural women sampled, 20% did not achieve empowerment, and the main contributors to their disempowerment were lack of group membership and lack of access and control over financial resources. Results also show

that women's education and their access to extension are significantly associated with their empowerment. Women's empowerment indicators significantly explain much of the variations in crop productivity and dietary diversity. The impact of women's empowerment on crop productivity was similar across asset quintiles, but the impact on dietary diversity was larger within the poorest household quintile.

1.2F · DESIGNING GENDER-SMART AGRICULTURAL ADVISORY SERVICES: EXAMINING EVIDENCE FROM ETHIOPIA, INDIA AND UGANDA (CAPACITY STRENGTHENING)

ORGANIZER: Jona Repishti, Digital Green

PRESENTERS: Prita Das Gupta, Digital Green

Jona Repishti, Digital Green

Namita Singh, Digital Green

Women in developing countries account for over 43% of the agricultural labor force, but only receive 5% of available training and advisory services. Extension agents not only fail to reach women farmers, but too often they also fail to deliver contextual, relevant and actionable agronomic advice that meets women's needs, further widening the gender knowledge, adoption and productivity gaps in agriculture.

Digital Green has successfully partnered to create farmer-to-farmer community videos, engaging thousands of extension workers and reaching 4.1 million farmers, 70% of whom are women. In this session, Digital Green will share a three-pronged model for developing and delivering gender-smart advisory services tailored to meet the unique needs and constraints of women farmers. We will showcase how to use the model through case studies, drawing evidence from three randomized control trials conducted in India, Ethiopia and Uganda. We will share lessons on how to design holistic approaches that enhance women farmers' knowledge, build their agency to adopt new practices, and increase their yield and productivity. We will also explore two new promising pathways for making extension services more participatory and demand driven: digitizing farmer and extension agent profiles and deploying AI-enabled chatbots that triage, inform and better curate content for female farmers' needs.

The gender-smart advisory model presented is an actionable tool for NGOs, tech companies, government and private sector actors working to enable extension networks to more effectively reach, benefit and empower women farmers.

11.00-12.30

DAY 2 · Tuesday, October 10 · Parallel sessions

2.1A · AGENTS OF CHANGE: TALES OF TENACITY IN TUMULTUOUS TIMES

Armed conflict and gendered participation in agri-food systems: Survey evidence from 1.8 million individuals in 29 countries

Wolfgang Stojetz, International Security and Development Center (ISDC)

Piero Ronzani, Tilman Brück, Carlo Azzarri, Gianluigi Nico and Erdgin Mane

This paper provides empirical microlevel evidence on the gendered impacts of armed conflict on economic activity, combining sex-disaggregated employment survey data with temporally and spatially disaggregated conflict event data for 1.8 million individuals from 29 African countries. Specifically, we study several employment outcomes related to participation in agri-food systems. Agri-food systems are embedded in ecological, economic and social processes, drive nutrition outcomes and are critically important for the development of developing countries. On average, we find that local conflict exposure is only weakly related to labor force participation, but strongly reduces the total amount of hours worked and increases engagement in the agricultural sector. These net impacts exist for both men and women. However, the reduction in hours worked is significantly stronger among men, while the increase in agricultural activity is significantly stronger among women. In the longer term, conflict impacts on employment two years later are stronger when no more conflict ensues, challenging the widespread idea of one-off conflict shocks 'fading away' over time, and suggesting that labor markets adapt to and absorb lasting conflict situations. Different types of conflict events have qualitatively similar impacts, which are strongest for explosions, such as from air strikes or landmines. Overall, our findings underline that armed conflict entails structural economic, social and institutional change, which create complex, gendered impacts on economic activity and agri-food systems.

Profiling women's reality of risk and vulnerabilities in the Nigerian cassava agri-food system

Temitayo A. Adeyemo, University of Ibadan

Olamide D. Nwanze; Siyanbola A. Omitoyin

Study objective: Men and women experience different realities within agri-food systems. In Nigeria, as in much of sub-Saharan Africa, sociocultural constraints have deepened women's vulnerability to risks and shocks, consequently limiting participation in economically viable agri-food chains. This study examined the cassava agri-food system in Nigeria with a view to profiling the experiences of women in terms of risks and vulnerabilities to livelihood losses. Research question: What are the risks and shocks contributing to women's vulnerabilities within the cassava agri-food systems in Nigeria? Methodology: The study used data of 168 women in different and sometimes overlapping nodes of the cassava value chain. The classical Vulnerability as Expected Poverty measure was used to assess women's vulnerability to risks. Key results: Women in the cassava agri-food system mainly faced covariate risks of herdsman conflict (35%), climate shock (22%), and fluctuating market prices (16.7%), among others. Idiosyncratic shocks mainly express as death of spouse and treatment of sick family members. Result shows that up to 94% of the women were vulnerable to loss of livelihood income because of these risks and shocks. Women managed vulnerability by risk-mitigation (contractual agreements, informal saving groups), risk-coping (borrowing, multiple jobs) and risk-reducing (improved farm management techniques) strategies. Contribution/implication: Although women are important at various nodes of the cassava agri-food system, vulnerability to risks may reduce their potential to make significant contributions. Gender-responsive interventions to strengthen individuals and women's groups to build vertical and horizontal networking are necessary to overcome these barriers.

Gender-based violence in food systems

Lilian Treasure and Lora Forsythe, University of Greenwich

Adrienne Martin

Gender-based violence (GBV) is a significant global health and human rights issue, particularly for women and girls, with substantial social and economic costs. The sheer scale and endemic nature of GBV means that it touches virtually all aspects of life. However, its relationship to food systems—the complex networks of people and activities involved in food, from production to consumption—lacks recognition in research, policy, and civil society responses. In this paper, we present the initial findings from a systematic review and identify important gaps in evidence. This systematic review followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement updated in 2020. Our main research question for systematic review is: What empirical evidence is there on the incidence and prevalence of gender-based violence in agri-food systems? To answer this question our review explored how GBV was conceptualized in AFS; the prevalent forms; the drivers, risk factors, and impacts. Finally, we present the priorities for future research on gender-based violence research in agri-food systems.

Inclusive innovation in bean value-chain interventions: A comparative study of gender dynamics in Tanzania, Malawi and Burundi

Cosmas Kweyu Lutomia, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Eileen Bogweh Nchanji; Ketema, Dessalegn; Ajambo Susan; Ranjitha Puskur; Hilda Janet Kabuli; Blaise Ndabashinze; Agness A. Ndunguru

As climate change relentlessly threatens the livelihoods of smallholder farmers regionally and globally, persistent gender disparities in the use of climate change adaptation strategies continuously impede achievement of resilience efforts. This study explored one research question: what specific strategies can be implemented to improve the inclusivity of bean value-chain innovations in Tanzania, Malawi and Burundi and enhance climate resilience? A cross-sectional survey that collected data from 656 respondents from three countries indicated that access to technologies and innovations varied across countries and genders, with women generally having lower access than men. The proportion of women

using improved seed (48%) was significantly lower than men (67%) and irrigation technology usage was 40% for women and 48% for men. Commonly used sociotechnical innovation bundles were irrigation and conservation agriculture technologies, and innovations such as group membership, seed access models and information sharing. Limited access to information and training for women was a major gap in women's ability to effectively adopt new technologies and practices. Implementation of inclusive innovation practices (participatory approaches, capacity building and context-specific solutions) demonstrated the potential to address gender disparities in adaptation to climate change. The results highlight need for gender-sensitive information dissemination and capacity-building initiatives to close gender gaps in climate change adaptation and resilience. Promoting inclusive innovation in agriculture and food systems and insights for policymakers, practitioners and researchers on designing and implementing gender-responsive interventions are recommended to foster inclusive innovations.

2.1B · HOUSEHOLD DYNAMICS OF DECISION MAKING, ASSET OWNERSHIP, LABOUR, AND EMPOWERMENT

In-depth understanding of intrahousehold decision-making in the cassava value chain in Tanzania

Devis F. Mwakanyamale, International Institute of Tropical Agriculture (IITA)

Millicent L. Liani, Steven M. Cole

Existing studies provide insights into understanding intrahousehold decision-making, focusing on who makes decisions on agricultural matters in low-income country contexts. However, little is known about the underlying processes concerning who performs which specific agricultural tasks, who makes decisions in those tasks, and how and why they do so. Our study used in-depth interviews with 37 marital dyads involved in cassava value-chain work in Tanzania. Findings highlight that women engage in cassava-related activities, yet do not necessarily hold exclusive decision-making powers in these tasks. Decisions concerning activities performed by both spouses are made jointly or by men, while women primarily make decisions on matters when they possess the most knowledge. Decisions on the use of income from cassava are mainly made jointly. Women are more involved in expenditure decisions on household food

and nutrition security, whereas men decide on matters related to purchasing farm inputs and high-value assets. The reasons why men make sole decisions are attributed to their traditional role as household heads. Joint decisions are made to avoid misunderstandings or promote cooperation within the household. Women in monogamous marriages and in similar age groups with their spouses are more likely to participate in decision-making processes. For dyads in polygynous relationships, we observe differences between younger and older couples, with decision-making authority exercised by men in the latter. We argue that an in-depth understanding of decision-making processes within agricultural households can better inform the design of value-chain development interventions aimed at promoting gender equality and empowering women.

Whose voice really matters? Exploring the intrahousehold decision-making process in farm households of rural Bihar, India

*Rosalin Geetha, University of Agricultural Sciences,
Bengaluru*

Empirical gender research on household decision-making has registered a significant expansion recently. While several of these studies indicate jointness in intrahousehold decision-making, the extent to which women's perspectives are considered in the final outcomes remains uncertain. Equally crucial is understanding the explicit recognition of women's contributions within patriarchal social systems by other household members. Against this backdrop, the present study empirically investigates women's agency in making intrahousehold decisions pertaining to agricultural production and household consumption, considering both women's and men's perspectives. The study draws upon primary data collected from 414 maize-growing households (comprising 828 individuals) across 10 districts in Bihar, India. The findings reveal consistent patterns, highlighting men's perception of women's limited role and agency in farm production activities, in contrast to how women perceive themselves. Conversely, men predominantly reported women's dominance in consumption decisions, while women refuted this claim, emphasizing joint decision-making involving other household members. Factors such as the husband's migration status, caregiving responsibilities, and the presence of in-laws significantly and negatively impact women's decision-making capacity. Moreover, households belonging to marginalized castes and communities exhibited higher levels of women's agency. Regional disparities in women's agency were also observed, indicating diverse dynamics influenced by social institutions,

household structure, and asset ownership. These findings underscore the intricate and varied nature of gendered power dynamics within intrahousehold decision-making processes.

Capturing dynamism in women's roles in an agrarian economy—a study in the Eastern Gangetic Plains of India

*Prateek Madhab Bhattacharya, Uttar Banga Krishi
Viswavidyalaya*

*P. M. Bhattacharya, K. K. Das, T. Dhar, A. Ghosh,
A. K. Chowdhury, S. Sen and T. Jackson*

Research suggests that investing in women's economic empowerment has important linkages with gender equality, poverty eradication, and inclusive growth. Considering women's share of 31% of the total agricultural workforce in India, changes in terms of involvement in operations and decision-making can have a significant impact on trajectories of economic empowerment. A study was undertaken in northern West Bengal during 2020–21, covering 687 randomly selected respondents, to understand the perceptions of the agrarian population regarding these changes and the foresight of transformations in gender roles. Exploratory analysis was carried out to understand the changes that have occurred regarding women's roles in the farm economy, and to explore what they expect to happen in the future. Our study indicates that about 69% of respondents expect enhanced participation of farm women in agriculture within 5–10 years, with a gradual change from their nominal participation in the past, to most activities in the future, mainly due to outmigration of males from farm families. Similarly, about 35% of the respondents believe that women's roles in decision-making will increase in the future. Assumption of the role of functional head (in the absence of a male head) and prominence of the nuclear family are two major facts to enforce this paradigm shift in decision-making. This paper will identify key elements that can contribute positively to this shift. Enhanced participation and an increased role in decision-making can lead to a more inclusive farm economy as a whole but warrants necessary initiatives to support the transition.

Asset ownership among women in the semi-arid tropics of India—microlevel insights toward empowerment of women

*Padmaja Ravula, International Crops Research
Institute for the Semi-Arid Tropics (ICRISAT)*

*Anil Kumar Vemula, Kavitha Kasala, Vishwambhar
Duche and Anupama Guvvala*

Ownership of assets is an important dimension and measure of women's agency in the rural agri-food systems. Ownership of productive assets by rural women such as agricultural land, dwellings, and livestock can translate to women's empowerment. This paper attempts to provide deeper insights into asset ownership by rural women in the semi-arid tropics of United Andhra Pradesh and Maharashtra states of India and how it translates into empowerment/disempowerment of these women. Data was collected from more than 1,000 women through a quantitative survey. Applied logistic regression analysis to test women's empowerment for the three productive assets—dwelling, agricultural land, and livestock was performed. The odds ratio revealed significant results across agro-ecologies, caste group, and age. Women belonging to the drought-prone areas had greater ownership of assets and thereby showed greater input into decision-making compared to women from the assured-rainfall region and canal-irrigated region. In all three agro-ecologies, women from the backward social group were empowered compared to the forward and the scheduled-caste and scheduled-tribes groups. Implementation of women-empowerment programs in drought-prone areas emerged as one of the major drivers in enhancing women's agency. Restrictive gender and social norms for women from forward caste limit their agency. This paper emphasizes the need for greater program and policy implementation focused on enhancing gender equality in asset ownership. By addressing the existing disparities and empowering women to access and control assets, we can foster inclusive economic growth and social progress.

2.1C · SUPPORTING YOUNG PEOPLE'S ENTREPRENEURSHIP AND EMPOWERMENT IN AND BEYOND AGRI-FOOD SYSTEMS

Growing futures: Youth empowerment through home gardening initiatives in Fiji

*Aradhana Devi Deesh, Ministry of Agriculture Fiji
Seremaia Bai*

The COVID-19 pandemic has had profound effects on various aspects of society, including food and nutrition security. One solution that had gained momentum in Fiji was home gardening, which empowered individuals and families to cultivate their own food and enhance their nutritional intake. The aim of this study was to understand how youth empowerment played a vital role in promoting sustainable and resilient practices, particularly for those who were in the early career of

professional rugby, which is the national sport of Fiji. This study highlights the significance of gardening initiatives in Fiji as a pathway to youth empowerment and sustainable development. A total of 20 youths were identified and supplied with seeds/seedlings, crop starter guides, planting techniques, pest management strategies, and agro-inputs as part of the Home Gardening Program initiated by the Fiji Ministry of Agriculture in 2020. Through the ARSF II project, a survey on the impact of home gardening and youth involvement was studied. The finding of the study revealed that the youths gained valuable skills in home gardening including plant/soil health, produced fresh vegetables to meet the nutritional needs of the family, generated income from the sale of the extra produce, and acquired farming skills. It further explored the innovative concept of AgroRugby as a powerful tool for empowering youth in Fiji. By combining the values and skills cultivated in rugby with the transformative potential of gardening, this study investigated the unique opportunities for empowerment and personal growth that arise from this synergistic approach.

Four key enablers of youth empowerment to achieve more sustainable agri-food systems

*Dinesh Panday, Young Professionals for Agricultural
Development (YPARD)*

*Ambrogio Zanzi, Andrea Rosso, Craig Chibanda,
Michael Ruggeri, Kim Anastasiou, Shangchuan
Jiang, Lethicia Magno, Joanna Trewern, Ram
Neupane, Shulang Fei, Elisa Quaranta, Clarity
Ropafadzo Mapengo, Abdulkareem Raheem, Edy
Trihatmoko, Peter Asare-Nuamah, Imad Antoine
Ibrahim, Lionel Fosso, and Makanalani Gomes*

Our agri-food systems are facing increasing shocks and stresses, which puts them under immense pressure. This raises the question of whether we can produce efficiently to meet rising global demand, while protecting the environment and communities inclusively and more sustainably. For this question, it is necessary to adopt practices that can make agriculture and forestry more efficient under limited availability of natural resources. However, the key challenge is to transform current agri-food systems into more resilient, sustainable, equitable and accessible systems for all and it is essential to identify and support the main drivers of this transformation. The first cohort of Young Scientists Group (2022–2023) conducted a review, including case studies and an interview, on specific policy issues, of particular concern to youth, related to agri-food systems transformation. We explored that youth, including diverse groups such as rural youth, indigenous youth, young women, etc., are

better positioned as drivers and agents of change by advancing four key enablers (education, technology, science and policy) especially given their willingness to take risks and adopt new ideas. The complete report is divided into five chapters: (i) provides an overview of the latest issues affecting agri-food systems, (ii) focuses on the challenges faced by youth who are working to advance sustainable agri-food systems, (iii) identifies and explores four key enablers of youth empowerment, (iv) highlights existing youth-based initiatives for improving agri-food systems, and (v) provides conclusions with 18 science-based and action-oriented recommendations that need to be adopted immediately to achieve more sustainable agri-food systems.

Youth–adult engagement in agri-food systems: A mixed-methods inquiry on positive youth development in 4-H clubs of Bicol, Philippines

*Sonny Pasiona, Southeast Asian Regional Center for Graduate Study and Research in Agriculture
Aileen Lapitan*

The study investigated youth–adult engagement (YAE) in community-based agriculture projects and the link to positive youth development outcomes among the 4-H youth of Bicol, Philippines. Guided by the theoretical perspectives of the Typology of Youth Participation and Empowerment model and positive youth development (PYD), the research employed an exploratory, sequential, mixed-methods design, with key informant interviews, focus group discussions and a mixed-mode survey among 154 youth from 10 Philippine 4-H clubs. Results showed a high level of YAE, constituted by high composite scores for three YAE dimensions: youth involvement, adult involvement and youth–adult interaction. Findings reflect a pluralistic type of participation where there is shared control among the 4-H youth and adults over decision-making in planning and implementing agri-based projects. Furthermore, the study also showed high levels of perceived PYD outcomes (competence, confidence, connection, character, caring and contribution) describing their overall 4-H experience. Performing an ordinary least squares (OLS) regression analysis confirmed that YAE is a significant predictor of PYD outcomes. Hence, enhancing the three dimensions of YAE yields improved PYD outcomes among the 4-H youth. Adult support through moral, financial and technical aspects was found to be a critical enabler for youth participation in agri-based projects. The study provides program and policy insights on youth as agri-food system actors and presents a case of 4-H clubs as a platform for enhancing the youth's sociopsychological skills, social

capital and sense of appreciation of and contribution to agriculture, among other factors.

Nonfarm enterprises: Strengthening youth resilience in 18 rural districts of Zimbabwe

*Doreen Tirivanhu, University of Zimbabwe
Tafadzwa Chevo, Toga Mapangisana*

Smallholder communities are faced with shocks and stresses caused by the effects of climate change and variability, as well as socioeconomic characteristics threatening their communities, which rely on rainfed crop and livestock production. This has a negative effect on young people, who are still innovative and energetic to take part in different initiatives to improve their livelihoods. This study uses a qualitative data analysis to evaluate youth participation in nonfarm activities among smallholder communities of Zimbabwe. The data was obtained from the ZRBF OMS surveys conducted from 2017 to 2019. The results show that youths participate mainly in nontimber forest products, natural resource management, water infrastructure development, DRM/DRR training, welding, cross-border trading, sewing, and village savings and loans groups, which were important for their adaptive, absorptive, and transformative capacities. The productivity of youths' nonfarm enterprises was affected by the stability of local currency, capacity building, access to markets, load shedding, and the COVID-19 pandemic. Based on these results, there is need for continued support of the youths by providing them with a conducive environment to showcase their skills, and improve their access to information and training, to improve co-learning and co-innovation for adaptation, absorption and transformation among communities.

2.1D · ADAPTATION AND INNOVATION UNDER A CHANGING CLIMATE

Understanding women farmers' empowerment in climate-stressed smallholder systems: Evidence from a climate-smart cropping system intensification initiative in Indian Sundarbans

*Poulami Sen, Ramakrishna Mission Vivekananda Educational and Research Institute (RKMVERI)
Sanchayeeta Misra, Rupak Goswami, Sukamal Sarkar, Krishnendu Ray, Kalyan Roy, Kousik Mallick, Koushik Brahmachari, Manoj K. Nanda, Marta Monjardino, Mohammed Mainuddin*

Climate change poses a profound threat to the well-being and sustainability of farming and farm-based livelihoods in fragile socioecological systems. Climatic challenges to farming have often been addressed by diverse forms of sustainable intensification that aim to maximize farm outputs and resource-use efficiency through climate-smart innovations. However, climate change poses specific challenges to women farmers, who play important roles in agri-food systems, often in the absence of their male counterparts who recursively migrate from the climatically challenged regions. In the absence of a gender-sensitive extension and advisory regime, it exacerbates existing gender inequities and limits women farmers' ability to adjust to changing climatic conditions. Unfortunately, inadequate attention is paid to the gendered outcomes of climate-smart intensifications and cropping-system transformations in smallholder systems. This implies the generation of evidence and insights into the gendered experience and measurements of the program interventions. The current study draws evidence from an international cropping-system-upscaling initiative that engages women farmers from the climatically challenged Sundarbans region in India. To understand the climate-society-innovation-gender nexus, we measure women farmers' empowerment and the existing gender gap by employing the comprehensive Women's Empowerment in Agriculture Index and gender analyses. WEAI evaluates the domains of women farmers' empowerment and gender analyses help to understand the gender gap in the system. The study outcomes show differential gendered outcomes of the climate-smart interventions and suggest the importance of contextual sociocultural factors shaping the nature and extent of women's empowerment.

Gender differences in perception of climate change and eventual impacts: An intrahousehold analysis from groundwater-depleted zones of Bangladesh

*Hasneen Jahan, Bangladesh Agricultural University
A.K.M. Abdullah al Amin, Tahmina Akhter, Abu Hayat Md. Saiful Islam, Md. Wakilur Rahman, Mohammed Mainuddin, Fazlul Karim, Sheikh Mohammad Sayemd*

Given the importance of gender in household and agricultural decision-making including climate change adaptation and mitigation decisions, understanding within-household gender differences in perception of climate change and its eventual impacts is crucial to formulate and design relevant policies and programs. Therefore, aiming at a more nuanced gender analysis, this study attempted to measure within-household gender differences in perception of climate change,

its impact and explored the factors affecting such perceptions. We drew on empirical data obtained from farm-household surveys conducted on 360 co-dwelling couples from three dissimilar drought-prone areas of northwest Bangladesh. Findings reveal that the significant difference in spouses' perceptions of unexpected rainfall and thunderstorms was perceived more by wives than husbands; nevertheless, increasing temperature was perceived more by husbands than wives. Similarly, spouses perceived that climate change has negative effects on agriculture and livelihoods. There were significant spatial differences in the responses across husbands and wives. The discrete choice modeling approaches employed to explore the determinants of perceptions by husbands and wives illustrated that wives living in high-water-scarce areas and medium-water-scarce areas with higher education and age were more likely to perceive climate change and its eventual impacts, whereas husbands' age and education were negatively allied with their perceptions. Intrahousehold gender-differentiated perceptions suggest that policy interventions should provide gender-disaggregated targeted human-capital development, extend institutional facilities, and support appropriate farm-level spatial program design and policy formulation.

Using technology to scale climate-smart agriculture, conservation agriculture, sustainable intensification, and nutrition interventions: Why use a GESI approach?

*Karen Nortje, International Water Management Institute (IWMI)
Kristin Davis*

East and Southern Africa is a climate hotspot, with more than US\$45 billion in agricultural production at risk from higher temperatures, shorter growing seasons, and more extreme droughts and floods. Women play a strategic role in agricultural development and food security, often in labor-intensive activities. Efforts to quickly address the current water and climate challenges through innovative ways have been underscored. One of such innovations emphasized has been production technologies, recognized as potentially effective in improving agricultural incomes for farmers. While these are positive steps, there is an increasing call for technological innovations to consider the position and dynamics of marginalized farmers by ensuring that farm equipment can be operated by both men and women, while requiring less labor and time. Hence, gender-responsive agricultural technologies should close the existing gender gaps that allow marginalized groups to fight against food insecurity. Some technologies have received increased

societal resistance to adoption, especially toward innovations that are introduced as ground-breaking due to sociocultural and economic values. We assess why and how a gender-equality and social-inclusion (GESI) lens is essential as a transformative approach to achieving food and climate resilience. Using the Ukama Ustawi Initiative in East and Southern Africa, we demonstrate: i) the different types of CA/CSA/ SI interventions practiced by men and women and ii) the gender implications for farmers' uptake and why a GESI framework is relevant. This presentation focuses on the GESI framework developed for the initiative and unpacks core innovations and how a GESI approach can influence a gender-responsive outcome.

Gender dimensions of climate change adaptation strategies among Indigenous communities in the Nilgiri Biosphere Reserve, India

Aiswarya S., Indian Council of Agricultural Research, Central Institute for Research on Buffaloes, Hisar (ICAR-CIRB)

R.N. Padaria

Women inhabiting biosphere reserves experience heightened vulnerability, attributable to the intricate interplay between constrained resource accessibility and their dependence on climate-sensitive sectors such as agriculture and natural resource management. However, there exists a dearth of comprehensive research regarding the gender facets of climate change adaptation within biosphere reserves. Hence, this study aims to evaluate the gender dimensions of perception, adaptation strategies to climate change and its determinants among the Indigenous communities of Nilgiri Biosphere Reserve, the first biosphere reserve in India. The data stem from a unique intrahousehold survey involving 948 households. Women's perception of climate change corresponds with local historical climate data, which indicates a slight upward trend in temperature and a decrease in rainfall over the past decade. Further different adaptation strategies adopted by the communities were grouped under crop sector, livestock sector, fisheries sector and other strategies. 'Adjustment in crop calendar' was identified as the major adaptation strategy by employing the analytical hierarchy process (AHP). The results of the multivariate probit model revealed that demographic factors like gender, age, education and family size; agricultural factors such as farm and livestock holdings; socioeconomic factors such as non-farm income; access to information, extension services and credit facilities; and the geographical factor of distance to the market were the major determinants of adaptation strategies. The outcomes of the study

suggest that policymakers should take into account the distinctions between households headed by women and men in terms of their access to resources like land, information, income and extension services.

2.1E · PITCHING GENDER-RESPONSIVE AGRICULTURAL SOLUTION STORIES TO SCIENCE EDITORS (CAPACITY STRENGTHENING)

ORGANIZER: Jennifer Metcalfe, Econnect Communication/CGIAR communication consultant

This capacity-building session is for researchers and practitioners interested in learning more about what science editors and journalists look for in a good story. It will include a panel of three local science journalists and editors (e.g., from *SciDevNet*, *The Conversation*, and *Times of India*). The panel will answer questions from the moderator and the audience about their coverage of stories about gender-responsive agricultural solutions, how their media outlet works to find and shape stories, and the best ways to pitch a story to their outlet. The purpose of the panel is for the audience to gain an appreciation of how the media works and how they can best work with the media to increase coverage of gender-responsive agricultural research and solutions. After the panel, participants will have an opportunity to pitch their story ideas (focused on gender-responsive agricultural research and impacts of that research) and gain feedback in small-group clinics. Session objectives include:

- Increase awareness of what the media needs to make a good story about gender-responsive research.
- Develop understanding of how to pitch a story to different types of media.
- Provide opportunities for participants to pitch their story idea and gain individual feedback.

2.1F · MEASURING THE IMPACT OF AGRICULTURAL PROGRAMMES FOCUSED ON RURAL WOMEN (PANEL)

ORGANIZER: Tinni Sawhney, Aga Khan Foundation

PANELISTS: Vicki Wilde, Bill & Melinda Gates Foundation

Jasleen Kaur, 60Decibels

Tinni Sawhney, Aga Khan Foundation

Rehana Khatun, Pashu Sakhi, Village Narsinghpur, District Muzaffarpur, Bihar
Krishna Devi, Pashu Sakhi, Village Sarmastpur, District Muzaffarpur, Bihar

Some 40–60% of smallholder farmers and livestock keepers in sub-Saharan Africa and South Asia are women. Investing in agriculture, especially for rural women, is a way to uplift some of the world's poorest out of poverty. The Aga Khan Foundation, in partnership with the Gates Foundation, launched Project Mesha in 2016, in Bihar, India. Through a last-mile agent model, the goal has been to transform the way rural women participate in economies and help them gain financial independence. Last-mile agent models play a crucial role in bringing knowledge, markets and inputs to farmers. Between 2018–2022, social impact measurement company, 60 Decibels, conducted phone-based surveys with 2,200+ women goat rearers and agricultural agents in Bihar. The surveys focused on understanding the impact of Project Mesha on their

lives and tracking the performance of the program as it matured. The data unpacks:

- the impact on women livestock farmers' knowledge, earnings, feelings of empowerment and quality of life
- market access opportunities for them – and the impact on their bargaining power
- women agricultural agents' job satisfaction, motivation, and challenges
- the sustainability of programs and understanding their role in agent livelihoods over time

To link this research to impact, we propose sharing key takeaways emerging from this work through a panel consisting of team members from the Aga Khan Foundation, the Gates Foundation and 60 Decibels. In this panel session, we will:

- share top actionable gender insights from the collected data
- discuss how rural women-focused programs can make data-based decisions to track, manage and improve their impact

1.30-3.00

DAY 2 · Tuesday, October 10 · Poster sessions

2.2A · TOWARDS SYSTEMIC CHANGE: CHALLENGING INEQUALITIES IN INSTITUTIONS AND POLICIES (POSTER SESSION)

Transforming lives via agroforestry: Breaking barriers through gender mainstreaming equality

Babita Bohra, CIFOR-ICRAF

Gender equality and social-inclusion (GESI) integration is a key priority for CIFOR-ICRAF, reflecting its recognition of the vital role women play in the agriculture, forestry and agroforestry sectors vis-à-vis the barriers they encounter in this area owing to their roles and responsibilities. To address this disparity, CIFOR-ICRAF is fully committed to mainstreaming gender considerations, raising awareness, and promoting inclusivity through gender-sensitive approaches and capacity building through training programs. Recently,

ICRAF completed a four-year project for producing and consuming more nutritious food through agroforestry systems and is currently executing a project on sustainable production and application on biochar in two districts of Odisha that empowered women through self-help groups, raised awareness and built capacity through training in project interventions, including development of quality planting material, nurseries and others. As a result, these groups had a significant increase in their income, from earning Rs. 1,04,920 in 2019 to Rs. 1,69,180 in 2020. Furthermore, by carefully examining farmers' views, knowledge, access and barriers linked to biochar production and use, both the projects incorporate gender-sensitive approaches. The projects use a participatory approach to craft activities to meet the specific needs and preferences of both men and women in agroforestry interventions and including the development of innovative biochar stoves. These stoves alleviate the burdens faced by women, reduce wood consumption, indoor pollution and greenhouse gas emissions, and result in drudgery reduction for women as well. Through this project, CIFOR-ICRAF hopes to advance gender equality, improve livelihoods, and support sustainable agriculture.

Capacity building for GESI in integrated water resources management (IWRM) through gender-transformative approaches

Kanwal Waqar, International Water Management Institute (IWMI)

The participation and empowerment of women and youth in water management in rural agricultural communities is very limited in Pakistan. The links between water, climate, gender disparities and social exclusion are prominent at national and provincial levels. Under this scenario, one of the International Water Management Institute initiatives i.e., the Water Resource Accountability in Pakistan Program Component 1: Climate-Resilient Solutions for Improving Water Governance (CRS-IWaG) funded by the Foreign, Commonwealth & Development Office is working to strengthen the capacity of federal, provincial and district level water managers. In this regard, the IWMI gender team was the first to conduct an in-depth gender analysis at the district and province level by adopting gender-transformative approaches. The analysis focused on: (a) identifying the capacity of national, provincial and local departments for gender mainstreaming, (b) women's participation, access and control over agricultural production and water resource management, (c) sociocultural division of gender labor, and (d) devising possible strategies for gender-inclusive planning. The results of the study show: (a) the need of capacity building and sensitization about GESI at all levels, that is in government institutions, water user associations and farmer groups, (b) lack of sex-disaggregated data to devise inclusive strategies. Recommended initiatives include: (a) capacity-building training on GESI in IWRM at district, province, and federal levels, (b) awareness sessions with male groups of WUAs, and (c) producing easily adoptable practitioner 'cheat sheets'. The implications of these initiatives would be capacity building of government officials from water and agriculture departments for gender-inclusive project planning and implementation.

Assessing the existing policies and schemes in India's food, land and water sector from a gender perspective

Garima Taneja, International Water Management Institute (IWMI)

Archisman Mitra, Marlene Buchy

Climate change poses a significant threat to agri-food systems. However, individuals involved in agriculture, particularly women and marginalized communities, bear a disproportionate burden of the climate's unpredictability. This disparity arises from existing

structural inequalities, such as women having limited access to resources; unequal sharing of agricultural and household responsibilities; lack of decision-making power; insufficient availability of nutritious food, leading to malnutrition and food insecurity; and heightened vulnerability to climate-related stresses. It is crucial to address these disparities by promoting gender-responsive policies that ensure equal opportunities for women and marginalized communities. This paper examines the policies and schemes at the central level in India within the food, land and water (FLW) sector, aiming to understand the extent to which current policies support gender-transformative efforts, and aiming to identify existing gaps. Additionally, we analyze the allocation of budgets for women and marginalized communities in these policies to identify specific ways in which gender budgeting is implemented for central-level policies. Furthermore, we highlight the necessity of improved accounting and meeting budget targets across various schemes that benefit women and marginalized groups.

The institutional dynamics of water justice in southern coastal Bangladesh

Mou Rani Sarker, International Rice Research Institute (IRRI)

Deepa Joshi

Bangladesh is the seventh most climate-vulnerable country, and the impacts of this are largely shaped by water-related challenges in this deltaic country. The gendered dimensions of these challenges are poorly understood and addressed in technical interventions designed to mitigate and enable adaptation to climate impacts. A focus on gender (read 'women') is often limited to water, sanitation and hygiene (WASH) interventions or, at best, extends to women's representation in irrigation water-user associations. These interventions fail to address the complexity of interlinked domestic and productive water challenges, as well as deep-rooted masculinities in the institutional dynamics of managing water crises. In this presentation, we discuss a water-justice framework that combines quantitative and qualitative methods to understand how intersectional gendered inequalities impact water governance and climate resilience. This includes exploring how the structures and cultures of formal and informal institutions shape masculinities in water access, availability and control. In this panel, we will discuss an analytical framework that allows exploring the multiple drivers—sociocultural, economic, political, and institutional that perpetuate structural and gendered water inequalities from household to policy levels. Addressing transformative water justice as the framework will demonstrate requires paying attention to these complexities, as well as to intersectional disparities that crosscut gendered inequalities.

Gendered experiences in small-scale aquaculture in Myanmar: Implications for programs in the community

Surendran Rajaratnam, The National University of Malaysia (UKM)

Chan Chin Yee, Nhung Tran and Naw Tha Ku Paul

Myanmar is one of the world's largest producers of fish, and its small-scale aquaculture sector has the potential to improve fish consumption, increase income, and reduce the expenses of purchasing fish products for rural people with aquatic resources. However, apart from gender inequalities, COVID-19 and the security situation in Myanmar since 2021 have impacted the lives and livelihoods of people reliant on aquaculture. We conducted a gender study and explored ways gender norms and relations influence the ability of people in the communities to engage in and benefit from aquaculture interventions by undertaking mobile phone interviews. A total of 24 women and men from two different communities in the Ayeyarwady Region were interviewed. Some of the key findings include that access to productive resources varies across households. Intangible resources, such as social networks and information, vary by gender groups, with men having better access to knowledge and people who know about fish farming than women. The roles and responsibilities within and outside of their households were not too distinct between women and men. When needed, women and men are able to take on each other's roles. But we found women to perform productive roles more actively when their spouses are not earning an income for a variety of reasons, which include addiction to alcoholism and gambling. In order to attain the sustained changes and outcomes intended by programs, we suggest strengthening women's collective agency and, most importantly, identifying and addressing issues within the communities that lead to addiction to alcohol and gambling, including mental health.

A framework for gender research integration in livestock feeds and forages research design

Esther Njuguna-Mungai, International Livestock Research Institute (ILRI)

Alessandra Galiè, Alan Duncan, Ben Lukuyu, Melkamu Derseh, Chris S. Jones, Amole Tunde, Isabelle Baltenweck

Low livestock productivity often observed in developing countries is partly attributed to unimproved genetic stocks and inadequate animal health services, but

the scarcity of high-quality and sufficient feeds is the critical constraining factor. The livestock feed challenge persists despite many investment programs focused on livestock feed research and development over the past three decades. Feed availability on small-scale farms is also impacted by climate change factors that lead to seasonal droughts during which feed resources are scarce, pastures dry up, distance to scavenge for feeds increases and market-based alternatives become expensive. The limited availability of feed during the dry season results in sizeable seasonal fluctuation in milk (or other products) production and, in extreme cases, producers lose their livestock. Community social norms (informal rules and regulations) lead to women, youth and men experiencing the feeds challenge in different ways in different locations. This gender and feeds conceptual framework is designed to help unpack the gender considerations to focus on in the feeds value chains in diverse livestock production systems in low- and medium-income countries (LMIC). It focuses on how, where, and which gender considerations matter in feed-resource targeting, feed-option improvement, and feed input/output marketing and delivery. The aim is to positively affect the knowledge about and adoption of improved feed technologies and innovations, among men and women farmers, to ultimately contribute to enhanced livestock production in the smallholder systems in LMIC as a component of agri-food systems.

Historical and gendered sweet potato 'pires' (pathways) in Mozambique

Lora Forsythe, University of Greenwich

Throughout history, the movement of people has brought with it the movement of food crops. These movements and the re-embedding of both food crops and populations in new and nonindigenous contexts are sites that reveal dynamic social relations profoundly linked to colonial histories, patriarchal power hierarchies and neoliberal ideology. This research paper and the accompanying visual representations explore this theme through an analysis of community discussions that bring a historical perspective to the non-indigenous crop of sweetpotato in Manica and Nampula provinces of Mozambique. The study involved qualitative, co-designed and participatory research that involved an interdisciplinary team from Mozambique, Kenya and the UK working with community elders, and male and female farmers. Findings from the study reveal layers of historic 'encounters' with external actors anchored around sweetpotato, from colonial powers to the private companies, international donors, agricultural extension and crop breeding institutions. These encounters are united in their reflection of patriarchal and colonial/postcolonial power dynamics that have shaped how men and women farm overtime, and the results and the reverberations that follow. Communities, particularly

older women, have developed strategies to maintain 'traditional' farming, food cultures and valued varieties, in the context of increasing pressure from climate and environmental change, conflict and the private sector. Important context and lessons can be drawn from research that uses a historical and gender perspective in understanding innovation pathways. It can inform a deeper understanding of trait preferences and broader, diverse, interactions with released crop varieties, which are relevant to crop-breeding communities.

Gendered dimensions of improved agricultural practices in farm households in a coastal polder of southwest Bangladesh

*Sadika Haque, Bangladesh Agricultural University
Nasiba Aktar*

Gender disparities persist in farm households in the climate-vulnerable coastal Bangladesh. Keeping this view in mind, this study explored the intrahousehold gendered dimensions in some coastal polders of southwest Bangladesh. A stratified random sampling method was employed to select 350 farm households from the polder 30 under Khulna district. Different quantitative descriptive and statistical techniques have been followed here. The study found that among the cropping patterns, Rice-Fallow, HYV Rice-Sesame and HYV Rice-Mungbean were the most dominant cropping patterns, and the introduction of improved cropping patterns resulted in an increase in women's workload. Most of the decisions regarding production methods, variety selection, and marketing were taken primarily by men (guided by cultural norms), but women had huge workload of postharvest operations, and greater involvement in household chores. The study identified that household heads' engagement in the nonagriculture sector, women's paid employment outside the households, farm size, household size and their existing knowledge are factors influencing women's decision-making and bargaining power. It seems when men are involved in nonagriculture, women participate more in farm works, they take more decisions and their level of bargaining power increases. Again, women's employment in paid work made them more empowered. So, the same women participate in agriculture for the household and other paid work, achieve bargaining power and are able to take decisions on production. What about time management? It is a matter of concern, whether women's position at household is traded off with their workload. In conclusion, this study provides strategic gender-focused policy recommendations.

Addressing gender-based constraints of smallholder women farmers in the mid-hills of Nepal

*Salu Basnet and Gyanu Maskey, Southasia Institute of Advanced Studies (SIAS)
Sushant Acharya*

Impacts of climate change, COVID-19, and feminization of agriculture have exacerbated uncertainties in agriculture in Nepal's mid-hills and increased women's burden. In such a context, the research in two districts of Nepal aimed at addressing the gender-based constraints (GBCs) to empower women's engagement in higher nodes of the value chain for vegetables in Arghakhanchi and for legumes in Ramechhap. This paper discusses: a) the research findings on gender-based constraints along the sociocultural, economic, policy, technological and environmental domains; b) the reflective approaches of the interventions, based on identified GBCs, and how these interventions were helpful in addressing the GBCs. The research adopted a qualitative approach, including key informant interviews, focused group discussions, photo stories, policies review, deliberative forums, and a policy expert meeting, and used N-VIVO for the data analysis. To address the GBCs identified as time poverty, limited mobility to access market, low bargaining power, limited access to finance, and financial and digital literacy, in Ramechhap the interventions focused on strengthening the farmer cooperative and branding and marketing of the legumes. While in Arghakhanchi, a process of co-production—continuous engagement and dialogue—led to the re-opening of the local market (haat-bazaar). Further, Women Champions' identification as role models and GESI and local planning orientations have motivated other women and helped to develop action plans to address their GBCs to further the agenda of economic empowerment. The insights and reflections have broader relevance to other municipalities in addressing GBCs through key interventions and GESI-responsive policies and programs.

Gender attitudes on politics and leadership: A framing experiment

*Ning Ma, International Food Policy Research Institute (IFPRI)
Catherine Ragasa, Jordan Kyle*

This paper measures the extent of attitudes toward gender inequality in leadership at different levels of decision-making. We also estimated the effect of a subtle gender frame on those gender attitudes through a randomized survey experiment. Using a sample of 241 experts involved in federal- and state-level agri-food policy process in Nigeria, we presented six statements that support gender (in)equality in leadership at different levels and asked the

experts to rate each statement using a four-point Likert scale. Study results show persistent gender norms around women's leadership roles, even among elites and experts: 4–20% of female experts and 30–46% of male experts in our sample still believe that men are better in leadership positions at different levels. Female experts' gender attitudes did not vary by the level of decision-making and by gender frame; however, males' gender attitudes varied significantly by the level of decision-making and by the gender frame. Those randomly assigned the gender equality frame (e.g., Women make equally good or better political leaders than men do) were less likely to have attitudes in support of gender inequality in leadership than those randomly assigned the gender-inequality frame (e.g., Men make better political leaders than women do). Male respondents tended to disagree less on the statements that support gender equality than to agree on the statements that support gender inequality. Assessing attitudes through surveys is often challenging and biased, as we show that responses to sensitive gender questions are malleable and sensitive to subtle framing. We demonstrate that subtle frames affect survey responses, which warrants attention to a more careful survey design.

Convergence and self-help groups: Conduits for advancing gender equality and social inclusion in agri-food systems

*Sugandha Munshi, International Rice Research Institute (IRRI)
Ashok Kumar, Virender Kumar*

Globally, women are dominantly employed in the agriculture food systems, which is a critical source of livelihood for women as compared to men. As a result, it becomes crucial to brainstorm, design and innovate strategies and approaches that are gender responsive and equally create a conducive platform for transformative agri-food systems. The role of social capital and the local/traditional system becomes critical to have a sustainable approach toward achieving the goal of an inclusive agriculture system where women have an equal and level playing field to that of men. There is an intrinsic need for leveraging platforms that help in dealing with gender power relations and establishing an institutional approach toward systemic change. Critically examining and understanding the role of social innovations primarily including collective actions and institutionalizing changes through two projects interventions Cereal Systems Initiative for South Asia and Precision direct-seeded rice-based diversified systems for transforming labor requirement, yields and profitability of smallholder farmers in Odisha (DSR-Odisha), two innovative approaches that have played a critical role in creating a pathway for gender-responsive agri-food systems—working with women self-help groups (WSHG) through livelihood missions

and institutionalizing the convergence platform. A detailed strategy developed created an inclusive pathway in outreach. Evidence generations were carried out through mixed-methods approaches—both qualitative and quantitative. The convergence platform is a unique innovation and now is institutionalization under the ICAR-ATARI. The platform has been playing a decisive role as far as the inclusive advisories outreach is concerned in eastern India.

Necessity as a driver in bending agricultural gender norms in the Eastern Gangetic Plains of South Asia

*Pragya Timsina, International Maize and Wheat Improvement Center (CIMMYT)
Anjana Chaudhary, Akriti Sharma, Emma Karki,
Bhavya Suri, Brendan Brown*

The majority of farmers in the rural global South continue to rely on agriculture for a living, either directly or indirectly. Despite accounting for nearly half of the world's farmers, women face gender-specific challenges such as deeply ingrained cultural and social norms that limit their access to land, assets, financial markets, agricultural training, and information. This study investigates how necessity is becoming one of the major drivers in the bending of agricultural gender norms, using semi-structured interviews with farmers in the Eastern Gangetic Plains. As a result of labor shortages, the absence of male household members due to emigration, or their involvement in other lucrative income-generating livelihood activities, we discovered that women's roles and participation in agriculture are adjusted on a needs basis. Women's involvement in agriculture was not motivated by a willingness or desire to work in agriculture, but rather by a necessity arising from their financial situation. Thus, this study focuses on the growing trend of bending gender norms, and makes recommendations for increasing women's participation and scope in future agriculture development initiatives through gender-equitable policies and interventions.

What agricultural transition means for women in man-headed households in South Asia: An in-depth exploration of intrahousehold evaluation processes

*Emma Karki, International Maize and Wheat Improvement Center (CIMMYT)
Anjana Chaudhary, Akriti Sharma, Pragya Timsina,
Rama Sharma, Ava Leipzig, Brendan Brown*

Women's participation in agriculture is increasing in the Eastern Gangetic Plains due to various external drivers, but they continue to play a limited role in agricultural decision-making. Yet there is limited understanding of the perspectives of spouses in a men-headed household post-technology adoption. To understand spouses' experiences after technology adoption, we conduct qualitative research with household heads and their spouses in 47 households to understand how they perceive recent adoption of conservation agriculture to have affected their socioeconomic status and roles in agricultural production. Both household heads and their spouses tended to prioritize technological benefits, status change, changing roles and responsibilities at a household level as important contributions/aspects of new conservation agriculture practices. However, upon deeper inspection, women had limited mechanistic understanding compared to men and their use of freed time was situation-dependent and with location-specific opportunities for women to upskill. Efforts to reduce the information gap and incorporating their technological preferences and needs in future promotional activities are necessary to improve women's participation in decision-making. Similarly, opportunities to upskill can provide potential opportunities to women to realize their personal aspirations and have a positive influence on their household and community.

Enabling environment for sustainable intensification of mixed farming systems for gender-transformative change in mid-hills of Nepal: What to consider?

Sanju Koirala, International Water Management Institute (IWMI)

Marlène Buchy, Manohara Khadka, Shristi Shakya, Nilhari Neupane

Nepal's agriculture sector is facing various challenges including, amongst others, inadequate infrastructures, investment, labor shortage, climate-induced changes, and weak agriculture governance mechanisms. With the increase in migration trends among males, the 'left behinds' in the mid-hills of Nepal, are mostly women, middle-aged men, and the elderly. Due to the massive decline in the labor force, arable land is left fallow, ultimately affecting food security. Within this context, IWMI and CIMMYT are conducting action research in Khotang and Surkhet districts located in the mid-hills of Nepal as part of a CGIAR initiative on the Sustainable Intensification of Mixed Farming System (SI-MFS). The intention is to suggest sustainable, gender-transformative pathways to address some of the challenges by deploying locally viable sociotechnical

innovations selected, profiled, and piloted in consultation with different stakeholders. The successful implementation and scaling of innovation depends on softer elements such as policies and regulations, informal institutions–power relations, value chains, markets, financial mechanisms, and infrastructure. Considering this, the study aims to assess factors that support and/or constrain the SI-MFS in Nepal to bring about transformative changes in the lives of women, the elderly and marginalized farmers. Using a gender-transformative approach (GTA) as a framework, we are trying to understand how GTA matches with the goals set by SI-MFS initiatives. This study takes a reflective approach and critically assesses SI-MFS activities planned and implemented in Nepal. At the initial stage of the research, we will be sharing reflections on challenges we faced in contextualizing SI-MFS activities in Nepal within GTA.

Women's empowerment to gender transformative change in agri-food systems in Fiji

Radhisha Shivnal Nath, Fiji National University

The article takes a look at how gender transition might help advance women's empowerment within the context of Fiji's agri-food systems. Women's contributions to agriculture and food systems have always been vital, but structural inequalities have kept them from reaching their full potential. Recent efforts to improve women's empowerment in agri-food systems have mostly focused on expanding women's access to resources, markets, and knowledge. Unfortunately, these efforts have not done enough to tackle the root causes of gender inequality in agri-food systems. A «gender transformative» approach, on the other hand, seeks to shift the underlying social norms, power relations, and institutional arrangements that sustain gender inequality. This article proposes that a gender transformative approach is necessary for Fiji to achieve sustainable and equitable agri-food systems. Using case studies from Fiji and elsewhere, this research highlights the potential benefits of a gender transformative strategy, such as increased productivity, better nutrition, and greater social inclusion. However, it acknowledges the challenges and complications of putting such a policy into effect, particularly in the face of cultural and economic hurdles. In order for Fiji to attain true gender equality and sustainable development in its agri-food systems, a gender transformative strategy is necessary, as argued in this article. It will take cooperation from government officials, nonprofits, and businesses for this to come to fruition. At the article's conclusion, suggestions are made for enacting a gender transformative strategy in agri-food systems, both in Fiji and worldwide.

2.2B · THE GENDERED FACE OF CLIMATE CHANGE, ADAPTATION AND RESILIENCE (POSTER SESSION)

Building resilience through human-centered interventions: A case study of female smallholder farmers in Matuu, Kenya

Ashley Mutiso, Itanya Africa Group

Samuel Vait, Okari Magati

This paper explores the findings of a baseline study conducted in Matuu Ward, Machakos County, Kenya, focusing on the needs, challenges, and aspirations of female smallholder farmers. The study employed focus group discussions and a desk review of existing information to collect data. The findings reveal that female smallholder farmers in the region face obstacles such as limited access to finance, knowledge, technology and markets. These challenges result in lower agricultural yields, increased vulnerability to climate change and heightened poverty levels. The social context of the farmers highlights the predominant role of men in decision-making, leaving out women in the making of life-changing decisions. The study also identifies various challenges they face, including lease agreement issues, market linkages, environmental concerns such as deforestation and soil degradation, and health-related problems such as water pollution, limited access to healthcare and behavioral biases toward receiving specific interventions, as challenges impacting women's agricultural productivity. As part of an ongoing project, the study recommends social capital and community resilience interventions, capacity building, improved financial structures, women's empowerment programs, and climate change adaptation and mitigation measures to increase resilience. This paper argues for a better understanding of the gendered dynamics within the context of women smallholder farmers for designing targeted interventions that address their specific needs. By enhancing their adaptive and transformative capacities, these interventions can contribute to building resilience, reducing gender inequality and promoting sustainable agricultural practices.

Enhancing climate- resilient livelihoods of women, youth and vulnerable populations in the Lake Victoria Zone Region of Kenya: A case of Homabay and Migori counties

Rahma Adam, WorldFish

Dorothy Amwata, Nicholas Ndiema and Philip Osa

Climate change and variability plays a central role in the livelihoods of fishing communities along the Lake Victoria Zone Region of Kenya. Women and vulnerable populations are the worst hit; therefore, this study aims to identify the effects of changes in rainfall and temperature on the livelihoods of women, youth and other vulnerable populations in the Lake Victoria Region in Kenya that depend on the fish value chain, and to assess the coping and adaptation strategies to deal with climate and other environmental changes, taking Homabay and Migori counties as a case in point. A cross-sectional study design, incorporating mixed qualitative and quantitative methods, was adopted in this study. This study analyzed data from the 480 sample households, 42 key informant interviews (KIIs) and six focus group discussions (FGDs). The participants were drawn from the different fish value-chain players, namely boat makers and repairers, boat crew, fishermen, beach management unit, small- and large-scale fish traders, transporters, county fisheries departments, county meteorological departments, the Kenya Revenue Authority and cage farmers. Content analysis was used to analyze data from KIIs and FGDs. A spatial analysis integrating socioeconomic and spatial data was used to establish factors influencing the vulnerability of women, youth and people living with disabilities to impacts of climate change in the counties. Results show that there are distinct sex-disaggregated roles among the fisher communities, with females playing specifically boat managers, small traders and fish assemblers, while males were fishermen, boat makers and repairers.

Understanding gendered coping mechanisms of actors within cassava production in the face of prevailing climate change challenges in Tanzania

Sarah Msita, International Institute of Tropical Agriculture (IITA)

Olajumoke Adeyeye, Devis F. Mwakanyamale, Steven M. Cole

Prominent climate change events such as heavy rainfall, windstorms, heatwaves, and drought pose detrimental effects on the livelihoods and resilience

of women and men actors in agri-food systems (AFS). This study explored the difference in coping mechanisms employed by women and men cassava smallholder farmers in the face of such climate change adversities. Qualitative research methods were adopted through conducting 10 in-depth interviews, eight key informant interviews, and six community-level focus group discussions with purposively selected women and men cassava actors in Muleba district in Tanzania. The preliminary findings highlight men reinvesting in replanting cuttings and relocating to distant locations, leaving their families for indefinite periods without support. In households where men relocate leaving their families, women are burdened with extra responsibilities caring for their family members. They are forced to diversify into additional income-generating activities, including opting for short-term crops to ensure food and nutrition security. Some older women used indigenous knowledge by sanitizing cassava cuttings with human urine to control root rot diseases, caused by climate change, to build resilience. The findings suggest that women and men experience climate change impacts differently due to their socially constructed roles and responsibilities. Providing better understanding of gendered coping mechanisms is essential for transforming cassava production system. This will increase productivity and incomes, build resilience to adapt to climate change and contribute to climate change mitigation. Findings from this study have significant implications for development interventions targeting inclusive efforts to build women's adaptive capacities in agri-food systems.

Understanding drivers and barriers for adoption of climate-smart agriculture through a gender lens: Evidence from India

Prapti Barooah, International Food Policy Research Institute (IFPRI)

Muzna Alvi

Adoption of potentially beneficial climate-smart agriculture (CSA) practices has been low. There is limited evidence on opportunities for, and constraints to, adopting agricultural practices to respond to climate change among smallholder farmers, particularly women farmers. Furthermore, CSA is criticized for neglecting existing gender inequities in agriculture and, hence, falling short of responding to the needs of women farmers. This paper draws from quantitative surveys conducted with 2,238 female and 811 male farmers in Gujarat, a western state in India, to understand their perception of climate change and experience with climate shocks; and to assess factors that influence awareness and adoption of CSA practices among women and men. We use panel data

from two data-collection rounds conducted in April to August 2022 and April to June 2023. While men mostly consider agricultural aspects and food security issues as the important consequences of climate-related uncertainties, women also mention impacts on physical and mental well-being. The education level of the respondent, phone ownership, access to formal sources of extension, access to farm-level electricity connection and irrigation, are positively associated with adoption of CSA practices among women. On the other hand, women belonging to female-headed households are less likely to adopt CSA practices. Risk aversion is negatively correlated with adoption of CSA practices for both men and women. The results can be used by governments, nongovernmental organizations, and other critical stakeholders interested in ensuring equity in adoption of CSA practices, thereby enhancing resilience among farming households in low- and middle-income countries.

The development of sustainable food systems based on climate-smart agriculture and circular principles

Melinda R. S. Moata and Jaqualine a. Bunga, State Agricultural Polytechnic of Kupang

The agriculture sector plays an important role for food security and national income. However, climate change and business models have challenged the development in agriculture, especially in limited-resource regions like Nusa Tenggara Timur, Indonesia. Therefore, a study on climate-smart agriculture, value chains, gender, and partnerships is needed to develop a business model, especially for horticulture products. This research applied observation, survey, and interview methods to four elements (climate adaptation, value chain, inclusive entrepreneurship, and partnership). Each element was analyzed using content and social network analyses. The output of this research provides innovation for the transformation of agri-food systems through climate-resilient, good agricultural practices, and land and water management, competitive circular business models, and circular supply chains, gender and youth awareness, and Pentahelix collaboration. The outcome of this research is improving food security through partnership with a focus on the development of sustainable food systems based on climate-smart agriculture and circular principles with an integrated and collaborative approach.

Gender, social inequalities and application of climate-smart agriculture practices among smallholder farmers in Ghana

Rich Kofi Kofituo, International Institute of Tropical Agriculture (IITA)

Rich Kofi Kofituo, Mustapha Alasan Dalaa, Ghislain Tapa-Yotto, Faustina Obeng Adomaa, Powell Mponela, Maureen Erekuo Odoi, Osman Damba Tahidu

Farmers in Ghana have suffered from the effects of climate change. These negative effects are more severe among women and youth farming groups. Research in Ghana has been focused on developing climate-smart agriculture (CSA) practices to mitigate the negative effect of climate change on farmers productivity. The study uses baseline data from the Accelerating impacts of CGIAR climate research for Africa (AICCRA) project to analyze social inequalities and gender dimensions in the application of CSA practices among maize, cowpea, yam, sweet potato and tomato farmers in Ghana. A total of 551 farmers (83% female) were interviewed in six regions using an exploratory research design approach. All farmers practice at least one of the CSA practices, that is use of disease- and pest-tolerant varieties, minimum tillage, ridging, mulching, promotion of stress-tolerant improved varieties, composting, organic amendment for improving soil health, planting of *Mucuna pruriens* and organic amendment. Further findings show that male farmers are more resource rich in all regions of the study, apart from the Bono East Region. In terms of agricultural land holdings, male farmers own more lands than female farmers. Female farmers have more access to climate information in Bono East, Central and Upper East regions. Overall, male farmers have more access to credit than female farmers. From a policy perspective, in order to enhance equitable application of CSA practices among farmers, stakeholders must operationalize laws guiding tenure of farm lands, and there must be effective climate information dissemination coupled with facilitation of agricultural credit and loan facility to mostly female farmers.

Insights from a positive deviance approach to support socially inclusive climate adaptation in Kenyan dairy systems

Tanaya DuttaGupta, International Livestock Research Institute (ILRI)

Renee Bullock, Philip Miriti

The transformation of livestock systems toward sustainable climate-smart systems generates

multiple trade-offs and synergies. In this paper, we describe how gender relations shape, and are shaped by, climate-adaptation innovations, specifically the uptake of innovations in dairy-producing households in western Kenya. Intrahousehold dynamics surrounding the uptake of innovations can unintentionally reinforce inequitable distribution of benefits and burdens. We develop a positive deviance framework to identify common and 'hidden' patterns in intrahousehold gender relations related to dairy innovations, such as decision-making surrounding labor and income. Qualitative data was collected through sex-disaggregated focus group discussions and key informant interviews in Nandi and Bomet counties. Using vignettes, we explore what 'typical' and less common, or 'deviant' household relations are, and the cultural norms associated with these practices. Key findings reveal that men are often the primary decision-makers in many dairy activities; however, married women also negotiate and navigate decision-making spaces in hidden ways. More equitable intrahousehold decision-making arrangements are not discussed openly in society, especially because they undermine men's traditional roles as heads of household. This research generates insights into methodological approaches to reveal complex, often oversimplified and overlooked dimensions of gender relations. Our findings highlight the potential trade-offs and synergies that may occur through producer-led scaling approaches and set a foundation for the design of gender-responsive scaling approaches that generate synergies to better support socially equitable climate adaptation strategies and outcomes.

Climate change adaptation strategies, food security and gender relations: A case of pastoralists in Kilosa District, Tanzania

Venosa Mushi, Mzumbe University

This manuscript assesses how pastoralists adapt to climate change in achieving food security, with respect to the existing gender power relations in Tanzania. Although various studies have been conducted on climate change and gender, information with a strong focus on climate change adaptation strategies, food security and gender power relations, particularly in Tanzania, is scarce. To fill the information gap, both primary and secondary data were collected through a cross-sectional research design from 50 respondents, complemented with a desk review of various documents on gender, climate change adaptation strategies and food security. Questionnaire administration, in-depth interviews and focus group discussions were used as data-collection methods. Quantitative data were analyzed by the use of IBM SPSS Statistics computer program version 22, while qualitative data were analyzed through content analysis. Results show that

inequality in gender–power relations exists among the pastoralists in terms of ownership of resources and decision-making. The findings further revealed that the respondents use various strategies to adapt to climate change as remedy to sustainable food security. The findings of this study are expected to contribute to the existing body of knowledge on gender–power relations and climate change adaptation, thus informing policy planners/makers who are interested in formulating relevant climate change adaptation policies with a gender perspective/lens. Thus, gender-sensitive policies and strategies on ownership of resources and decision-making at the household level are required to trim down women’s vulnerability to climate change impacts and food insecurity at large. The government should also design implementable policies to ensure sustainable food security.

Inclusive water systems for just and resilient agri-food systems in Bangladesh: A transdisciplinary approach to inclusive water governance

Indu K. Sharma, International Water Management Institute (IWMI)

Shanta Soheli Moyna

A lack of equitable access to water among marginalized populations is a key constraint to the transformative agri-food system in Bangladesh. A centralized approach to managing water, persistent contextual socioecological barriers and the dominance of the powerful elite at multiple levels in the water governance systems have led to the exclusion of women, the poor, fishers and the landless from equitably accessing water resources. These challenges contradict national policy guidelines on participatory water management. The Asia Mega-Deltas initiative, in partnership with the Oxfam-led Transboundary Rivers of South Asia (TROSA)—Rivers, Rights and Resilience Project, plans to implement participatory research using a transdisciplinary approach that involves multiple sectors and stakeholders in water management to identify actionable pathways to addressing complex water issues. The TROSA second phase (2023–2026) will continue to work with evidence-based advocacy on inclusive water resources governance while addressing impacts of climate change on riparian communities through incorporating a citizen science approach for river health, supporting youth initiatives in the water sector, facilitating bilateral dialogues, strengthening resilience of livelihoods and ensuring people’s rights over river with special focus on women and Indigenous communities.

Climate resilient strategies for rice production in Jharkhand towards fulfilling food security

Ekhlaque Ahmad, Indian Council of Agricultural Research (ICAR), Birsa Agricultural University

Ashok Kumar Singh, Krishna Prasad, M.K. Barnwal, Binay Kumar, Varsha Rani, O. N. Singh

Rice is a major staple food crop of Jharkhand, mainly cultivated in Kharif season, because rainfed crops fulfil only 50% of food-grain requirements of the state. Women of the farming community in the state play a pivotal role in farm operation and rice cultivation—about 75%. Migration is a major bottleneck of resource-poor rural people for livelihood. Therefore, an integrated system approach is envisaged for self-sufficiency in rice production. Jharkhand is a state with a high population of tribal farmers (28%) who have a traditional farming system and mostly fall in category of marginal farmers. Cultivable land in the state is dominated by acidic soil, with only 16% assured irrigation facilities during kharif season. However, forest coverage is around 29.6% with an average annual rainfall of 1400 mm. Resource-poor farmers practice traditional mono-cropping with low inputs. The average land holding per family is less than one hectare. People cultivate rice mostly in the uplands, and the medium and lowland in a scattered manner, which brings down the average productivity. Birsa Agricultural University is working to uplift the tribal-dominated population of the state with rice crop improvement and has released many varieties suitable for different ecology of rice cultivation—like Birsa Vikas Dhan-111, Birsa Vikas Dhan 203, Birsa Vikas Sugandha-1—in recent years while collaborating with national and international institutes for releasing and promoting varieties like IR-64 (drt-1), Sahbhagidhan, etc. Quality seed acts as a catalyst in agricultural production, and is the most vital and critical input playing a significant role for the efficiency of the other inputs. A seed-rolling plan for producing quality HYV rice seeds of 20,507 tons would help timely availability to the farmers to make the state self-sufficient. In the recent past, several varieties have been released which are water efficient, nutrient efficient and nutrient dense to fulfil the dream of systemic approach for seed production. Direct seeding of rice is also advocated for maintaining the climate resilience in Jharkhand. This technology is affordable and time saving in crop establishment, advances the crop planting by 15–20 days, saves fuel and labor, reduces production cost, reduces irrigation water needs, reduces weed populations of particular species, reduces carbon emissions, increases crop yield by 5–10%, increases farm income and reduces emission of greenhouse gases.

Women's empowerment meets gendered transformations and climate change: Lessons for resilient agri-food systems from northwest Ghana

Charity Osei-Amponsah, International Water Management Institute (IWMI)

Andrew Okem

Women in climate-vulnerable and agriculture-dependent hotspots, like the Savanna and Upper West regions in northwestern Ghana, experience diverse impacts of climate variability and change, pressures on the natural resource base, and rapid socioeconomic changes. Women’s empowerment influences their ability to build resilience against the impacts of climate change and societal transformations to sustain their agrarian livelihoods. Yet, gendered transformations are not given much attention in policymaking and climate-resilience programming. The study applied the three key elements of agency, relations and structure to better understand gendered transformation, while looking at women’s empowerment through the lens of the related concepts of agency, resources and achievements. A mixed-methods approach was used to investigate the gendered nature of transformations and related issues of women’s empowerment for climate and agri-food resilience-building in 21 rural communities. The study found that women’s ability to adapt to climate change impacts, like droughts, is worsening because of cultural norms that restrict women’s control over land resources and their limited adaptive capacities. Exchange labor practices, mostly used by women, have drastically declined in the communities because agricultural production has increasingly become individualistic, mechanized, and based on nuclear households. Gendered cropping patterns have been transformed over the last 10 years. For example, while groundnut used to be produced predominantly by women, men have become the most significant groundnut producers. It is concluded that gendered transformation can enable or constrain women’s empowerment to influence their ability to build climate and agri-food resilience systems.

Compendium of good practices and promising approaches for gender responsive climate-smart agriculture

Katie Tavenner, Independent Researcher

The *Compendium of good practices and promising approaches for gender-responsive, climate-smart agriculture* is a new collaborative publication between FAO and the CGIAR GENDER Impact Platform, which

documents the state-of-the-field on gender-responsive, climate-smart agriculture (CSA) practices, policies, and actions across six regions: Latin American and the Caribbean, East Africa, Southern Africa Development Community, West Africa, South Asia, and Southeast Asia.

Drawing on the Framework for Gender and Socially Inclusive Climate-Resilient Agriculture, the compendium documents good practices and promising approaches across four gender and CSA action areas: (1) field-based evidence on what works for gender equality and women’s empowerment; (2) promoting women’s leadership and decision-making in policy at all levels; (3) closing the gender gap with information, institutions and services; and (4) building mechanisms to engender finance.

The good practices and promising approaches to gender responsive CSA compiled in this compendium were gathered from a desk review, analysis of programmatic evidence, and case studies contributed by development practitioners and experts in the different gender action areas. The examples showcased highlight the different gender in/equality dimensions that must be addressed in advancing gender equality and women’s empowerment in CSA: promoting women’s participation in decision-making at household, community, national and global levels; closing gender gaps in access to and use of productive resources and information needed for CSA production; technologies and practices for adaptation and mitigation that reduce workloads and negative impacts on women; and leveraging the power of women’s collective action.

2.2C · ADVANCING AND ASSESSING EMPOWERMENT IN AGRI-FOOD SYSTEMS (POSTER SESSION)

Assessing the impact of women's self-help group (WSHG) interventions on women's empowerment: A case study of WSHGs engaged in pisciculture in Odisha

Aradhana Srivastava, UN World Food Programme (WFP)
Eric Kenefick, Priskila Makwan, Azhar Haque

Objectives: Women’s economic empowerment through participation in women’s self-help groups (WSHG) is a key strategy to transform rural livelihoods in India. The UN World Food Programme in India collaborated with Mission Shakti, Government of Odisha, to assess the impact of a WSHG pisciculture scheme on incomes and women’s empowerment. Methodology: The study followed a mixed-methods approach, with empowerment assessed through a knowledge, attitudes and

practices module. The data were collected digitally by Mission Shakti staff and covered 260 WSHG. Key results: (a) For most WSHG, work in pisciculture had a positive impact, including growing respect within the family and increased engagement in community activities. (b) Impact on changing gender norms is visible, with many women believing it is OK to earn more than men. However, women still felt that household chores were their primary responsibility, even if they were working. (c) WSHG members received support from their families in managing pisciculture operations including pisciculture related tasks, commuting to the pond, paperwork, household chores and childcare. Contributions/implications of the findings: (a) Women's participation in WSHG activities has a positive impact on their empowerment and participation in family and community. (b) Community gender-sensitization programs are required to challenge traditional gender norms and promote active involvement of women in male dominated livelihoods. (c) It is important to also encourage men and the wider community to recognize and appreciate the contributions of women in such livelihoods.

Economic well-being induced empowerment through women's savings groups: Evidence in the coastal fishing communities of Bangladesh

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Md. Salauddin Palash; A.B.M. Mahfuzul Haque, Md. Nahiduzzaman

Women's empowerment becomes an important policy agenda and identifying pathways for empowerment is crucial for developing countries like Bangladesh specially to achieve SDGs. The prime objective of this paper was to examine whether community savings groups can truly improve the economic conditions of women, which may turn into women empowerment in fishing community or not. The propensity score matching and logistic regression technique was incorporated and required data were collected from Community Savings Groups (CSG) and non-CSG villages of coastal Bangladesh. Quantitative data were collected from 615 women comprising 306 CSG participants (intervention group) and 309 nonparticipants (control group). The results affirm CSG members were economically more solvent and less dependent on borrowed money compared to the members of non-CSG. Improved economic indicators (savings, income and expenditure) of CSG households were the foundation of attaining women empowerment of the intervention group. The women who were CSG members performed better in various dimensions of leadership capacity than those in the non-CSG women.

Econometric analysis confirmed the positive impacts of CSG interventions on savings, gross household income, earning from catching fish, alternative income-generating activities (AIGAs), expenditure, and women empowerment. The initiatives of CSG not only generate economic well-being but also contribute to women's empowerment. Financial access and literacy, along with an enabling environment for productive engagement of women, reduced gender inequality in the fishing community. Establishing institutional linkages (advisory and financial), legality/registration of CSGs from the government authority, and facilitation of AIGAs are crucial for sustaining the benefits.

Heifer's intervention for empowering women to transform communities

Sunmina Sreshtha and Neena Joshi, Heifer International

Diya Dutta, Apoorva Mahendru

Smallholder farmers in Nepal mostly women, engaged in household and farm activities with limited resources and access to services. Women's empowerment is cross-cutting and not the primary goal of most of the interventions. This study measures the outcomes of Heifer's intervention in women's empowerment to improve livelihoods through strengthening of the social capital, improved access to services, finance and income. The study employed mixed methods, combining quantitative and qualitative approaches. The quantitative study involved 251 respondents, 176 of whom were female beneficiaries and 75 of whom were some of their male family members from the Heifer, Nepal, working area. The qualitative study involved 10 focus group discussions and key informant interviews with various stakeholders. Secondary data from the nationally representative Demographic and Health Surveys (DHS) database of Nepal, Bangladesh and India were used to corroborate the findings. We found that women who are part of Heifer's intervention, outperform compared to other women from India, Bangladesh and Nepal in financial independence, ownership of assets and agency. The results show the intervention has significantly improved financial autonomy, thereby allowing women to become the primary decision-maker for their personal finances. Their confidence in depositing the savings in formal institutions has increased significantly. A very promising shift in attitudes shows 56% of men agreeing that unpaid care work should be shared equally between men and women. This shows Heifer's approach to be effective in achieving women's empowerment.

Economic empowerment of tribal women farmers through gender-inclusive mechanized seeding based technology in Odisha, India

Bidhan Kumar Mohapatra, International Rice Research Institute (IRRI)

Wasim Iftikar

This study is evidence of action research with eight women tribal smallholder farmers of the Mayurbhanj district of Odisha, India and its impact on enhancement of crop productivity and profitability through technology and varietal adoption, and crop diversification. Because of agricultural R4D innovations of a gender-inclusive DSR-Odisha project, the women farmers are trained in mechanized direct-seeded rice (DSR) based advanced rice production practice. These eight women farmers were imparted with season-long, hands-on training on advanced practice during the execution of demonstrations in their fields during kharif 2022. As 'seeing is believing', they attended various extension events. In the same season, these farmers had also their own traditional/farmer practice, that is puddled transplanted rice (PTR). We kept a record of the costs of cultivation, crop-cutting experiments based grain yields, and income earned through both practices. We estimated the average cost of cultivation in mechanized DSR-based practice (US\$530/ha) was 8% lower than the PTR-based farmers' practice (US\$578/ha). The benefit-cost ratio increased from 2.01 (traditional practice) to 3.22 (advanced practice) due to the innovations the women farmers adopted. Moreover, there was a yield advantage of 1.86 ton/ha (42% higher) in advanced practice (6.31 ton/ha) over the farmers' practice (4.45 ton/ha). Overall, there was crop intensification with an increase in profit of US\$593/ha due to the advanced practice of rice cultivation. Moreover, due to the adoption of mechanized seeding-based innovations, the scope for cultivating rabi crops opened for these women farmers, further resulting in crop diversification for income, food and nutritional security.

Empowering smallholder farmers by sustainable fodder development for improved animal management in Odisha

Swetasmita Das, Heifer International

Smallholder women farmers in the eastern Indian state of Odisha play a crucial role in the management of goat and backyard poultry. However, they face significant challenges due to fodder shortages, which adversely affect their livelihoods. This abstract highlights the

efforts of Heifer International in addressing the fodder scarcity through sustainable farming practices, with a particular focus on smallholder women farmers in Odisha. Heifer International's project in Odisha aims to promote the cultivation of diverse fodder crops, including tree fodders like moringa and subabul, grasses like napier and blue buffel, and seasonal crops like maize and cowpea. The project places a strong emphasis on the adoption of sustainable farming practices and provides targeted training to members of self-help groups (SHGs) on improved animal management and good agricultural practices (GAP) for fodder development. This training equips women farmers with the necessary knowledge and skills to cultivate fodder sustainably, considering factors such as land type, size, irrigation facilities, and the selection of high-quality planting materials. By addressing the challenges of fodder scarcity, Heifer International's project in Odisha contributes to the economic development and empowerment of smallholder women farmers. Access to nutritious and sustainable animal feed sources throughout the year enhances the health and productivity of their livestock, particularly, goat and backyard poultry, thereby improving their overall livelihoods. Furthermore, by actively involving women in decision-making processes and income-generating activities related to livestock farming, the project promotes gender equality and women's empowerment within the tribal communities of Odisha.

Role of technology as an enabler for gender empowerment: Evidence from the Khyber Pakhtunkhwa province of Pakistan

Khadija Begum, International Water Management Institute (IWMI)

Women constitute a majority of the workforce in agriculture and play a significant role worldwide in crop production. But their contribution largely remains invisible thus their involvement in agricultural policies/programs continues to be overlooked. This invisibility of women affects their access to new agriculture/irrigation technologies as mechanical work is considered men's domain whereas women do all manual labor in the fields.

IWMI introduced micro drip irrigation technology to women instead of following the established practice of introducing it to men. Going against the wind was a risk. Would the women show interest in adopting new technology, and would there be a social backlash because of this intentional targeting of women farmers? However, we decided to take this risk, as it would potentially open up new opportunities for women farmers to access new water and agriculture technologies, if successful.

These interventions are not just about enhancing

women's skills in agriculture technologies. This is essentially a step towards intentionally transforming gender norms in situations where such interventions are hard to undertake. Enabling women to realize that they can handle new technologies and increase their income – has allowed men to also acknowledge these issues. Small, but important steps have been taken, for example, in breaking the social norms on women's restricted mobility, by allowing them to travel safely in groups, to the city for attending training programs. This is how gender-responsive technological interventions can lead to transformative change towards a more inclusive, gender-equal society – in situations and contexts, where acting directly on unequal gender relations is challenging.

Beyond poverty alleviation: National Rural Livelihoods Mission's contribution to gender transformation and women's economic empowerment in Jammu and Kashmir, India

Neer Somakka AN, Indian Council of Agricultural Research (ICAR)

Sudhakar Dwivedi

The programs of the National Rural Livelihood Mission (NRLM) in Jammu and Kashmir, India, cater to around 80,371 self-help groups (SHGs) with 639,140 members. NRLM is a government initiative aimed at improving the economic well-being of rural women by promoting the formation of SHGs and providing them with access to financial services and support. In this study, the focus was on understanding how participation in the program affected the income of women in the region. A total of 303 women from 143 self-help groups were studied as treatment groups, and 120 below-poverty-line women from the same village were studied as control group. We followed the steps mentioned in Caliendo and Kopeinig for using the propensity score matching technique which compares the treatment and control groups in observational studies to estimate causal effects. The study's results indicated that the treated group, which had participated in the program, had a significantly higher mean income compared to the control group, suggesting that the treatment group was significantly more likely to have access to financial services than the control group. The average income of the treated group is Rs.6324.422, while the average income of the control group is Rs.5051.703. This means that the treatment is increasing income by an average of Rs.1272.719. The findings indicate that participation in the program had a positive and statistically significant effect on women's income, demonstrating the program's effectiveness in improving the economic well-being of rural women in the region.

Gender differences in pathways and politics of emic empowerment: Cases from Kenya and Cambodia

Haley Zaremba, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Patti Petesch, Eileen Nchanji, Nadia Guettou Djurfeldt, Hanna North, Marlène Elias

This study examines how men and women in Cambodia and Kenya define empowerment and describe empowerment pathways, and how empowered people are perceived by their families and communities. The study found that different genders and cultures define empowerment of women and men differently. In Kenya, conceptualizations of an 'empowered man' focused on economic factors, while an 'empowered woman' was primarily defined according to personal virtues, such as being ambitious and self-sufficient. In Cambodia, men and women alike focused on economic empowerment definitions and pathways. Additionally, empowered men and women are perceived differently by their communities. Empowered Kenyan men were seen as 'desirable', whereas empowered women were 'openly admired' and 'treated as a threat/feared' in equal turn. In Cambodia, men and women felt that empowered women would be welcomed by the community, but women felt that they may be resented by their husbands. Results revealed that the under-involvement of men in empowerment initiatives has contributed to resentment and feelings of neglect. These findings suggest that in supporting the effective empowerment of women and men, there is a need to center emic definitions, actively engaging men, including introducing safeguards for backlash against empowered individuals, and redressing norms that hinder acceptance of empowered women by their families and communities.

Developing a women's empowerment in energy index: Conceptual framework and empirical evidence

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Vidya Vemireddy, Claudia Ringler, Nikita Tank

Equal access to clean energy is key to meeting SDG 5 (gender equality) and SDG 7 (ensuring access to affordable, reliable, sustainable, and modern energy services for all). However, energy access is not distributed equally, with more than 80% of energy poverty—the lack of access to sustainable, modern energy services and products—concentrated in rural

areas, where it affects agriculture, food security and nutrition, and reduces livelihood opportunities and well-being. At the same time, a transformation in energy technology and resources is underway as the world moves to more efficient ways of conducting day-to-day activities while enhancing productivity. But are the gains from energy transformation distributed equitably within and across countries, communities and households? Research examining gender-differentiated patterns of energy use or access, and the role that women's empowerment plays in this, is scant. We contribute to the knowledge gap by reviewing the extant literature to understand the gender-differentiated patterns of access or use of energy and the role of women's empowerment. We develop a theoretically grounded conceptual framework to study energy and women's empowerment and identify a set of indicators that can be used to measure women's role in a rural and developing country context. We hypothesize that multiple dimensions of empowerment such as mobility, agency, and control over income, are the main drivers as well as outcomes of equitable energy use and access. We test this using detailed survey data from India, Pakistan, and Nepal, using empirical evidence linking women's energy use portfolio to measures of empowerment.

Toward gender equality in agri-food systems: Designing an women's empowerment index in integrated farming systems

Suci Wulandari, National Research and Innovation Agency (BRIN), Republic of Indonesia

The Integrated Farming System (IFS) has been rapidly expanding in agri-food systems due to its potential for sustainable agriculture, increased productivity, income diversification and climate change adaptation aligning with market demands. However, women's participation and contributions in IFS are hindered by gender norms, limited access to resources, low adoption of technology and unequal decision-making power. Currently, there is no existing measurement tool for women's participation in IFS. The use of existing measurement tools is not applicable due to the complexity of IFS. It encompasses the integration of diverse agricultural systems, including the Integrated Crop Livestock System and Mix Crops System, while also necessitating horizontal and vertical integration of business operations. This research aims to design the Women's Empowerment Index in Integrated Farming Systems as a comprehensive tool for measuring women's participation in agri-food system. The index aims to address gender gaps by evaluating women's inclusion across various dimensions of IFS. The index considers dimensions such as: (a) access to resources,

(b) decision-making power, (c) knowledge and skills, (d) entrepreneurial skill, (e) technology adoption, (f) income and economic empowerment, (g) social empowerment and well-being, and (h) sustainable practices and environmental management. The measurement is conducted using Multidimensional Scaling with weighting using the Analytical Hierarchy Process. By providing a comprehensive assessment of women's empowerment, this index can reveal the status of women's participation, inform policies and programs, and promote gender equality by recognizing and integrating women's contributions and needs in the agri-food system.

A counting-based approach to measuring women's empowerment in national surveys: Development of the Women's Empowerment Metric for National Statistical Systems (WEMNS)

Ruth Meinzen-Dick, International Food Policy Research Institute (IFPRI)

Greg Seymour, Jessica Heckert, Agnes Quisumbing, Hazel Malapit, Florencia Paz, Simone Faas, Emily Myers, Cheryl Doss, Sheela S. Sinharoy, Erin R. Johnson, Yuk Fai Cheong, Kathryn M. Yount, Md. Zahidul Hassan, Md. Imrul Hassan, Sudhindra Sharma, Pankaj Pokhrel, Mónica Dardón Sagastume, Shelton S. E. Kanyanda, Wilbert D. Vundru, Talip Kilic, Heather Moylan

Monitoring progress toward SDG 5—achieving gender equality and empowering all women and girls—remains challenging without incorporating women's empowerment metrics into nationally representative and multitopic surveys. To address this problem, we designed the Women's Empowerment Metric for National Statistical Systems (WEMNS) as a short empowerment module for the 50x2030 Initiative, a global partnership that aims to build capacity and close the agricultural data gap in 50 countries by 2030. We aimed to design a measure of women's and men's empowerment in urban and rural areas, with the flexibility to be relevant to a variety of livelihood strategies across countries in different stages of rural and structural transformation (e.g., farming, wage labor). WEMNS is a multidimensional index composed of four domains—intrinsic agency, instrumental agency, collective agency, and agency-enabling resources—measured by binary indicators. In this paper we describe the development and validation of the WEMNS index using the Alkire-Foster approach, including: (1) WEMNS's distinctiveness from other empowerment metrics, (2) the iterative approach to the development and piloting of WEMNS in Bangladesh, Guatemala,

Malawi, and Nepal, using cognitive interviewing, phone surveys, and face-to-face surveys, (3) analysis of quantitative pilot data, including intrahousehold patterns of empowerment/disempowerment, and (4) a summary of the findings from the qualitative work. The paper concludes with a discussion of lessons learned and possibilities for further development of empowerment metrics.

Measuring gender equality and women's empowerment in Latin American agricultural development

Mónica Juliana Chavarro, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)
Manuel Moreno

In 2016–2017, qualitative and exploratory research analyzed opportunities and challenges of using cell phones to collect sex-disaggregated data. This study was based on semi-structured interviews with men and women smallholder farmers involved in the Colombian Climate-Smart Village where climate-smart practices are implemented. This first study identified the difficulty in selecting the most appropriate gender indicators, and the best methods for data collection. Due to the identification of these challenges, we decided to conduct further research on the implementation of gender indicators in agriculture in the Latin American (LA) context. This process was carried out through an extended literature review of 150 documents. The review allowed us to understand how research and agricultural development projects in LA discuss, measure and consider women's empowerment and gender inequalities. We examined the theoretical concepts, the methodologies employed, and the way in which both are linked, in practice, uncovering similarities in the theoretical definitions of women's empowerment and gender inequality, as well as the differences in the way in which each study operationalizes these concepts. We also found discrepancies in the theoretical frameworks used and the results presented since many of the reviewed studies based their theoretical frameworks on the concept of empowerment but framed their results in terms of reaching or benefiting women, not necessarily in terms of women's empowerment. This study contributes to knowledge gap on the use of gender indicators in LA region and on the reflection on the debate on the measure of women empowerment.

'From plot to people': A photovoice exploration of South Asian farmer livelihood diversification strategies when

extra time and money are found through zero tillage adoption

Anjana Chaudhary, International Maize and Wheat Improvement Center (CIMMYT)
Bhavya Suri, Emma Karki, Akriti Sharma, Rama Sharma, Hom Nath Gartaula, Brendan Brown

Over the last decade in India, farmer producer organizations (FPOs) have emerged as a means of collectivizing smallholder farmers and providing them access to extension, innovation, and market services. FPOs that center women farmers, traditionally at a disadvantage vis-à-vis their male counterparts in access to resources and extension, can serve to enhance women's agency and collective action in agricultural value chains. We used 59 key informant interviews and nine focus group discussions to examine the constraints to, and facilitators of, women's and men's participation in three women-only FPOs in Jharkhand, an eastern Indian state. The FPO intervention we evaluated provided members with both agricultural and gender-based inputs to improve agronomic practices, market linkages, agricultural yields and profits, and the role of women both within the FPO and within their households and communities. We provided contextual insights on 'what works' to empower women in this context. Women's perceptions of the benefits from FPO membership were heterogeneous. Our qualitative analysis suggests a nuanced picture of women's autonomy and decision-making within and outside their household, further shaped by women's and men's perception of shifts in women's access to resources and services. The emerging lessons provide inputs for development implementers and policymakers to recognize diverse contextual barriers in designing FPO interventions to enable and enhance women empowerment outcomes. The research also contributes to the body of knowledge on local gender norms and understanding of empowerment.

Nexus among agricultural extension services, women's empowerment in agriculture, and farm income in Bangladesh

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Mohammad Jahangir Alam, Paresh Kumar Sarma, Bethany Cooper, Lin Crase, Sheikh Mohammad Sayem

The economic inclusion of women in the agricultural sector plays a crucial role in boosting productivity, increasing food security, and improving rural livelihoods in developing countries. However, women's empowerment

within this sector faces persistent social obstacles and economic constraints. Agricultural extension service programs provide farmers with education and support to increase agricultural productivity. However, such programs tend to favor the development of male farmers, perpetuating the exclusion of women. This study examines the nexus between agricultural extension services, women's empowerment, and rice farm income. Data from the Bangladesh Integrated Household Survey of 2015 and 2018 were used. We find that participation in agricultural extension services resulted in a 16.36% increase in the Women's Empowerment in Agriculture Index over three years, rising from 0.605 in 2015 to 0.704 in 2018. Rice farmers who participated in agricultural extension services received, on average, 31.61% more income than those in the nonparticipant group. Furthermore, those who participated in agricultural extension services increased their income by 2.63% between 2015 and 2018, indicating a cumulative positive effect over time. This study establishes a significant nexus among agricultural extension services, women's empowerment, and farm income in Bangladesh. The government must formulate policies to deliver agricultural extension services through the timely recruitment and periodic training of delivery agents, as well as the provision of adequate logistics.

Working hard toward empowerment? Studying the association between nonleisure time and decision making power of male and female farmers of central India

Vijayalaxmi D. Khed, International Maize and Wheat Improvement Center (CIMMYT)
Vijesh V, Krishna

The present study examines the gender differences in workload and decision-making as well as analyzing the influence of decision-making and other socioeconomic factors on the time use of male and female farmers of central India. Analyzing individual-level data collected in 2019 (347 wheat farming households), we found significant gender differences in the total number of work hours, patterns of time use, and the power to make decisions within the household. Men and women participate equally in productive activities, and women spend more time in domestic work. Land ownership by women and belonging to marginalized castes are found associated with a higher workload for female respondents. These factors have an insignificant effect on the amount of work and leisure time of the male respondents. Irrespective of their higher workload, women's involvement in decision-making is limited. The decisions over different farming and nonfarming activities and the use of income generated from these activities are made predominantly by the male household head across caste groups. We also observe

a trade-off between leisure time for women and their involvement in household-level decision-making. Women with agency had less leisure time than others. Our paper concludes that the decision-making agency for women in the study area comes at a cost, unlike in the case of men, due to the existence of patriarchal social norms. Our study findings create a richer picture of rural women's nexuses of time poverty and decision-making, which have implications for the development and diffusion of laborsaving technologies in agriculture.

2.2D · UNPACKING GENDER IN AGRI-FOOD VALUE CHAINS, MARKETS, ENTREPRENEURSHIP, EMPLOYMENT AND INCOME (POSTER SESSION)

Women power! Gender-related inequality in agricultural income generation: Empirical evidence from eight African countries

Carlo Azzarri, International Food Policy Research Institute (IFPRI)
Esther Heesemann, Jessica Kluth

Gender disparities in climate change vulnerability not only reflect preexisting gender inequalities, but they also reinforce them. Inequalities in the ownership and control of household assets and rising familial burdens due to male outmigration, declining food and water access and increased disaster exposure can undermine women's abilities to achieve economic independence. Our study looks at gender-related inequality and climate vulnerability, aiming at quantifying how climate shocks and stressors influence income and agriculture-related outcomes across households, with differing levels of gender equality in agricultural decision-making, and estimating to what extent gendered differences in productivity, income, labor, and farm investments are affected by exposure to climate shocks. Our study takes advantage of nationally representative LSMS-ISA household surveys from eight countries in Africa, south of the Sahara (Burkina Faso, Ethiopia, Malawi, Mali, Niger, Nigeria, Tanzania, and Uganda), matched with gridcell monthly time-series bioclimatic variables (temperature, rainfall, SPI, SPEI), to identify climate shocks and weather variability. We use a multivariate regression framework to estimate elasticities of climate shocks, capturing also nonlinearities along the distributions of outcome variables using a quantile regression model. Results show that climate shocks and weather variability exert a disproportionate negative effect on women in all dimensions considered that call for local advocacy initiatives in support of labor market policies for climate adaptation. Sustainable,

climate-resilient policies and interventions on the labor market remain a key priority, alongside vulnerable group protection in planning and promoting agriculture- and job-related programs.

Women's employment in agri-food systems

Vanya Slavchevska, Food and Agriculture Organization of the United Nations (FAO)

Agri-food systems (AFS) are an important livelihood source for women, particularly in low- and middle-income countries. However, to the best of our knowledge, no formal statistics or other available data readily identify and quantify the number of women and men whose livelihood depends on AFS globally. There is also limited information on the quality of their employment in AFS. To bridge this gap, we expand Davis's 2023 methodology and produce new global and regional estimates for people working in AFS disaggregated by sex. Our findings reveal that, in 2019, 36% of working women and 38% of working men were employed in AFS, globally. This reflects a decline of about 10 percentage points for women and 3 percentage points for men since 2005, mainly driven by a decline of employment in agriculture. We further find that during the first year of the COVID-19 pandemic, women lost jobs at greater rates than men, particularly in the off-farm segment of AFS. Finally, we use diverse data sources to analyze the type of employment in AFS and we find that women are more likely than men to be employed in vulnerable forms of employment, to be part-time, and in the less likely to be working in the more lucrative segments of AFS like transportation and wholesale trading.

State, civil society and women's labor use in the millet ecosystem: Gender transformative or exploitative? A tale of two Indian states

Rajshree Bedamatta, Indian Institute of Technology Guwahati

Tulika Rani Talukdar

India's National Food Security Mission, guided by the National Food Security Act, initiated a submission on nutri-cereals focusing on millet crops. In the wake of contestations surrounding different frames of food security and food sovereignty, millet has emerged as a critical link between women's labor and local food systems. In Nagaland, the North East Network is leading the revival of millet crops involving local communities, particularly women. In Odisha, a state-supported mission, the Odisha Millet Mission is creating new markets through an institutional process. In both these states, women are at the core of the

process as producers and processors. We studied the millet ecosystem in Nagaland (Phek District) and Odisha (Koraput District) to understand the successes, constraints and challenges within this dynamic milieu of increased state and civil society attention to millet. We analyse whether such interventions have transformed women's lives or relegated them to the background as disempowered and voiceless producers. We used a qualitative research framework comprising 25 in-depth interviews, 25 FGDs and 21 key informant interviews among women farmers, self-help groups (SHGs), and other actors leading the millet programs in both states. In Nagaland, women's bargaining power within a household has sway over the family's decision to cultivate millet. In Odisha, the state has directly intervened through an institutional process to intensify the process of women's participation in millet production and processing. However, the drudgery of work is disproportionately shouldered by women without commensurate financial gains.

Contributions of women in the agriculture sector of Bangladesh

Shahrina Akhtar, Krishi Gobeshona Foundation

Women in Bangladesh face a range of challenges in society. The study investigated the multifaceted contributions of women in various aspects of agriculture, including production, processing, marketing, and decision-making. The research employed a mixed-methods approach, combining qualitative interviews, focus-group discussions, and quantitative surveys to collect data from 300 women farmers, agricultural workers, and key stakeholders in the coastal area of Bangladesh. The study also drew on secondary data sources, such as government reports, academic publications, and development agency reports, to provide a comprehensive analysis. The findings reveal that women in Bangladesh are heavily involved in agricultural activities, both as unpaid family laborers and independent farmers. They contribute significantly to food production, accounting for a substantial agricultural workforce. Women's participation is particularly in labor-intensive tasks, such as planting, weeding, harvesting, and postharvest activities. They play a crucial role in transforming raw agricultural produce into marketable products through sorting, grading, cleaning, packaging, and preservation. Women's contributions extend beyond on-farm activities and encompass the entire agricultural value chain, including the marketing and distributing of agricultural products. Women often form self-help groups and cooperatives to enhance their bargaining power, access markets, and share knowledge and resources. Moreover, the study uncovers the growing influence of women in decision-making processes related to agriculture. Recognizing and supporting

women's contributions can contribute to inclusive and sustainable agricultural development, poverty reduction and improved food security in Bangladesh.

Empowering women and youth in rice value chains by implementing innovation platforms: A case study in Senegal

Maimouna Ndour, Africa Rice Center (AfricaRice)

The attempt to boost Senegal's local agricultural production has led to increased rice production that is more attractive to the private sector, which is competing with the vulnerable actors who are young people and women. The COVID-19 pandemic has further accentuated these groups' vulnerabilities, who, more than ever, need to be supported in reviving their economic activities. The observed tendencies of feminization of poverty, youth unemployment and high emigration rates reflect numerous economic and social obstacles, including exclusion from some financing programs. To preserve the profitability and the sustainability of small actors' activities, innovation platforms were created to strengthen and encourage innovation through a synergy of actions, collective and social learning and interactions among actors. Two youth-inclusive innovation platforms for rice value chains were established within this rationale in the Senegal River Valley. A focus was put on training the vulnerable actors in ICT to facilitate operations and linkages within the platform. Two activities were conducted: a mixed group of 100 young people was trained on the IP and a group of 25 women was trained on the use of ICT for marketing. Additionally, they were accompanied to better make their entrepreneurial activities profitable, building on the resources of their platforms. The impact of the IP engagement on the profitability and the sustainability of their activities was assessed by a quantitative survey that shows a positive impact on their economic activities throughout contractualization between them and the use of ICT for visibility.

Women and youth inclusive value-chain development: A case from Zaway-Shalla sub-basin of Ethiopia and Wegnia and Sourou of Mali

Likimyelesh Nigussie, International Water Management Institute (IWMI)

Assitan Diallo, Thai Thi Minh

Inclusive value-chain development aims to empower small-scale farmers and strengthen the agriculture sector. This study explores the impact of livelihood

assets, access strategies, and enabling and discouraging factors on women's and youth's inclusion in surplus agricultural production and off-farm activities in Ethiopia and Mali. It is based on an ecologically sustainable agricultural water management project that aims to make markets work for the poor through inclusive value-chain development in Zaway-Shalla Sub-basin of Ethiopia and Wegnia and Sourou of Mali. We explored how livelihood assets, strategies for accessing the assets, and enabling and discouraging factors in the value chain shape the inclusion of women and youth in surplus agricultural production and off-farm and nonfarm activities in landscape restoration. A qualitative dataset of 32 focus group discussions, 48 key informant interviews and 40 in-depth interviews was analyzed. We identified investing and cultivating inclusion strategies that demonstrate how women and youth from diverse social groups actualize business opportunities, overcome challenges, and create new opportunities for inclusion. Investing strategies involve women and youth from better-off households with good access to natural, social, political and physical capital for capital-intensive roles. On the other hand, cultivating strategies involve women and youth from resource-poor households that can harness natural, social and political capital to participate in off-farm and nonfarm business opportunities in landscape restoration. However, access to productive resources and services for women and youth adopting any strategies is hampered by gender and intergenerational norms, poverty and insufficient institutional capacity. We argue that it is essential to understand how social disparities and local environments interact to design and implement inclusive value chains. Additionally, it necessitates building competencies in institutions of various sizes.

Exploring socially responsible consumption intentions for gender-responsive cacao value chains in the Philippines

Aileen V. Lapitan, University of the Philippines Los Banos

Canesio Predo, Mitchiko Lopez, Nico Jayson Anastacio, Mia Barbara Aranas, Ma. Russel Faylor, Emmanuel Flores

In the Philippines' cacao sector, women and men take on various roles in the production and creation of values for the commodity. As gender-based inequalities are rife in agricultural value chains, addressing equity issues is justified in terms of business, social justice or development cases. The social justice argument for gender equality as a desired outcome is widely accepted by the development practitioners and scholars. On the other hand, the development case relies on the mutually supportive links between social

justice and the business case. This paper focuses on the role of gender in the business case that goes beyond the productivity benefits of encouraging women's participation and removal of gender-based barriers to production and processing. It explores the potential of tapping into the buying power of consumers who are willing to place premium value on socially desirable and gender-responsive actions in the cacao value chain. Using data gathered through an online survey in emerging markets for Philippine chocolate and a series of focus group discussions, the study examined intentions for socially responsible consumption among chocolate consumers. Findings show some opportunities and difficulties in expanding the scope of social certifications while bolstering the commercial case for gender equality for social justice. Policy implications and recommendations are discussed in the paper.

Comparative analysis of women-led and agrarian reform beneficiaries cooperatives in Davao City: Cocoa value chain using a gender lens in the face of vulnerability

Mitchiko Ariola Lopez, University of the Philippines Mindanao

Aileen V. Lapitan, Mia Barbara D. Aranas, Ma Rassell P. Faylor, Nico Jayson C. Anastacio, Canesio D. Predo, and Emmanuel Flores

This paper presents a comparative study using a gender lens in examining how two groups engaged in the cocoa value chain in Davao City, Philippines, addressed challenges and leveraged innovative strategies amidst a backdrop of vulnerability. The first group is a women-led cooperative, while the other group is a cooperative of Agrarian Reform Beneficiaries (ARB) operating for 35 and 30 years, respectively, within conflict and nonconflict areas. A rapid value-chain assessment was conducted through a series of focus group discussions and key informant interviews with members/officers of the cooperatives. The assessment was also supported by the available secondary data. Results highlight the unique roles and contributions of women in Davao City's cocoa value chain. A women-led cooperative has a one-of-a-kind innovation of buying and consolidating cocoa pods from tagged trees rather than wet or dried beans to ascertain 'tree-to-bar' quality standards. It is a way of navigating various challenges in cocoa production—accessibility of needed services, lack of postharvest facilities, and marketing difficulties within a community in transition from conflict. The ARB cooperative with its access to diverse services, and capital (financial, equipment, facilities) has diversified from dried fermented cocoa beans to a wide array of value-added products involving mostly women

workers. Innovation thrives when women workers and/or leaders have agency and power. Innovations are eased by persistent gender sensitivity and mainstreaming efforts. Recommendations leading to desired transformative change in agri-food systems in this part of the world are also discussed in the paper.

Reimagining agri-value chains as sites of social and societal reproduction

Chandana Bindu, International Rice Research Institute (IRRI)

This presentation highlights a 2023 scoping review of literature of studies conducted in Asia, Africa, Latin America and Middle East and North Africa (MENA) focused on the way women's labor and productivity is conceptualized in the value-chain approach in agri-food systems. The review argues that even in interventions designed to be gender transformative, productivity gains are assessed in terms of extracting more economic value per unit of input factors. They do not consider the nodes as sites of social and societal reproduction and, consequently, ignore the care and affective labor that women perform to maintain them. This is significant because a-economic labor is consequently not considered while calculating total factor productivity and results in potentially false narratives of interventions producing Pareto gains. Some interventions utilize a methodological individualist lens that only considers the behavior of the communities and groups as the aggregate of the behavior of the individuals. Consequently, interventions that may not provide significant benefits at the individual level, but transform social norms, might be categorized as unsuccessful. Together, this results in monitoring and evaluation frameworks that privilege individual economic gains, discounting trade-offs in other forms of non-economic labor or impact on community well-being. The review calls for a framework for a comprehensive evaluation of inputs and outputs, including economic inputs and impact at the community level.

Assessing gender gaps among women street vendors and hawkers: A study of women as stakeholders of agri-food systems of India

Sai Sailaja Bharatam, NMIMS, School of Law, Hyderabad

Sridip S. Nambiar, Abhijeet Kumar

Agency will (government support) plays a crucial role in achieving palpable results toward gender justice

through empowerment. Women street hawkers and vendors selling greens, flowers, meat and fish in urban and rural areas take a vital place in the agri-food systems. These small day-to-day businesswomen play a major role in bringing in the produce to markets for sale. Understanding their impact on the ecosystem of the respective supply chains will enable future research on the positioning and impact of these vendors and hawkers in the ecosystem. In our work, we sought to understand three aspects of women street vendors and hawkers: (a) The time invested and the gains they receive on a day-to-day basis. What is their present status of technology usage in terms of phones, smart phones, and digital payments? What are the pros and cons of digital transformation in their lives? What aspirations they hold for the future and upgrade of technological help for further improvement to their lives? (b) What alternatives are available and what are the opportunity costs involved if they are moving out of their routine? What is their awareness of saving and support systems they have for a rainy day? (c) What is their awareness of and aspirations for governmental intervention in their lives? The work will collect 20 plus personal interviews of both men and women street vendors and hawkers through a survey from a metropolitan, semi-urban and rural areas of Telanagana and Andhra Pradesh. The present work will facilitate and help understand the agency that is the government for a relevant intervention and support for the betterment of the women street vendors and hawkers.

Resilience of rural women vendors in Bihar, India

Prakashan Chellattan Veettil, International Rice Research Institute (IRRI)

Ishika Gupta, Samira Choudhury

Resilient supply chains are at the backbone of any well-functioning market. This paper examines how resilient the supply chains are for female vendors and what are the types of challenges they face when selling their products. A survey of both traditional markets and small village retail shops was conducted in 50 clusters in Nalanda district of Bihar, India. A census was carried out of all markets and retail shops within a cluster. For the survey, the market vendors and retail shops identified in the census were further stratified into different categories as per the products they sold. Even with this inclusive approach of sampling, we found only 27% female in retail shops and less than 5% as market vendors. Wholesalers were the primary supplier for both female and male vendors and retail shop owners and the female owners were located closer to their respective suppliers. When choosing a supplier, female vendors took into consideration

whether a credit facility was available or not, whereas male vendors and shop owners considered the quality of the product to be most important. One of the biggest challenges that female vendors face while selling their products was that there were not enough customers, whereas male vendors faced competition from their peers. Male retailer shop owners mentioned price fluctuations as their biggest challenge whereas their female counterparts mentioned low profit margins as a challenge. In summary, we observed low women participation in organized markets but relatively higher for retail shops.

Gender-smart investment to improve access to finance and resilience for women-led agribusinesses

Marie Ena Derenoncourt and Stephanie Jaquet, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Climate change is increasingly threatening agri-food systems. Extreme events and external shocks are affecting global markets and increasing prices for the most vulnerable members of society with women and minorities disproportionately affected. In that context, improving women-led agribusinesses access to finance is key to improving CSA practice adoption and increasing agri-food system productivity. Yet, women in agriculture, food, forestry and fisheries receive less than 10% of total agriculture investments worldwide. The Gender Accelerator program of the Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) project in Senegal aims at addressing gender inequality in access to business acceleration by providing targeted business development in conjunction with CSA and CIS capacity building. This paper presents the project results and our recommendations for improving access to finance and improving resilience for women-led SMEs in agri-food systems. To illustrate this process, we analyze a case study of a woman-led SME in the transformation of cashew nuts. We followed her path of change and scale throughout the project via surveys, interviews and analysis of her business model, including its adaptation to climate change. The results underscore the gender-based inequalities that continue to prevail in Senegalese culture despite progress made through initiatives by women-led cooperatives and private sector actors. Even for formal businesses, access to finance remains complicated. There is a need to create awareness and raise the importance of de-risking investments through capacity building and impact analysis. Adapted innovative financial solutions can be a solution to support investment in women-led agribusinesses.

Gendered decision-making and the drivers of seed choice in Andhra Pradesh and Telangana

Goundla Mamatha, Center for Sustainable Agriculture

G Rajshekar, GV Ramanjaneyulu, Divya Veluguri

Seeds play a critical role in agriculture, affecting biodiversity and food security. This study focuses on understanding the factors influencing seed source and varietal choices, with an emphasis on the gendered nature of decision-making, as part of a larger project aiming to establish gender-responsive, decentralized, open-source seed systems in Andhra Pradesh and Telangana. Data collection is ongoing, and nine focus group discussions (120 men, 82 women) have been conducted thus far. The findings suggest that women's role in seed selection varies across regions and crops. In tribal communities, women are custodians of seeds and reported significant influence over seed varietal choices and replacement, preferring to store seeds, whenever possible. In central Telangana, where farmers cultivate market-focused crops, women rarely participate in seed selection activities, despite being integral to agricultural operations. In regions growing high-input, market-focused crops, where women report contributing to discussions on seed-related choices, the final decision often rests with the family head. Women respondents often reported that male decision-makers preferred sourcing seed from input shops. Farmers primarily rely on input shops and nurseries for sourcing seeds or saplings, but they acquired seeds from state-run universities, farmer producer organizations and fellow farmers. Few farmers reported storing seeds, with storage primarily limited to self-pollinated crops that are easy to store and less susceptible to pests. This study illuminates the multifaceted dynamics of seed systems in Andhra Pradesh and Telangana, and highlights the disparity in women's involvement in seed selection across regions.

Exploration of gender dynamics in the production and marketing of forage technologies in Kenya

Nelly Njiru, International Livestock Research Institute (ILRI)

Alessandra Galiè, Francis Wanyoike, Mashonganyika Tawanda, Brenda Boonabaana, Jenipher Bisikwa, Esther Njuguna-Munga, Chris S. Jones, Isabelle Baltenweck

Inadequate and poor-quality feed resources constrain livestock production that compromises

the livelihoods dependent on livestock in low- and middle-income countries. Several forage varieties have been developed, targeting smallholder farmers in developing countries, yet the level of adoption remains low, particularly among women farmers. Adoption of varieties could enhance livelihoods by increasing livestock productivity and by providing income from the sale of surplus forage. Evidence on gendered barriers to, and incentives for, adoption of forage varieties is scarce. We explored the gender dynamics influencing uptake and commercialization of the *Brachiaria* grass forage variety among women and men farmers in four subcounties in Kenya. Data from 260 individuals, belonging to a household where at least one individual is a member of a dairy cooperative, were collected. Also, 16 single-sex focus group discussions and eight key informant interviews were undertaken. Results revealed *Brachiaria* grass is accessible to women and men. Dairy cooperatives are critical for women and men to access extension services, useful information, and planting materials, but only a few women are cooperative members. Men are constrained by small land areas, rather than the ownership and access problems that constrain women. These challenges privilege men while subordinating women and disenfranchizing them in terms of adopting this technology. Pathways for women's and men's empowerment exist through the sale of planting materials, hay bales, and an increased volume of milk obtained when cows are fed with *Brachiaria*. However, gender norms that reduce women's engagement with cooperatives, and their access to and control over land, should be challenged.

Exploring the gender dynamics in artisanal production of pearl millet and sorghum in Mali

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Jummai O. Yila, Padmaja Ravula

Pearl millet and sorghum are crucial staple crops in Mali, providing food security, nutrition, and income for both men and women. However, gender imbalances and various biotic and abiotic stresses affect their production and use. Traditionally, only older women who have reached menopause and are relieved of other family responsibilities, are allowed to own pearl millet or sorghum plots due to social norms determining who can use the harvest and how, and the desire to maintain family unity. The main research question of the study is to find out how can women's involvement in agri-foods improve their economic empowerment and combat malnutrition and famine in fragile Mali. The present study provides insights into the gendered roles in millet production and utilization, and the

current dynamics of agri-food systems in Mali valuing women's social and economic capacities using a mixed-methods approach and a strengths, weaknesses, opportunities and threats (SWOT) diagnosis. The diagnosis of women processing groups revealed that women in rural, semirural and urban areas have the best economic and nutritional opportunities in food processing and food products marketing in Mali. The engagement of women in artisanal food processing resulted in positive public recognition of women's roles in most communities. In conclusion, the involvement of women in artisanal food processing, combined with capacity development initiatives, has demonstrated positive outcomes of revenue generation, job creation, improved nutrition, and increased social recognition. The study recommends more efforts and attention to women's entrepreneurship development in the food production sector in fragile countries like Mali.

Fostering gender dimensions in henna (*Lawsonia inermis* L.) production under arid and semi-arid conditions

Dheeraj Singh, Indian Council of Agricultural Research (ICAR) - Central Arid Zone Research Institute

MK Chaudhary

In the experiences of arid/semi-arid zone Rajasthan women farmers with limited resources, it is imperative to create alternate livelihood options with strict adherence to sustainable technologies. In this regard, henna cultivation has become highly commercialized in the Pali district, but still there is a wide gap between current production and productivity. Women's participation in the henna (*Lawsonia inermis* L.)-based farming system is crucial to the sustenance of rural economy in such areas. They need to be involved in the cropping sector to considerably increase productivity. Realizing the importance and involvement of women in henna production, a study on gender dimensions in henna production was undertaken in the Pali district in Rajasthan. The degree of participation of women in henna production was determined in operations for manual participation and supervision. A knowledge test was prepared to assess the training needs pertaining to selected operations in henna growing. It is evident from the study that participation of women in different operations of henna production was very high. With women predominant at all levels—production, pre-harvest, post-harvest processing, packaging and even marketing—it is imperative to adopt gender-specific interventions. An inclusive, transformative agricultural policy should aim at gender-specific interventions to raise productivity of small farm holdings, integrate women as active agents in rural transformation, and engage women in extension services with gender

expertise. Thus, rural women are increasing their quantum in the integrated management and use of diverse natural resources with multiple roles as cultivators, entrepreneurs and laborers.

2.2E · GENDER DYNAMICS IN AGRI-FOOD SYSTEM INNOVATIONS (POSTER SESSION)

Advancing gender-inclusive agriculture: Leveraging geographic information systems (GIS) integration with smart irrigation technologies

Hafsa Aeman, International Water Management Institute (IWMI)

This abstract delves into the pivotal role played by geographic information systems (GIS) in promoting gender inclusion and equity in agriculture through the integration of smart irrigation technologies. By harnessing the power of GIS, in conjunction with the Internet of Things-enabled soil moisture devices, significant opportunities emerge to empower women and foster gender equality in agricultural practices. This project identifies and explores the potential benefits, challenges, and strategies associated with implementing gender-responsive approaches in the context of GIS-integrated smart irrigation systems. Key opportunities encompass enhanced access to critical information, targeted extension services, collective action and knowledge sharing, as well as improved market access and value-chain participation. It will highlight the importance of addressing challenges such as limited technology access and empowerment in agriculture. To overcome these challenges and maximize the potential of GIS and smart irrigation technologies, various strategies are proposed, including the establishment of tailored digital literacy programs, the promotion of gender-transformative policies and institutional frameworks, fostering partnerships between technology providers and grassroots organizations, and investment in capacity-building initiatives to enhance women's skills and utilization of GIS and IoT devices. By effectively integrating GIS with smart irrigation technologies, the agricultural sector can advance gender inclusion, leading to sustainable agricultural practices.

Understanding irrigation pump preferences in West Bengal: A paired comparison approach

Sophie Lountain, University of South Australia

Bethany Cooper, Lin Crase, Michael Burton, Dan Rigby

The impact of agricultural technology and access to this technology on the livelihoods of the rural poor cannot be overstated. It is crucial, however, to acknowledge that technology alone is not a panacea for poverty alleviation. While technological advancements offer immense opportunities, their effectiveness hinges on various factors, such as the diverse preferences of different user groups. This research provides valuable insights into the intricate relationship between energy, groundwater markets, and farmers' preferences regarding groundwater pump technologies. Using primary field data from West Bengal, India, this study utilizes primary field data to shed light on the multifaceted dynamics that influence the livelihoods of impoverished farmers through the groundwater market. It employs a paired comparison technique, which provides a rigorous analysis of the diverse preferences of farmers regarding groundwater pump technologies. The findings underscore the significant variations in irrigation pump preferences among different farmer groups, emphasizing the need for tailored policies that consider the specific needs of each group. The study highlights that by aligning technology access with user preferences, policymakers can better facilitate inclusive development and equitable distribution of resources. It also sheds light on the interplay between irrigation technology, institutions and gender, revealing their substantial influence on the livelihoods of rural communities. In summary, this study finds that recognizing the difference in preferences and needs among farmers is essential for formulating effective policies that address the challenges faced by each group.

Loose flower plucker: A women-friendly innovative gadget for harvesting loose flowers

Rahul Yadav, Indian Council of Agricultural Research, Directorate of Floricultural Research (ICAR-DFR)

K.V. Prasad, Ganesh Kadam, Tarak Nath Saha

In India loose flowers are used for making garlands for worship, religious function, and extraction of bioactive coloring pigments and essential oil. Generally, these flowers are harvested manually and it is a labor-intensive

process. There is need for mechanization in harvesting of flowers to minimize the dependence on limited resources such as labor and time, and reducing the cost of production for better farmer income (particularly for women farmers). So, considering all these factors, we have designed, developed and evaluated an women-friendly innovative gadget—the loose flower plucker for harvesting loose flowers. It consists of blade-holder assembly made of plastic material, cutting blade made of stainless steel, fixing belt and thumb protector. Also provided are the additional features of a metal gruf at the upper side of the plucker for tightening and loosening the cutting blade. This metal gruf will provide support to the cutting blade during harvesting of loose flowers. The blade holder assembly was designed according to the size and shape of the index finger of women. We tested the loose flower plucker on farmers' flower fields for women. Factors such as total weight of plucked flowers (g), plucking rate (g/min), flower quality (score/5), pain experience (score/5) and plucking efforts (score/5) were considered during testing of loose flower plucker. We found that the loose flower plucker had a higher plucking rate than hand plucking, and minimum damage to flowers and plant during harvesting of flowers. This innovative gadget is ideal for women because of its women-friendly features: simple design, small size, light weight, easy carry and storage, low production and plucking cost, and higher plucking efficiency.

Social, household, agronomic, and ecological characteristics of gendered wheat trait preferences in India

Hom N. Gartaula, International Rice Research Institute (IRRI)

Our research examined how personal, household, agronomic and ecological characteristics of wheat growers in Bihar in India's eastern Indo-Gangetic Plains, affect female and male farmers' wheat trait choices. Data were obtained from 1,003 households where both male and female respondents from the same household were interviewed. We accounted for 22 traits of wheat from a careful assessment of production, environment, cooking quality, market demand and aesthetic criteria. Binomial logistic regression was used to determine men's and women's trait preferences. The results imply that gender influences the preferences of wheat traits. Some traits are favored by both men and women; however, in other instances there are striking disparities. Men choose wheat varieties that are well adapted to extreme climate conditions, have a higher grain yield and produce chapati with a superior taste, while women preferred wheat types with superior chapati-making quality, higher grain yield, and high market prices. Other socioeconomic, agronomic,

cultural and geolocation factors have a considerable impact on trait preferences. These human dimensions of traits preferred by women and men farmers may be considered when selecting combinations of traits to develop breeding product profiles for certain market segments.

Strength in diversity: Designing on-farm trials to guide gender-intentional maize breeding

Michael Euler, International Maize and Wheat Improvement Center (CIMMYT)

Mainassara Zaman-Allah, Jill Cairns, Paswell Marenya

Strengthening gender-intentionality in maize breeding is one potential pathway to closing improved variety adoption and productivity gaps between female- and male-managed maize plots, and to foster social inclusion in agricultural development. The breeding of gender-intentional maize varieties requires a better understanding of the dynamics of gender roles in maize production systems, gender-based differences in trait preferences and maize seed demand. Despite a growing number of studies, the evidence on gender-differentiated preferences for maize varieties remains inconclusive. This study uses data from on-farm trials with Stage 1 maize breeding material conducted on 800 smallholder farms in Kenya and Zimbabwe to assess how dynamics in gender roles in maize production affect gender-differentiated preferences for tested maize lines on-farm. On-farm trials with early-stage breeding material allow capturing spatial and temporal heterogeneity across target population of environments, including differences in management practices among farms and between female- and male-managed plots. Preferences for agronomic and end-use traits, and gender roles in maize production were collected through individual surveys with the female and male household heads. We hypothesize that there are gender-based differences in preferences for tested maize lines, and that these differences are mediated by socioeconomic and agro-ecological context variables, as well as biotic and abiotic stress factors experienced during the growing season. Results are expected to guide product development of regional maize breeding programs, and to strengthen their adaptation to changing maize-growing environments in sub-Saharan Africa.

Priority quality traits for gendered sweet potato breeding in Mozambique

Sarah Mayanja, International Potato Center (CIP)

Samuel Edgar Tinyiro, Martin Ogwal, Godwill Makunde, Abdul Naico, Mariam Nakitto, Reuben Ssali, Maria Andrade

Sweet potato breeders strive to breed varieties that address the productivity challenges farmers face in sub-Saharan Africa (SSA). However, adoption of these varieties is low, partly attributed to limited attention to preferred attributes desired by the end users. This study sought to identify the key traits preferred by eight women processors and 426 consumers (180 male, 246 female) in Manhiça, Marracuene and Maputo districts, Mozambique. Processing diagnostics and consumer studies evaluated four sweet potato varieties: two local (Lilas and N'santimuni) and two improved (Alisha and Irene). Data from processors were analyzed using content analysis and summary statistics, while consumer data were analyzed using the nine-point hedonic test for 'overall liking', 'just about right', and 'check all that apply' tests. Processors prioritized mealiness, sweet taste, not fibrous, good sweet potato smell, ease of peeling, easy to cook, and good appearance for the boiled root. N'santimuni was the most preferred variety for processing. Consumers preferred the N'santimuni and Lilas varieties because of their high dry matter, pleasant sweet potato smell, firmness in the hand, smoothness when eating and sweet taste. The Alisha and Irene varieties were the most penalized with low scores on sweetness, mealiness and firmness. Although varietal preferences between genders differed, the top four attributes were similar except for sweet taste (preferred by women) and softness (favored by men). Also, youth and more educated consumers disliked improved varieties more than adults and lower income consumers. Breeding programs can be enhanced by studies of biophysical and chemical parameters of sweet potato, which will quantify and enable incorporation of quality attributes such as mealiness.

Evaluation of new hybrid and farmer genotypes on processor productivity, workload and related drudgery: Focus on women cassava processors

Abolore Bello, International Institute of Tropical Agriculture (IITA)

Abolore Bello, Alexandre Bouniol, Hernan Ceballos, Bello Abolore, Béla Teeken, Olamide Olaosebikan, Durodola Owoade, Agbona Afolabi, Gospel Edughean, Fotso Kuate Apollin, Tessa Madu,

Benjamin Okoye, Miriam Ofoeze, Solomon Nwafor, Nnaemeka Onyemauwa, Laurent Adinsi, Geneviève Fliedel, Lora Forsythe, Dominique Dufour Peter Iluebbey, Robert Ndjouenkeu, Rabbi Ismail

Processing enhances shelf life of bulky and perishable roots, tubers and bananas. This study highlights, for the first time, the impact of genotypes on labor requirements, productivity, and the associated drudgery in processing operations primarily carried out by women processors. Participatory processing and processing diagnostics were conducted with experienced cassava processors in West Africa. Peeling, soaking/grinding/fermentation, dewatering, sieving, and toasting steps were evaluated on a range of newly bred genotypes and traditional landraces with three processors processing all the genotypes. Furthermore, processors used pairwise ranking to evaluate the quality at each stage: from fresh roots to the dry product gari and the final dough like product eba. Genotypes influenced food product yield and productivity. Results show that, depending on the genotypes used, women's required labor can be more than doubled and even the sum of the weights transported along the process can be up to four times higher for the same quantity of gari. Cassava root shape and size, ease of peeling and dry matter content impact food product yield. Root peeling and pulp toasting were the most labor demanding. Processor effects on results were minimal, indicating full mastery of the processing. Several genotypes showed relatively high field yield, processor productivity and product yield combined with good food product quality, indicating the possibility to optimize. Productivity, related drudgery and food quality traits are key factors to consider in breeding for better acceptance of new genotypes by actors in the value-addition chain and contribute to improved livelihoods for women processors.

Assessment and remedies for reducing the drudgeries of women farmers in post-harvest operations of millets

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Muppidi Spanditha, Kanthisri Burakasri and C. Tara Satyavathi

Women's share of work in conventional post-harvest operations of millets is higher compared to men—they must undertake maximum drudgery and have no access to appropriate technologies. The purpose of the study was to assess the extent of drudgery for women farmers on different parameters, and the impact of the adoption of improved post-harvest technologies

over traditional practices. This study was conducted in millet-growing area in Nyalkal and Jharasangam blocks (Sangareddy district of Telangana state) in India which were purposively selected on basis of adequate women farmers engaged in millet production. One village from each block was selected, and we randomly identified 16 key women farmers from each village who were representative of fellow women farmers. A total of 32 key informants were interviewed personally; we collected data with help of a pre-tested interview schedule and analyzed it using appropriate statistical tools. Results revealed that more than 50% women farmers felt that traditional threshing and winnowing of millets were very tiresome tasks. Similarly, all respondents expressed that flour and flatbread making was found to be most difficult and time consuming, whereas drudgery was reduced due to use of power-operated machines. The drudgery index of traditional practices was found to be higher (70 or above), while it was moderate for flatbread making (58.51) and minimum (less than 50) for the rest of operations with improved practices. Enhanced work output, reduced drudgery and time, and minimized health issues were found from using improved technologies. Based on the operation-wise drudgery profile, suitable power-operated machines should be introduced that reduce drudgery, and increase consumption of millets and, ultimately, the livelihood status of women farmers.

Excluding the marginalized? Exploring the livelihood and inequality implications of herbicide diffusion in eastern India

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Vijesh Krishna, Vijayalaxmi Khed

The increasing agricultural wages in rural India have lent significant R&D and policy support for laborsaving agricultural technologies. While some are heralded as 'game changers' in achieving food sufficiency goals, less research is devoted to understanding whether farmer adoption of these technologies worsens economic inequalities. We hypothesize that the rapid diffusion of laborsaving agricultural technologies could result in a reduction in employment and loss of a key source of livelihood for the nonfarming rural poor, especially women from socially marginalized groups. Analyzing two datasets (2,725 households) collected from the Bihar state of India in 2021–22, we document empirical, stylized facts on the intersectionality of gender and caste on effects of a laborsaving technology—chemical weeding. We then develop a task-based conceptual framework in which social norms on tasks performed by women and marginalized caste groups are examined to understand the technology impacts on inequality. This framework helps in developing the relevant policy actions toward

more inclusive innovation. We observe that herbicide adoption has increased by 50%age points in the past decade. A large share of the herbicide application labor is provided by male laborers replacing hand weeding labor, which is supplied mostly by female laborers from marginalized caste groups. Herbicide adoption has reduced the labor force participation of women from marginalized castes. We do not observe reinstatement of women hired laborers in other on-farm tasks (e.g., land preparation, sowing). There is no evidence of them getting better opportunities in the nonfarm sector or they have the necessary skillsets.

From waste to managed waste facility and compost for farming: The role of women movement in urban villages in Bali, Indonesia

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Levina Augusta Geraldine Pieter, Dewi Kusumawati, Hermitianta P. Putra

One of the problems faced by urban areas is waste, including in Pejeng Village, Bali, Indonesia. With the issuance of Governor Regulation No. 47 of 2019, waste management must be carried out at the village level through waste management facilities (TPS3R) and Pejeng is one of the villages that has successfully implemented this regulation. With so many TPS3R failing halfway, the study of the success factors of TPS3R in Pejeng is important, so that its findings can be a recommendation for possible factors so that TPS3R is successful in other villages. Through field observations, in-depth interviews with key informants, and participatory action research (PAR), it was found that the role of the Pejeng Village women's organization 'Laskar Pertiwi', who voluntarily set aside their time in the waste management movement, has a very large role in educating residents to carry out waste sorting at the household level and never giving up despite many rejections in the early stages of the program, go directly to the field to collect waste and process organic waste into compost for soil improvement materials for agriculture. Through PAR purchasing compost from TPS3R Pejeng and providing compost grants to rice farmers in one planting season as a stimulus to switch from non-organic to organic farming, it is known that there are still compost sales challenges because making rice farmers aware of how to consistently farm organic rice still takes time. Nevertheless, Laskar Pertiwi has succeeded in creating a healthier living environment, waste that has a selling value, and increased public awareness.

Behavioral games for triggering adoption of good agricultural practices: insights from women's empowerment project in Telangana, India

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B Sailaja, S Arun Kumar, R. Mahender Kumar, R M Sundaram

In a creative endeavor for gender-transformative change in agri-food systems, a study was designed to use a behavioral game to trigger the adoption of good agricultural practices (GAPs) in a women's empowerment project in Telangana, India. Based on insights from behavioral economics and game design, the traditional snakes and ladders game was adapted to disseminate GAPs among women farmers. The specific GAPs to be promoted were identified to be included in the behavior-change game. In this innovative approach, ladders symbolize GAPs, while snakes depict less desirable practices. Leveraging the versatility of Python's open-source software, this game was crafted with ingenuity. Upon launching the game, the initial screen prompts players to input the number of participating farmers. Subsequently, virtual dice and coins are generated for each farmer. By initiating the game with the 'play' button, the virtual dice sets the game in motion, propelling tokens across the game-board's blocks. Positive reinforcement was through the in-game reward of climbing the ladder with the adoption of GAPs. The in-game progress to real-world outcomes was connected through demonstrations of selected GAPs on fields' of women farmers. The alternate wetting and drying (AWD) method of rice crop establishment was demonstrated to show them how it translates in reality to improved crop yield (20.32%) and reduced water usage (14.49%) over the conventional flooded transplanting method. By incorporating game elements into the project, we planned to tap into psychological and behavioral drivers that encourage participants to adopt and sustain positive practices.

Impact of gender targeting in ICT hubs: Cluster randomized controlled trial in Malawi

Catherine Ragasa, International Food Policy Research Institute (IFPRI)

Access to information and improved technologies is a major constraint for improving agricultural productivity and incomes in many agriculture-based economies, including Malawi. A combination of digital agricultural extension services and facilitation of group learning

through ICT hubs is being piloted in Malawi under the Scaling Up Radio and ICTs for Enhanced Extension Delivery (SRIEED) II project. Gender messaging and targeting are incorporated in this digital extension provision and group learning. Designed as a clustered-randomized controlled trial, this study aims to evaluate the impact of these interventions to support ICT hubs on agricultural income, food security and women's empowerment indicators. Of the total 118 hubs targeted by the project, 59 hubs were randomly selected as a treatment group (first cohort in the phased implementation) and the remaining 59 hubs as a control group (second cohort in the phased implementation). Baseline data were collected in June 2021; interventions with the first cohort hubs started in 2021 and 2022 cropping and marketing seasons; and a follow-up survey is being prepared. A total of 1,012 members of these hubs (6–10 randomly selected members in each hub) provide the sample households for the baseline and impact evaluation. Within these 1,012 sample households, one female and one male were interviewed, giving a total of 2,024 rural women and rural men as our sample respondents. Follow-up survey data were available in July and will be analyzed in time for the conference. This study will provide rigorous empirical evidence on the causal impact of digital extension, combined with group-based approaches and gender targeting.

Transitioning from ICT-enabled advisory to digitalized agri-food value chain for empowering women farmers: Experience from a donor-supported initiative in Indian Sundarbans

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Sanchayeeta Misra, Rupak Goswami, Sukamal Sarkar, Subhasis Mandal, Krishnendu Ray, Kalyan Roy, Poulami Sen

Smallholder agriculture establishes the cornerstone of agri-food value chains (AVC) in agrarian economies, where women's participation has significantly increased in recent years. Traditional rural advisory services are inadequately equipped to meet the specific needs of women farmers in the evolving AVC, where digital agriculture is capable of offering digital inclusion with unique value propositions. In rural areas, digitalization is still confined to ICT-enabled advisory services, which need to employ digital technologies to explore multiple possibilities for women farmers. As part of a donor-aided research project, we explored women farmers' roles in an existing AVC of rice–potato cropping

systems in climatically challenged Indian Sundarbans, mapped the mechanisms of their information dissemination process, and understood their ICT use behavior and user readiness. To understand the complicated multilayered household–community–value chain nexus, we employed a mixed-methods approach using value-chain mapping, social network analysis, qualitative text analysis and technology user-readiness assessment at the household, community and value-chain levels. Our project could alter the ICT use behavior of women farmers after season-long farm advisory services through key communicators. Despite multiple roles of women farmers in the existing AVC, they were restricted by the island region's invisible social controls and geographical boundaries. We argue that the digitization efforts in agriculture can initially benefit women farmers upstream of the AVC—where ICT-enabled advisory is still very important—unless an institutional mechanism enables women and their collectives to take control of the AVC and harvest the benefits of digital agriculture across the chain.

Gender-responsive agro-advisory and dissemination mechanisms

Mohammed Ebrahim, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Lulseged Tamene, Feyera Merga

Improved agro-advisories have been developing to provide context-specific and climate-smart agricultural information on the application of improved farm input, integrated soil fertility management and pest and disease surveillance. However, the advisory type and means of dissemination benefits different user groups. This study was conducted to identify men's and women's advisory preferences and suitable dissemination mechanisms. The study used survey data collected from 200 husbands and 200 wives at Amhara, SNNP and Oromia region of Ethiopia. Descriptive statistics, frequency and logistic regression were applied to the analyses of gender component response. The survey data was complemented with men's and women's focus group discussions. Even though women contribute up to 75% of the farm labor, compared to men they have lower level of extension contacts, participation to agricultural training, field days and other capacity-building activities. The current agro-advisory type and means of dissemination do not consider their needs and time preference. Around 80% of women received agricultural information from single channel while nearly 70% of men received advisories from multiple channels through multiple advisory forms. Nearly 95% of women and men need new agro-advisories in the form of orientation training, farm radios, video-based messages, and door-to-door extension services.

Agricultural and marketing radio programs should consider women's free time. Households with multiple agro-advisory channels are more likely to adopt new wheat varieties. The shorter distance from the farmer training center positively influences the use of multiple agro-advisory forms.

From seeds of change to harvesting equality: Women in India's agro-ecology-based agri-food systems

Sonali Singh, International Food Policy Research Institute (IFPRI)

The Indian agricultural system is undergoing rapid degradation because of climate-induced shocks and stressors. As a result, there have been endeavors among governments, civil society organizations and researchers to embrace transformative approaches toward the agri-food system. Within this context, agro-ecology has emerged as a comprehensive methodology that aims to reshape food systems by harnessing the interconnectedness between indigenous knowledge, local conservation practices, social capital and strategies for adapting to the climate crisis. The pivotal role of women within agro-ecology is widely acknowledged, as their active engagement is considered crucial to the success and effectiveness of this approach. However, significant constraints persist in limiting women's meaningful participation in agro-ecological farming systems, including constraints imposed by existing agricultural policies, institutional frameworks, gender roles, and limited access to markets, land, and information. Employing a gender and political-economy framework, this paper analyzes how agro-ecological approaches to agri-food systems have the potential to empower women, and where gaps and institutional barriers remain in limiting the participation of women. Through a comprehensive review of agriculture policy documents, case studies and empirical evidence, this study seeks to uncover the gaps and challenges in achieving gender-responsive policy and institutional frameworks within the agro-ecological context. By examining the intersectionality between gender, climate change, and food systems, this research contributes to a deeper understanding of the complex dynamics of the Indian agri-food systems and offers an alternative, inclusive paradigm to conventional systems of practice.

Gender differences in agricultural productivity in India: Empirical analysis using micro-level panel data

Anupama GV, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

Thomas Falk, Mayukh Sen

Strong evidence exists that women farmers have less access to land, inputs, labor, and information compared to men. Over the discourse of empirical research conducted in the domain of agricultural productivity, agricultural economists have always pondered over the inclusion of gender diversity as a separate dimension to identify the efficacy of gender roles in agricultural decision-making. In this context, for the purpose of empirical analysis, we used the primary survey data Village Dynamics in South Asia panel dataset collected by the ICRISAT in collaboration with IRRI and ICAR institutes. The research questions formulated for this study are: (a) Today, in India, is there a gender gap in agricultural productivity depending on plot ownership, and household decision-making on agricultural activities? (b) Are there differences in male and female labor use between male- and female-owned plots and does this effect productivity? In the current paper, the Blinder–Oaxaca decomposition technique is used. We found that male labor, both family and hired, shows a significant positive effect on crop value in female-owned plots, as well as male-owned plots. The gender gap in agricultural productivity using the plot ownership as gender indicator could not be found. A higher share of leased-out plots were owned by women and also a higher share of fallow plots were found to be women owned. The most exciting inference from the study is that synergies are produced when men and women work together and are more productive compared to working separately.

Some like it hot: Household disagreement and productivity in smallholder chili production in Indonesia

Apri Laila Sayekti, National Research and Innovation Agency (BRIN)

Daniel Gregg, Randy Stringer

Women's leadership of smallholder households is a major component of women's empowerment. Approaches to understanding women's empowerment in Southeast Asian countries require nuance due to the lack of independently managed plots by male and female spouses. We present an approach that allows detailed insights into women's leadership of activities and the extent to which male and female spouses disagree about leadership. Using a

combination of confirmatory factor analysis and a revenue function regression, we show that female leadership and disagreement are both significant factors affecting household revenues from chili farming in rural Indonesia. In particular, disagreements can diminish chili revenues and act to reverse gains from female leadership. Our results indicate women's empowerment in these regions is strongly affected by the extent to which households can agree on the importance of women's leadership. Results indicate a need to consider interventions that support building communication between the spouses and that reinforces the importance of acknowledging women's roles as leaders in decision-making in the household.

2.2F · ENHANCING GENDER EQUALITY IN NUTRITION, FOOD SECURITY AND HEALTH (POSTER SESSION)

Do we need to worry about the nutrition security of indigenous communities? Empirical Evidence from northeast India

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Nazmun N. Ratna

The Hindu Kush Himalayan region is home to many indigenous communities, each with its own distinctive culture and traditions. Many cultures have evolved around agriculture and food and have rich food heritage and agricultural practices. Despite this, more than 30% of the population suffers from food insecurity, and around 50% face some form of malnutrition, with women and children suffering the most. In this study, we investigate the difference in the food consumption patterns and dietary diversity across rural and urban households of the Ao-Naga Community in Nagaland. Analyzing survey data for 404 female household heads in Mokokchung district, we have three preliminary findings. Firstly, rural households have higher Food Diversity Score (FDS) than urban households, with much higher consumption of traditional foods like organs and insects, which are good protein and nutrient sources. Secondly, household income has more impact on FDS among urban households than their rural counterparts, but there is a positive association between income and consumption of food away from home for both communities. Thirdly, although the meat consumption is higher for urban households in general, there is a positive association between female education and meat consumption in rural areas. Currently, we are analyzing the data to provide policy insights on how indigenous women's

agency can influence the preference for traditional food and thereby address the challenges for food and nutrition security among indigenous communities in northeast India.

Influence of women's empowerment on maternal and child dietary diversity in urban Bangladesh

Md. Nazmul Hoque, Bangladesh Agricultural University

Sadika Haque

Consumption of diverse diets has been associated with improved maternal health and child growth. Diverse diets are a proxy for micronutrient adequacy. The nutritional effects of women's empowerment on women and children are understudied, especially in urban locations. Hence, this study has been conducted on the status of maternal and child nutrition, understanding how it relates to various dimensions of women's empowerment in urban settings. A sample of 1978 mother-child pairs in different cities of Bangladesh revealed that more than 75% of the mothers and 50% the children had low dietary diversity. The wealth holdings and access to resources by the women were found unsatisfactory, while 66% had the lowest to medium level of nutritional knowledge due to a lack of dietary counselling. Multivariate logistic regression indicated that child dietary diversity was influenced by the mother's education, antenatal care, maternal dietary diversity, supportive attitude and behavior of husbands, and antenatal care. While the household wealth index can enhance both the child's and mother's dietary variety, nutrition education, dietary counselling, and access to and control over resources can all improve maternal dietary diversity. This study recommends improving women's socioeconomic status by increasing their wealth and access to resources, including providing food and nutrition counselling for higher nutrition knowledge.

CIFOR-ICRAF: Gender equity and social inclusion across the agri-food landscape

Elisabeth Garner, CIFOR-ICRAF

The Center for International Forestry Research and World Agroforestry (CIFOR-ICRAF) have long engaged with communities, focusing on people-first solutions to environmental challenges that threaten sustainable and equitable agri-food systems. CIFOR-ICRAF has identified inequality as one of the five global challenges to address strategically over the next 10 years. As a

cross-cutting theme, gender equity and social inclusion (GESI) informs the way the organization works across all its activities, from forest and agroforestry landscapes to climate change policy and action to inclusive value chains. Central to its approach is the need to address the power dynamics that shape the unique experiences, barriers and opportunities of the diverse and intersecting identities of women, including indigenous peoples, youth, refugees, and other marginalized groups. Drawing on a deep and evolving understanding of the barriers to gender equality and inclusion, CIFOR-ICRAF conducts applied research to explore the dynamics of gender and other social categories in forestry and agroforestry landscapes. This presentation will discuss institutional efforts to mainstream gender equity and social inclusion by providing examples of research-led development projects across the institution, as well as the importance of centering justice and resilience in these efforts. The presentation will provide examples of previous efforts and discuss the future of the organization.

Soil inequalities and its relation to gender and health in Guatemala

Karla Molina Galindo, The University of Edinburgh

This research examines the relationship between soil inequalities, gender disparities, and health outcomes in Guatemala. The historical context of land concentration, limited access to land, internal conflict, and socioeconomic factors contribute to soil inequalities, which in turn affect household gender dynamics and health outcomes. Using a case study approach in San Martin Jilotepeque, Guatemala, this research examines the challenges faced by male and female farmers in managing their soil. The study employs a mixed-methods approach, including field observations, surveys and a literature review. A total of 250 surveys were conducted, gathering information on managing practices in homefield and outfield areas, as well as the gender of field managers and household heads. Preliminary findings reveal the impact of gender inequalities in land management and access to soil inputs on soil quality. Women often experience limited access to agricultural resources such as fertilizers, improved seeds, and machinery, hindering soil enhancement. This gender-based resource inequality further exacerbates existing gender disparities in agricultural productivity and household well-being. By highlighting the connection between soil and gender inequalities, this research contributes to understanding intrahousehold gender dynamics and their connection to health inequities. It aims to provide insights for addressing gender and health disparities in Guatemala. Integrated approaches that consider the multifaceted nature of these challenges are essential for sustainable development and community well-being.

Kitchen gardening: Empowering smallholder women farmers for nutrition, food security, and health in Bihar's sustainable livelihood development project

Karunesh Shukla, Heifer India

Amit Kumar

The abstract highlights the transformative power of kitchen gardening in empowering smallholder women farmers, promoting gender equality, and ensuring nutrition, food security, and health within Bihar's Sustainable Livelihood Development (BSLD) project. Launched in 2020 by Heifer International, the project aims to provide sustainable livelihood opportunities for small and marginal holder farmers over the next five years. Kitchen gardening enables smallholder women farmers to take control of household food production, ensuring access to fresh and healthy food and contributing to improved food security. It also empowers women by promoting autonomy and decision-making power in shaping household food security. Through anecdotal findings and interactions with women smallholder farmers, it has been observed that kitchen gardening has a significant positive impact on their social and economic well-being. It provides them with a sense of empowerment, and improved decision-making power, fostering social cohesion within the community. The BSLD project also focuses on promoting a balanced diet through Panchranga Bhojan, an educational initiative that encourages smallholder women farmers to adopt diverse and nutritious diets for better overall health outcomes. Moreover, kitchen gardening plays a vital role in the economic stability of smallholder women farmers by reducing reliance on external markets, lowering expenses, and generating additional income through the sale of surplus produce in local markets. This economic stability enhances their financial well-being and contributes to broader food security efforts. In conclusion, kitchen gardening proves to be a powerful tool in empowering smallholder women farmers, promoting gender equality, improving nutrition, and more.

Intrahousehold dietary diversity and determinants of fish consumption in Bangladesh

Lucy Njogu, WorldFish

Rahma Adam, Catherine Mwema

Malnutrition undermines an individual's quality of life and has far-reaching impact on a country's economy. In Bangladesh, malnutrition among women and children is widespread. Consumption of low-nutrient foods, limited dietary diversity and discrimination in intrahousehold

food allocation are often reported as common cause of malnutrition among the vulnerable in the household. Although the government of Bangladesh has put in effort in eradicating malnutrition, the reduction rate is still very low. Given the high nutrient level of fish, it is considered an invaluable tool in fighting malnutrition. To inform policy and initiatives in malnutrition eradication, we assess the intrahousehold dietary levels among general households, women and children. Data was collected from 2,669 households in Rangpur and Rajshahi divisions of Bangladesh. Results indicate that the fish species with the lowest price was not the most consumed species. Also, while almost all households consumed fish, but about 30% of women and children in those households did not consume fish. Similarly, women and children recorded a lower dietary diversity score compared to the households. Consumption of fish among children was influenced by age and gender. Among women and general households, some of the factors which influenced fish consumption included pond ownership, distance to the market and consumption of other animal proteins. Increases in fish price increased the odds of fish consumption. These results indicate the need for development initiatives and food policies adopt targeted strategies in promoting fish consumption for nutritional security.

An inclusive agri-food systems transformation approach for India

Vartika Singh, International Food Policy Research Institute (IFPRI)

Prantika Das, Miodrag Stevanovic, Ranjan Ku. Ghosh, Chandan Ku. Jha, Hermann Lotze-Campen, Alexander Popp

The urgency of India's food system transformation is more pronounced than ever. Despite high economic growth and rising per capita incomes, approximately 194 million people in India remain undernourished and there is a high prevalence of micronutrient deficiencies, particularly among women and children under 5 years. Agri-food systems in India employ more than 50% of the workforce and engage nearly 82% of smallholder farmers. Therefore, ensuring inclusive growth and reduced poverty necessitates new and enhanced livelihood and employment opportunities in the agri-food sector. We use an integrated suite of models to create macro policy scenarios for India until 2050. These scenarios are centered around equitable livelihoods by ensuring minimum wages for agricultural labor, and inclusive development through reduction in income inequalities and wage gaps. Our results suggest that multiple livelihood-enhancing measures, such as minimum wages and capital investments, when combined, have a weakening effect on inclusion outcomes. Employment levels significantly decline,

affecting 19 million people. This has higher negative effects on women whose agricultural employment has been found to reduce disproportionately with increased capital investments. However, livelihoods improve from higher wages and lower economic costs of production. Transformative actions encouraging agricultural labor engagements can potentially increase the share of labor requirements to 73.5% by 2050, compared to 67% in the baseline, thereby enhancing employment opportunities for nine million individuals. Our integrated Food Systems Development Pathway, which integrates multidimensional policy measures, reports strong trade-offs with the goals of inclusion as the largest decline in employment is observed in this scenario following an increase in wages and labor productivity.

Engaging men as allies for a journey of gender transformation and improved nutrition

Avani Verma, Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)

Nadine Bader, Susanne Milcher

The Indo-German Securing Nutrition, Enhancing Resilience (SENU) project implements a nutrition-sensitive integrated approach linking nutrition education with government-supported community nutrition gardens. It aims at improving the dietary diversity of women (15–49 years) and young children (6–23 months) in six districts in Madhya Pradesh and Maharashtra. Through qualitative and quantitative social behavior change barrier and enabler analysis, SENU found that gender roles with respect to childcare and nutrition are hampering positive nutrition outcomes. Women are seen as responsible for household work, preparing food and childcare, but do not have the necessary decision-making power for their own and their small children's nutrition. Based on the findings, SENU developed a gender-transformative strategy, which addresses attitudes and perceptions of gender roles and stereotypes at individual, family and community level. The nutrition education modules and tools have been revised to include participation opportunities for men and other household members and community meetings with innovative games for men. Further, through a campaign focusing on #MenCare, using participatory and community-based street theaters, the project promotes parents as a team and highlights their joint responsibility of childcare and nutrition. The project also focuses on economic empowerment and livelihood of women by mobilizing them in self-help groups to maintain community nutrition gardens for improved access and availability of nutritious food. These groups provide a peer-to-peer network support, along with income generation through selling of surplus produce. SENU focuses on

men as allies and women's empowerment at the core, where men and other family members take an active role in family nutrition.

Adopting a gender-transformative approach (GTA) to increase dietary diversity and decision-making of women: Evidence from a nutrition-sensitive intervention in Bangladesh

Kamrun Nahar, WorldFish

Given the high levels of malnutrition in Bangladesh, and the importance of fish in providing micronutrients, we sought to understand the dietary diversity, level of nutrition knowledge, awareness and attitude toward fish consumption among fisheries communities in the Cox's Bazar area. In addition, the study aims to assess the effects of gender-transformative approaches (recognizing the importance of targeting both husbands (men) and wives (women)). The study also targets other influential members within the households to improve the food, nutrition and build skills in communication and problem-solving to discuss nutrition and gender-related problems that were implemented in the technical training portfolio for agriculture, aquaculture, nutrition, and market development interventions. The study aims to assess the effects of gender-transformative approaches to discussing nutrition- and gender-related problems that were implemented in the technical training portfolio for agriculture, aquaculture, nutrition and market development interventions targeting female beneficiaries and their husbands to challenge gendered barriers to agriculture, health and nutrition behaviors. Data were collected using mixed methods; we carried out quantitative survey from 322 artisanal fisher households (project beneficiaries) of Cox's Bazar district. We collected qualitative (semi-structured interviews), 16 focus group discussions and 16 key informant interviews. The result shows that the proportion of women who are consuming an inadequate diet was 55% of households that have a lower dietary diversity score, while 45% have an acceptable dietary diversity score after the intervention. Whereas 82% of the households had lower dietary diversity scores, and only 18% of households had acceptable dietary diversity scores at the baseline with increased participation in the critical household decision-making process. The basic nutrition- awareness training participants (92%) understood topics. Nutrition (92%) and caring for pregnant mothers (84%) and women's knowledge contributed to women's dietary diversity. The majority of participants (92%) understood the topics of the gender sensitization training: workload sharing (94%), joint decision-making (66%), and trust building (64%). Most participants practised workload sharing (91%), joint decision-making (70%) and trust building (61%).

Overall, the gender-transformative approach is effective in addressing gender inequality and its adaptation to enable household members to work together for better nutrition outcomes for women in this program.

Stunting and undernutrition among adolescent girls of indigenous communities in Telangana, India: A cross sectional study

Padmaja Ravula, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

Kavitha Kasala, Soumitra Pramanik, Aravazhi Selvaraj

Despite economic progress in recent decades, the indigenous population in India remain at risk of malnutrition due to major dependence on traditional agricultural practices, poverty, illiteracy and low personal and environmental hygiene. This study investigates the incidence, causes and socioeconomic-cultural determinants of three indicators of chronic malnutrition—stunting, thinness and undernutrition—among adolescent girls from indigenous communities from selected sites in Telangana, India. The data on demographic and nutritional indicators using a mixed-methods approach was collected in 2017 from 695 adolescent girls out of 2,542 households. These adolescents were grouped into two categories—early adolescents (11–14 years) and late adolescents (15–18 years). The analysis showed that, overall, 13% of adolescent girls in the sample were of normal nutritional status and 87% were either stunted/underweight/thin or a combination of two or three indicators. Girls in early adolescence showed a higher prevalence of being underweight (24.4%) whereas stunting was higher in late adolescent category (30%). The logistic regressions supported these findings and identified key factors influencing this result. Education of head of the household and the adolescent girl, and availability of toilet infrastructure by households played a significant role in reduction of malnutrition, especially in stunting and underweight categories. The sociocultural norms around food that starchy staples are the most important in the diet and early age of marriage were also found to be influencing the nutritional status. The study concludes the need for concerted policies, programs, nutrition education sessions and behavior change campaigns aimed at adolescent girls' nutrition among the indigenous communities.

Drivers of food insecurity amongst the Batwa in Uganda

*Triphine Ainembabazi, Makerere University
Shuaib Lwasa*

Crop production is important in fostering food security. This is particularly true in Uganda, where the majority (80%) of the population rely on agriculture for sustenance. Although agriculture is important, about 30% of the country's population is still food insecure due to climate variations, reduced soil fertility and limited livelihood diversification, among other factors. The Batwa of southwestern Uganda are an impoverished, marginalized indigenous group that are sternly food insecure. They were evicted from their traditional homeland, the Bwindi impenetrable forest, about 30 years ago to pave way for the conservation of endangered mountain gorillas. They Batwa were forced to adapt to agricultural livelihoods amidst many challenges and they have since been food insecure. Factors that influence their food insecurity have not been adequately explored. This study, therefore, examines the factors that drive food insecurity among 10 Batwa communities in Kanungu, southwestern Uganda. Five variables—land, labor, agro-inputs, rainfall and temperature—were assessed. Multilinear regression analysis was done in R studio to determine the most predictor variables and bivariate correlations were done to establish causality. The findings revealed that land and rainfall were the driving factors of food production. There was a relationship between food production and food security. While it is true that the Batwa are food insecure, some communities are worse off compared to others. Some communities still rely on handouts and ecotourism through dancing and selling crafts to tourists, which is not sustainable, making them vulnerable to food insecurity. There is a need to reinforce food production, especially with the increasing population.

Evaluation of a gender-responsive nutrition education intervention on nutrition knowledge, attitudes and practices among the vulnerable populations in the traditional agri-food systems

*Kavitha Kasala, International Crops
Padmaja Ravula, Abhishek Das*

Nutrition knowledge plays a crucial role in promoting healthy dietary behaviors among communities. We aimed to evaluate the outcome of nutrition education interventions on nutrition knowledge, attitudes and practices, and provide an evidence base for targeting nutrition programs among the vulnerable population

using a gender lens. Quantitative surveys and interventions were conducted with a sample of 415 individuals in Telangana, India. The sample included two groups of participants—beneficiaries of the targeted national nutrition programs (pregnant women, lactating mothers and young mothers) and frontline staff who implement the nutrition programs at the grass root level (Anganwadi teachers, school teachers and accredited social health activists). Based on the statistical analysis, it was found that nutrition education improved the dietary behavior of the participants. The knowledge levels regarding the micronutrients of iron and Vitamin A in diets improved significantly at 5%, but there was no change in the attitudes and practices among both the groups. In the case of an education intervention on food safety behavior, the knowledge levels significantly (10%) improved for both groups. Alongside this, the practice scores improved slightly after the education intervention in both the categories of participants because food safety practices can be easily implemented with minimal resources. Lack of knowledge about nutritional needs, as evident from this study, emphasizes the ever-increasing need for policies on the importance of nutrition education and training at all levels toward improving equitable and sustainable healthy diets in traditional agri-food systems.

Bringing nutritional security and women empowerment through Nutri-SMART Villages

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Institute (ICAR-ATARI)*

*A.A. Raut, Varsha Srivastava, R.R. Burman, U.S.
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In the past 30 years, agricultural production of India has increased and reached a self-sufficiency stage, but the status of malnutrition is a formidable challenge towards the holistic development of the country because women and children are still malnourished. To combat malnutrition, the present agriculture and food system has to transform into a more resilient system which delivers low-cost nutrient-rich food and affordable healthy diets for all in a sustainable manner. In this purview, Krishi Vigyan Kendras (KVKs) of Madhya Pradesh and Chhattisgarh under the guidance of ICAR-ATARI Jabalpur and with the Department of Women and Child Development are working in this direction since 2016. They adopted one village where the malnutrition status of women and children were high, to make them nutrition secure for achieving nutritional security and transformed it into a Nutri-SMART Village (NSV). At present, 42 and 15 NSVs are operational in Madhya Pradesh and Chhattisgarh, respectively. KVKs

conducted field demonstrations on nutrition gardens, food fortification and bio-fortified crop varieties; and organized capacity building and awareness programs for farm women and aganbadi workers to enhance nutrition literacy. Some innovative approaches like poshan thali, poshan rangoli, poshan garlands and poshan calenders were introduced and promoted to create awareness and deep understanding about the micronutrient-rich food items in their daily diets. Small-scale income-generation activities were promoted for women's empowerment. During 2022, a total of 370 nutrition gardens were established, 41 demonstrations

were conducted on bio-fortified varieties to provide a nutrient-rich diet, and 34 activities on value addition were conducted for economic empowerment of the women. As well, a total of 143 and 659 training programs and extension activities, respectively, were conducted to help increase people's nutrition literacy and develop the skill of 10,739 beneficiaries. Thus NSVs are advocating nutrition-sensitive and specific agricultural interventions in a targeted approach to make food more available, accessible, diverse and nutritious to ensure nutrition security in the operational area.

3.50-5.00

DAY 2 · Tuesday, October 10 · Parallel sessions

2.3A · UNDERSTANDING THE OUTCOMES OF AGRI-FOOD SYSTEM INTERVENTIONS ON WOMEN'S EMPOWERMENT

When interventions reach women, but women do not automatically benefit: The case of landscape restoration through tree planting in Burundi

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*Anne Rietveld, Audace Ndikumana, Innocent
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The Landscape Restoration and Resilience project in Burundi established commercial community tree nurseries (CCTN) aiming (1) to satisfy the increased demand for trees in areas to restore, and (2) to build the economic resilience of CCTN members in Buhinyuza (Muyinga) and Isare (Bujumbura) communes of Burundi. This study analyses the role and participation of women in CCTN in Burundi and the impacts of CCTN on the well-being and empowerment of the women involved. We conducted 33 mixed and sex-disaggregated focus group discussions in the project areas and analyzed the documents of the community

nursery associations. We use the 'Reach-Benefit-Empower-Transform' (RBET) framework to analyze our results. Women are highly represented in CCTNs (63%) and participate in most of CCTN's key activities, such as watering and regular weeding. However, the sharing of profits is based on an initial monetary investment, of which men hold a major part. The active participation of women in associations is perceived as a space to share life experiences and pathways to increase their ability to perform traditionally men's income-generating activities. Even though the CCTN initiative reached more women than men through participation, benefits to women are limited. There are some signs of social empowerment and normative transformation that are not necessarily associated with benefits. We recommend identifying pathways to increase benefits to women and contribute to their economic empowerment. The RBET framework is a useful tool to explicate the value of women's current participation in CCTN while giving direction for more impactful participation and organization of CCTN.

Women empowerment in water governance in polder zone in Bangladesh

*Mou Rani Sarker, International Rice Research
Institute (IRRI)*

Niyati Singaraju, Sudhir Yadav

The polders in coastal zones of Bangladesh are vulnerable to climate risks resulting in low agricultural

productivity and low incomes for the communities dependent on agriculture-based livelihoods in these regions. Bangladesh adopted a participatory approach to water governance in the 1980s to improve the equitable and sustainable use of water resources. With men migrating away for better income opportunities, women are more involved in agricultural production and dependent on water resources. However, there is limited evidence on the implications of participatory water management on women's empowerment outcomes—whether it results in improved participation and agency of women in farm production and control over farm incomes. Addressing this gap, drawing data from 640 households in four polders of Patuakhali district using a mixed-methods approach, the study aims to examine the implications of participatory water management on women's empowerment outcomes in three domains—agency, resources, and institutional structures adopted from the Empowerment in Water, Sanitation and Hygiene (WASH) framework. The findings reveal that women's agency outcomes improved with increased participation in joint decision-making and mobility. Women still had limited access to productive resources and control over farm incomes. Nevertheless, their access to credit and agricultural technology improved due to WMGs. The policies and interventions remained gender insensitive as they did not address the prevailing social barriers and pervasive cultural norms, thus exacerbating the existing gender inequalities in society. Therefore, we argue that unless the structural barriers are addressed, participatory water governance would not empower women in polder zones.

Fisheries sector and women in Bangladesh

Mir Mohammad Ali, Sher-e-Bangla Agricultural University

Women's empowerment in promoting the fisheries sector is not encouraged in Bangladesh. The study explored how empowering women in the fisheries sector can contribute to achieving more equitable, inclusive, and sustainable fisheries and food systems. The research adopts a qualitative approach, combining in-depth interviews, focus group discussions, and participatory observation methods. The findings highlighted the critical role of women's empowerment in challenging. Women's empowerment initiatives, such as access to education, skills training, and leadership opportunities, enable women to challenge traditional gender roles and stereotypes, enhance their self-esteem and agency, and improve their socioeconomic status. These include supportive policies and legal frameworks, access to credit and financial services, inclusive and gender-responsive institutions, and the recognition of women's contributions and rights. Social and cultural norms, discriminatory practices, and lack of awareness about

the benefits of women's empowerment are identified as major barriers that need to be addressed for sustainable gender transformation. The study emphasizes the importance of multistakeholder collaborations and partnerships to foster women's empowerment and transformative change in agri-food systems, specifically within fisheries. It highlights the need for inclusive and gender-responsive policies, programs, and interventions that address the specific needs and challenges faced by women in the fisheries sector. Additionally, capacity-building programs, awareness campaigns, and targeted support for women's entrepreneurship and market access are recommended to enhance women's participation and leadership in the sector.

Can nutrition-sensitive agriculture (NSA) intervention reaching women affect women's empowerment? Impact assessment using pro-WEAI tool on ethnic minority groups in Northern Vietnam

*Lan Nguyen, Wageningen University and Research
Marrit van den Berg, TjeerdJan Stomph*

Women's empowerment is of paramount importance in agriculture, food security and nutrition, making it the focal point of nutrition-sensitive agriculture (NSA) projects. However, the specific pathways and impacts of such interventions on women's empowerment is still not fully understood, partly due to lacking of consensus of measurement approaches across projects. Moreover, understanding of men's empowerment, which is integral to comprehensively grasping the dynamics of women's empowerment, remains limited. In this study, we examined the empowerment level of ethnic minority men and women in Northern Vietnam, focusing on the impact of a gender-neutral NSA using the internationally validated pro-WEAI tool. The NSA included two interventions: nutrition and agriculture training, and seed provision. Our sample consisted of 1,160 individuals (609 women and 551 men) residing in 38 villages grouped into 36 clusters. Our findings showed that both men and women experienced disempowerment, suggesting that both groups subjected to external constraints rather than gender stereotypes. However, women remained the more vulnerable groups compared to men in various domains. We also identified some impacts of both interventions on individual indicators within three domains of empowerment (3DE). After multiplicity correction, several effects remained significant, including effects of training intervention on women's mobility, and seed provision on total score of intrinsic agency domains. These results not only contribute to the establishment of benchmarks for interpreting pro-WEAI scores across program, but also emphasize the importance of investigating the impact of development

programs engaging women's traditional spheres, even though the implementation is gender neutral.

2.3B · PROGRESS TOWARDS GENDER-INTENTIONAL BREEDING

Addressing gendered maize seed and trait preferences in Kenya

Mariana Garcia Medina, International Maize and Wheat Improvement Center (CIMMYT)

Conny Almekinders, Jason Donovan

Maize is an important staple and cash crop, contributing to food security and economic development in Kenya. Despite numerous high-quality varieties with increased genetic gains having been released and disseminated, research on maize seed systems (SS) has highlighted slow varietal turnover. Understanding farmers' preferences for varieties and specific traits has been at the core of SS research as it is recognized that adoption of new varieties is usually slow because varieties often do not meet farmers' needs and preferences. Previous studies have provided valuable insights demonstrating that, in certain contexts, there are clear distinctions for trait preferences among men and women. Nevertheless, there are still many questions regarding gender-differentiated preferences for maize varieties, for instance, little is known on how these preferences vary across diverse gender intersections and the motivations and values driving seed choices. Aiming to delve into those differences we interviewed 66 maize farmers in two counties in West and Central Kenya. Using means-end chains as methodology, the interviews consisted of a triadic sorting technique to elicit varietal attributes, followed by laddering interviews where participants verbalized their own constructs related to varieties which were subsequently linked to their personal goals and values. The insights of this research can contribute firstly to understanding diverse groups of farmers and secondly to informing public breeding programs to develop and promote maize varieties that not only enhance productivity and profitability but are also adapted to the different needs of women and men smallholder producers to benefit both in an equal manner.

Using the G+ systematic customer and product profiling tools to validate gender-equitable breeding decisions for traits inclusion in new cassava varieties targeted at men and women cassava actors in Nigeria

Nwanze-Olaosebikan Olamide, International Institute of Tropical Agriculture (IITA)

Béla Teeken, Ireti Balogun, Tessa Madu, Benjamin Okoye, Bello Abolore, Vivian Polar, Jacqueline Ashby, Steven Cole, Peter Kulakow, Elizabeth Parkes

This study used the G+ tools to investigate: (a) relevant gender and social diversity among cassava users related to granulated and paste food products value chains (VC), and (b) prioritized quality traits (PQTs) that should be incorporated into breeding new cassava to achieve equitable benefits for men and women cassava VC actors in Nigeria. The G+ tools were used to synthesize literature on cassava production, processing and products' market segments. Furthermore, survey, participatory processing and consumers testing data were triangulated to identify PQTs to fill the G+ product profile templates. Gender impact scores were calculated to categorize PQTs into essential/must-have, niche, added-value and winning traits. The customer profile showed that the VC actors from production to final food product are gendered with high poverty levels among the dominant granulated and paste products VC actors. The gender impact scores per trait validated that high dry matter/dry matter stability, multiple product-use, high root yield, ease of peeling, stem storability, good food color, texture and swelling are essential/must-have PQTs from a gender perspective across the various stages. For instance, "multiple product-use" enables men and especially women to make choices related to profit, household food needs, and different workload involved for different final products. Applying G+ tools provided a realistic overview of where donors can invest, forecasting equitable benefits and possible harm regarding traits in the product profile, and identified PQTs that breeders are to incorporate to achieve impact on gender equality, nutrition security, increased incomes and resilience among cassava users.

Gender mainstreaming in sweet potato breeding in Uganda: A case study

Reuben Tendo Ssali, International Potato Center (CIP)

Sarah Mayanja, Mariam Nakitto Janet Mwendu, Samuel Edgar Tinyiro, Irene Bayiyana, Julius Okello, Lora Forsythe, Damalie Magala, Benard Yada, Vivian Polar

Purpose: In Uganda, sweet potato is typically a "women's crop" grown by smallholder farmers for food and income. Farmers value sweet potato for

its early maturity, resilience to stresses, and minimal input requirements. However, productivity remains low despite the effort of breeding programs to introduce new varieties. Low uptake of new varieties is partly attributed to previous focus by breeders on agronomic traits and much less on quality traits and the diverse preferences of men and women in sweet potato value chains. Method: To address this gap, breeders, food scientists, and social scientists (including gender specialists) systematically mainstreamed gender into the breeding program. This multidisciplinary approach, grounded in examining gender roles and their relationship with varietal and trait preferences, integrated important traits into product profiles. Results: Building on earlier efforts of participatory plant breeding and participatory varietal selection, new interventions revealed subtle but important gender differences in preferences. For instance, in a study for the RTBfoods project, women prioritized mealiness, sweetness, firmness and nonfibrous boiled roots. These were further subjected to a rigorous gender analysis using the G+ product profile query tool (Ashby and Polar, 2021; CGIAR 2021). The breeding pipelines then incorporated these gender-responsive priority quality traits, prompting the development of standard operating procedures to phenotype the PQTs. Conclusion: The product advancement and joint decision-making meetings have further positioned sweet potato breeding to better respond to the varying needs and preferences of the users

How can gender research trigger changes to influence breeding priorities

Vivian Polar, International Potato Center (CIP)
Jacqueline A. Ashby, Hale Ann Tufan

Significant progress in agricultural technology development have remained persistently blind to social and gender inequalities. Creating agricultural research ecosystems and institutions that address gender inequality require structural and systemic analysis. One of the major areas of investment in agricultural innovation is plant breeding. Integrating social welfare objectives in plant breeding is a good starting point to catalyze progress toward gender-equality objectives in research for development at a global scale, yet if devoid of structural change these efforts risk falling short of expectations. Intentionally addressing gender can reshape the technical options, goals and intended impact of plant-breeding programs. Improving the benefits delivered to rural women through plant breeding can be achieved through new methods and learning, critically analyzing systematic barriers to equitable plant-breeding research, and documenting case studies that demonstrate positive change. This paper analyzes different cases and

experiences of gender-intentional breeding across crops, geographies and institutional frameworks to explore: (a) how are gender-responsive and other social-inclusion objectives implemented in breeding programs and why? (b) what methods, tools and instruments can successfully help this process? and (c) what type of strategies can be used to integrate multidisciplinary work into defining new breeding objectives? This analysis generated a comprehensive overview of factors that influence how, when and why results from gender research can trigger changes in breeding priorities, processes or decisions, and how to better design structural innovations across different regional and institutional contexts to enhance technology design.

2.3C · INTO THE VALUE CHAIN: GENDER ROLES, BIASES AND ASPIRATIONS

Participation in downstream nodes of the rice value chain in Uganda: Where are the women?

Gaudiose Mujawamariya, AfricaRice
Thelma Flavia Akongo, Edgar Twine

Evidence of women's participation in value chains is greater on the production side, but scanty in downstream nodes, pointing to women being relegated to unprofitable activities. The consequence is suboptimal value chain performance with wide gender gaps in productivity, income, household food security, and poverty. This study sought to inform the development of gender-inclusive value chains. A qualitative investigation of the downstream nodes of the rice value chain (DS-RVC) was conducted in six districts of Eastern Uganda with 21 key informants and 93 women and 19 men in 14 focus group discussions (five mixed, nine women-only FGDs). Results confirm the limited participation of women in DS-RVC while men comprised up to 70% in all the nodes. Most women participated in wholesale and retail marketing and in lighter and unskilled activities including sweeping, cleaning, sorting, and pouring paddy into milling machines. Women's engagement is constrained by additional reproductive and productive workloads, limited income and access to credit, and their risk-averseness toward engaging in bulk purchases. Norms are also restrictive, such as on their mobility and telephone usage and being physically unfit to operate heavy equipment. The factors favoring engagement in the DS-RVC are participation in networks, information access and skills-building, trust, respect, and cooperation—

especially in joint marketing. Availability, access to and control and ownership of resources and assets are also important. Tailor-made training, subsidized processing machinery, soft loans, and improving working conditions and environment would increase women's participation. Continuous gender sensitization for men and women would advance equitably working together.

Gender bias in customer perceptions: The case of agro-input dealers in Uganda

Anusha De Licos, KU Leuven and University of Göttingen
Caroline Miehe; Bjorn Van Campenhout
Caroline Miehe; Bjorn Van Campenhout

Faced with incomplete and imperfect information, economic actors rely predominantly on perceptions and often base decisions on heuristics prone to bias. Gender bias in perceptions favoring men has been found in a wide variety of settings and may be an important reason why some sectors remain dominated by men, and gender gaps in terms of benefits persist. Using ratings of agro-input dealers provided by smallholder farmers in their vicinity, we test if farmers perceive male-managed agro-input shops differently than agro-input shops managed by women. After explicitly controlling for quality differences between male- and female-managed agro-input shops and including fixed effects to account for farmer-level heterogeneity, we find that farmers rate male-managed agro-input outlets higher on a range of attributes related to the dealership in general, as well as on the quality of inputs sold by the dealer. Our results show that gender bias in customer perceptions persists and continues to be a severe comparative disadvantage and an important entry barrier for female agro-input dealers. Policies and interventions designed to challenge gender norms and customs are needed to correct this bias.

Cultural and economic barriers and opportunities for the participation of women in agricultural production systems: A case study in Guatemala

Maria Lucia Berrospi, International Food Policy Research Institute (IFPRI)
Manuel Hernandez, Constanza Alarcon, Diana Lopera, Diana Quintero, Byron Reyes, Francisco Olivet

Agricultural activities in Guatemala constitute 32% of the total employment, but only one in every 10

individuals employed in these activities are women. This study examines cultural and economic barriers and opportunities for women's participation in crop and livestock production systems. We used a qualitative approach involving focus groups with 15–20 women in eight communities in Chiquimula and Huehuetenango in 2022. The findings are consistent across locations. First, women seem not to be strongly interested in crop-production activities, except harvesting, and they only get involved in specific tasks. This lack of interest and participation can be related to low empowerment levels and traditional gender stereotypes, and persists even in locations with a high male emigration, where women could be expected to take over traditionally male crop-related tasks. Second, participants perform a variety of unpaid activities (e.g., raising small-scale livestock and maintaining home gardens), which they do not recognize as formal income-generating occupations. Third, women consider commercialization of their products a challenge as they lack access to markets beyond their communities. This also deters applicants from applying for credit due to fear of defaulting. The main aspirations of participants are to generate income from non-crop-related activities, mainly livestock oriented, or to emigrate for better prospects. This study underscores the need to help women not only start new activities, but also provide them with continuous support services in production and commercialization, management, accounting, and financial literacy, as well as building agency through existing women's organizations and facilitating access to credit.

Gender dynamics of Musheerabad fish market, Telangana, India

Priyanka Mushkam, Indian Council of Agricultural Research (ICAR), Central Institute of Fisheries Education
Arpita Sharma

Fish markets are integral components of the fisheries value chain and play a crucial role in livelihood development. A study was done with the objectives of assessing roles, time-use patterns, workload, constraints and fishery needs of women and men vendors of the Musheerabad fish market, Telangana, India. Our study employed a copyrighted tool developed by the Indian Council of Agricultural Research – Central Institute of Fisheries Education called the Gender Analysis Tool for Fisheries and Aquaculture (GATFA) which examines various dimensions of gender dynamics. A non-parametric Mann–Whitney U test was used to determine if significant differences existed between men and women. Rank based quotient (RBQ) was employed

to assess severity of constraints. It was found that women are engaged in intensive reproductive roles (6.3 hours/day) alongside their market activities. For reproductive roles, significant differences were discerned between men and women in terms of time use and workload. Women spent 8.2 hours/day in fish markets which was more than their men counterparts (7.9 hours/day). Both genders were actively engaged in productive and community roles with no statistically significant differences in their time use and workload. Statistically significant differences were found between men and women with respect to fisheries-related needs. However, no significant difference was seen among men and women for practical and strategic gender needs. High operational costs and limited financial returns from fish sales were the main constraints for both. Economic constraints with a RBQ of 80.90 ranked first, followed by fisheries constraints. Improved market infrastructure, and access to credit and financial support are required. Our findings underscore the critical importance of gender-inclusive policies and interventions.

2.3D · THE W+ STANDARD (CAPACITY STRENGTHENING)

ORGANIZER: Larissa Eugenia Dominguez Fuentes, Women Organizing for Change in Agriculture and Natural Resource Management (WOCAN)

The session will introduce the W+ Standard and give an overview of the methodology for measuring women's empowerment. The session will outline the set of steps to apply the W+ Standard—development of the project idea note, development of the project design document, gender analysis, data collection, interpretation of the data and development of the monitoring report. The second part of the session will focus on how the W+ Standard has evolved and our current scaling efforts—also providing insights on the results from the joint work with the Bill & Melinda Gates Foundation. This second part of the session will be more focused on sharing the challenges and opportunities we have found along the way, including collaborating with other Standard teams. Our oral presentation will introduce the Standard and methodology, with practical group exercises for each of the four steps of the methodology.

2.3E · UNMASKING THE COLONIALITY OF SCIENCE: TOWARDS RESILIENT AND INCLUSIVE AGRI-FOOD SYSTEMS (PANEL)

ORGANIZER/CHAIR: Marlène Buchy, International Water Management Institute (IWMI)

PANELISTS: Karen Nortje, International Water Management Institute (IWMI)

Purnima Menon, International Food Policy Research Institute (IFPRI)

Darshan Karki, International Water Management Institute (IWMI)

Eileen Nchanji, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Rahma Adam, WorldFish (TBC)

DISCUSSANT: Chariy Osei-Amponsah, International Water Management Institute (IWMI)

In this panel we reflect on the coloniality of science as a way of building more resilient, sustainable and inclusive agri-food systems. We start this interrogation from our own professional standpoint. The One CGIAR we know today aims to address food security, whilst also ensuring sustainable, natural resources management and inclusivity. Yet the foundations of the CGIAR began in the 1950s as a techno-scientific project leading to the Green Revolution. The climate crisis, environmental degradation, farmer suicides, growing food insecurity and dependency and the pervasive under- and malnutrition in many countries are argued as the outcome of agricultural developmental models imagined in the north and imposed globally through various political and economic measures. What we call “science” denies the plurality of knowledges and local contexts that may help us to manage food systems more sustainably. Similarly, what we label “technical” knowledge is often dismissive of historical indigenous knowledge about flora and fauna, which has been systematically erased as part of development projects. This panel brings together CGIAR and external researchers to discuss how food systems science is colonized and deeply subjective, and present (proposed) case studies of approaches to decolonize science: decolonizing traditional dietary approaches: Purnima Menon (Asia); hybrid water laws: Barbara Van Koppen and Inga Jacobs-Mata (Africa); and food security and sovereignty: Jahi Chappell.

Our aim is to enable reflection on alternative ways of knowing and doing science.

2.3F · YOUTH RESPONSIVENESS FOR CLIMATE RESILIENT AGRI-FOOD SYSTEM THROUGH ADAPTATION-MITIGATION AND DIGITALIZATION INTERVENTIONS FOR GREEN LIVELIHOODS (PANEL)

ORGANIZER: Ashish Khandelwal, Young Professionals for Agricultural Development India (YPARD India)

CHAIR: Akriti Sharma, Zonal Technology Management & Business Planning and Development (ZTM-BPD) and Young Professionals for Agricultural Development India (YPARD India)

SPEAKERS AND PANELISTS: Vikash Chaudhary, Small Scale Producer

Ashok Dalwai, Ministry of Agriculture and Farmers' Welfare, Gol

Zenebe Uruguchi, Hugo P. Cecchini Institute of International Cooperation and Development, Bern University of Applied Sciences (HAFL)

Jyotsana Kaur Habibullah, Lucknow Farmer Market Shruti Shandilya, Tirwa Farm

Rajkumar Halder, Ruhvenile Biomedical

Amrita Jagatdeo, ThinkRaw India

Ashish Khandelwal, PARD India, New Delhi

India is rich in geography and biodiversity, and a country in which agriculture plays a critical role in the country's economy. However, there are many challenges that India's food system faces, such as lack of agri-food supply chains, inadequacy of climatic adaption and mitigation approaches, lack of infrastructure and logistics, and inadequate management of workforce availability. Moreover, technological advancement, decentralization, collaboration through agri-food supply chains and ensuring sustainable livelihoods are major strategies to build resilient agri-food systems.

Scientific interventions in collaboration with government at local, state and central levels, along with administration, youth, farmers, and marginalized communities are required to improve on-farm productive capacities and off-farm generating opportunities. The inclusion of good agricultural practices, such as agroecology, post-harvest approaches, on-farm climate adaptation, mitigation approaches, carbon farming, climate finance, and vocational skills development for green entrepreneurship are required to enable the

protection and sustainable empowerment of livelihood of the agricultural community.

The key questions we ask in this session through presentations and a panel discussion are:

- What are the focus areas in which youth engage to innovate?
- How can institutional support help to build the resilience of agri-food systems?
- What are the risk factors involved in innovating and bringing technologies to the market?
- How do you strengthen livelihood security through digitalization?

The session objectives are to better understand:

1. meaningful contribution of youth in climate-resilient agri-food systems and green livelihoods
2. the role of technological intervention and institutional factors for strengthening agri-food supply chains
3. the role of climate-smart management practices for environmental sustainability and livelihood security

11.00-12.30

DAY 3 · Wednesday, October 11 · Parallel sessions

3.1A · EMPOWERING CHANGE: BRIDGING GENDER AND CLIMATE RESILIENCE THROUGH POLICY AND DATA

Scoping review on gender-disaggregated data in climate smart agriculture

Emma Smith, CARE USA

Peter Wright, Karl Deering, Abinet Tasew, Maureen Miruka, Ranjitha Puskur, Chandana Rajasekharan, Abiyot Anbacha

Understanding the role of gender and other social relations in shaping adaptive and transformative capacities for building resilience requires assessing the gender and social-inclusion outcomes and impact of climate-smart agriculture (CSA) programming. CARE and IRRI, through the CGIAR GENDER Impact Platform, recently collaborated on a scoping review on gender-disaggregated data in CSA. The focus of this scoping review was to understand the extent to which gender-disaggregated data are available in CSA programming, identify existing gaps in the collection and analysis of this data, and suggest ways to bridge those gaps to reduce gender inequalities that may prevent women and girls from benefiting from CSA programming. The methodology involves a qualitative approach that uses a desk review of selected literature and key informant interviews (KIIs). The KIIs included a convenience sample of 11 informants representing multilateral agencies, an international NGO program, a local NGO program, government programs, a national agricultural research institute, an international research institute, and a private-sector program. Key findings indicated positive trends in the collection, analysis and use of gender-disaggregated data; gaps as a result of a lack of high-level commitment to seek gender equality and social inclusion; a lack of clear standardized indicators to measure impacts; lack of resources, capacity and time to effectively capture disaggregated data; and the need to creating an alliance of organizations to advocate for GESI integration. With the presentation

of this learning and evidence, we intend stimulate discussion on the importance of inclusion of gender-related outcomes and impacts in CSA.

Gender mainstreaming and intersectionality in policies related to climate and agri-food issues: A comparison and reflections of the Guatemalan, Honduran, and Colombian cases

Fanny Howland, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Alexander Buritica, Diana Lopera, Maria Blanco, Deborah Pierce

Although progress has been made in promoting gender equality in governments, gender and intersectional inequalities in national agri-food and climate policies are rarely meaningfully considered or systematically addressed. The nexus between climate, agri-food and gender issues is relevant. Climate and gender policies often follow a top-down approach without integrating women's and men's knowledge, vulnerabilities and demands; and do not address structural causes of gender and intersectional inequalities. The link between gender and food issues is related to power and control in food systems and related to a set of social, economic and physical conditions. We propose an innovative methodology to assess gender and intersectionality integration in policies based on the concepts of policy integration, policy translation and policy coherence. An intersectional gender lens is crucial, as gender-blind policies often prioritize the needs of men and dominant social groups, neglecting the needs of women and marginalized populations. Through policy-document analysis and informant interviews, we examine how gender and intersectionality are portrayed and integrated in climate and agri-food policies, using as case studies Guatemala, Honduras and Colombia. Results indicate that gender and intersectionality mainstreaming in policies remains limited. Gender translations, policy barriers, lack of knowledge and capacity are some of the barriers identified. Intersectionality is poorly

considered and limited to general categories such as 'rural women' or to women's function ('nutrient provider for malnourished children'). These results provide valuable insights that could inform policymakers.

Gender differentiated adaptation strategies considering climate risk perceptions, impacts, and socio-technical conditions in Senegal's Dry Regions

Shalander Kumar, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

Soumitra Pramanik, Adjani Nourou-Dine Yessofofou, Therese Gondwe, Niyati Singaraju, Ranjitha Puskur

The present study attempts to understand the farmers' gender-differentiated perception of climate risk and its impact, access to climate information, and adaptation strategies in Senegal's dry regions. Study uses data collected from 514 households through primary survey between May and June 2022 covering Kaffrine, Louga and Thies subregions and multiple communes, including 5% women-headed households and 12% women respondents. Preliminary findings show that the perception of men and women on the phenomena of climate risk and its potential impact on farming systems is similar; however, the women's access to climate information services (CIS) and climate-smart agriculture (CSA) technologies is relatively very low. The women farmers were found to be much more vulnerable to climate risks, but they often rely on traditional coping mechanisms rather than modern CSA technologies. Both men and women emphasized the importance of context-specific climate information. Although 78% households had access to CIS or some kind of training on CSA, among these it was the men in 73% households and only in 5% in households where women had access to CIS or training on CSA. A refocus of current CIS and CSA programs—with a provision of increased frequency and women-preferred timings of CIS through radio broadcasts, and CSA interventions addressing risk in vegetable production and small animals—will make these programs gender responsive. In addition, we propose appropriate institutional interventions that are critical to address cultural barriers by enhancing women's role in farming decision-making, and access to CIS and CSA.

Unpacking the gender-responsiveness of climate-smart agriculture in India

Niharika Tyagi, Council on Energy, Environment, and Water (CEEW)

Kangkanika Neog, Apoorve Khandelwal

The gender gap in agriculture is a global pattern in which women in agriculture have limited access to land, productive resources, financial capital, information, technology and advisory services when compared to male farmers. Given that women comprise a significant portion of the agricultural workforce, it is crucial to ensure climate-smart agriculture (CSA) policies and interventions are gender responsive. Embracing a gender-responsive approach in CSA entails addressing the distinct gender needs, roles and lived realities of farmers. Ensuring accessibility and inclusivity in site-specific CSA strategies is fundamental for maximizing agricultural potential and facilitating equitable benefits for all farmers. This evidence-based policy research assesses the scope for advancing gender-responsive CSA in India. The gender analytical framework for CSA assesses the gender-responsiveness of policies and institutions, while also reviewing evidence from interventions on climate-adaptive water management practices in Odisha, Uttar Pradesh and Bihar. Only 45% of the analyzed policies incorporate provisions for women farmers, primarily focusing on participation in capacity-building programs, while neglecting holistic gender-responsive investment, planning and implementation. Further, the study reveals only 32% of the water management interventions across states employed a gender-responsive approach, while 40% employed a gender-aware strategy that addresses women's practical needs but does not challenge structural gender inequalities and ideologies. This research highlights the gender gap in agriculture and recommends niche opportunities for policies, interventions and investments urging gender-responsive approaches for inclusive and equitable CSA outcomes.

3.1B · MEASURING AND IDENTIFYING NORMS: APPROACHES AND CONSIDERATIONS

Participatory measurement of norm transformation towards building inclusive agri-food systems: Evidence from Northern Ghana

Agnes Loriba, CARE International in Ghana
Mohanraj Pranati, Abdulai Eliasu

The study assessed behavioral change among women livestock keepers, their spouses and community members with a comparison of changes in a set of villages that participated in a gender-transformative approach (GTA) against a set of villages that participated in a gender accommodative approach (GAA). Both

approaches were applied to a technology-enhanced livestock vaccine delivery system for chicken and goats in two districts in the Upper East Region of Ghana. The outcome mapping approach was applied, and progress markers were developed by men and women to describe gradual progression of changes in behavior leading to the ideal outcome of women's empowerment in five categories: gender division of labor and workload sharing; intrahousehold negotiation, communication and decision-making; control of income, productive assets and resources; self-confidence, autonomy and leadership; and intimacy, and harmony in relationships. Qualitative data was collected through 16 focus group discussions in four GTA and four GAA villages. Villages were purposively sampled to reflect diversity in ethnicity, religion, and proximity to urban areas. The findings reveal both men and women in GTA villages reported positive progress in behavioral changes compared to men and women from GAA villages. 70% of women in GTA villages reported requesting support from spouses compared to 31% in GAA. In GTA villages, 50% of men reported supporting the need to ease restriction on sale of livestock by women, while 100% of men in GAA villages reported wanting the restriction to be enforced. Involvement of participants in defining the path toward a shared vision of empowerment supports measurement of incremental progress and ownership of the process, and enables implementors take action to address reported challenges.

Piloting the multidimensional gender and social norms in agri-food systems index

Betsy Costenbader, FHI 360

Greg Seymour, Steve Cole, Devis Mwakanyamale, Olajumoke Adeyeye, Shiferaw Feleke, Jessica Heckert, Sarah Msita, Kate Litvin, Tina Phillips Johnson

Gender inequalities remain deeply entrenched in many agri-food systems (AFS), limiting the potential of women—especially those from agriculture-dependent communities—to be empowered and to build social and economic resilience to climate change challenges. The Harnessing Gender and Social Equality for Resilience in Agri-food Systems (HER+) initiative will generate learning and evidence on where and how to intervene at a deeper level to disrupt the foundations of inequality in AFS. This effort requires high-quality data. Yet, currently no tool exists to measure and track gender and social norms in AFS and how norms may differ across AFS, geographical regions, or actor groups performing different roles in the AFS. This work supports HER+ through the development of a survey-based tool to measure the perceptions of women and men working in AFS toward inequitable social and gender norms and, ultimately, to assess

the level of gender bias within and across three AFS: cassava, fish and chicken. This presentation will cover the development process of the tool from local stakeholder consultations to the cognitive testing and piloting of the tool in Tanzania and Nigeria. We will present preliminary evidence from these pilot studies and make recommendations for how the tool could be used and adapted by researchers and development organizations working in other agricultural contexts. These findings will, in turn, inform the design of gender-transformative approaches to address harmful social and gender norms in the three AFS.

Including past and ongoing dynamics in ex ante project research

Margreet van der Burg, Wageningen University

Many projects start with a baseline setting the state of affairs or a needs assessment with community members and/or key persons. Only few *ex ante* studies have sought to include past and ongoing dynamics. This is especially concerning for projects aiming at gender-transformative change since these cannot rely on literature about localized changes as in gender and other social relations, labor divisions or use of introduced innovations. We might wonder why such *ex ante* research covering the momentum is never really disputed. And what methodologies can we use to change? First, I illustrate why it is necessary to systematically contextualize any project not only within its local spatial-geographical, ecological-climatological, and social-cultural context but also its temporal-historical one. I will also elaborate on the need for decolonizing the underlying bias toward 'distant' cultures and communities as long-time homogeneous, unspoiled, stable and hardly changed, especially in rural areas. Second, I will show and build on existing approaches that include past and ongoing dynamics in their project sites. These are, for instance, the CGIAR GENNOVATE project tools that help ranking change over 10 years, and mapping exercises to make changes visible as an entry point to elaborate on the experiences with and perceptions on change in relation to various impacts. Additional local sources are community elders or local newspapers. Significant themes to focus on are project dependent and can be extracted from historical and development literature. By purposefully including participants in their long-term processes of change and building on their local experiences and learning with changes and their impacts, transformative change will be more within reach.

Gender norms and women's empowerment: The case of pig-related businesses in Uganda

Esther Leah Achandi, International Livestock Research Institute (ILRI)

Alessandra Galiè, Emily Ouma, Immaculate Omondi, Cathy Rozel Farnworth and Ben Lukuyu

This study explores gender norms, women's empowerment and the interlinkage between the two in pig-related businesses. The study adopts a qualitative methodology with single-gender focus group discussions (FGDs), key informant interviews (KIIs), and individual interviews (IIs) with respondents directly involved in or knowledgeable about norms in pig-related businesses. Findings highlight norms that shape the image of what and where a woman ought to be and the actions she can display or activities she can perform thereby affecting women's engagement in the pig enterprise in terms of activities, places of engagement and positioning in terms of value of benefits accorded. Noncompliance to norms drew sanctions and frequent reminders about the ideal image of the woman in the society. Local conceptualization of empowerment shows the extent of the key role gender norms play in empowerment. Women understood empowerment as a process that entails a change in the traditional image of the woman as prescribed by norms in addition to frequently highlighted aspects of empowerment such as voice, independence, status and positioning. Men defined empowerment as a process along commonly held aspects of decision-making, ownership of resources but within the confines of social expectations (norms). This study implies that gender-transformative change and women's empowerment in pig-related businesses requires engagement with both norms and empowerment gatekeepers who often play the two roles simultaneously.

3.1C · GENDERING THE DIGITAL REVOLUTION

A gender and socially inclusive farmer feedback system: Concept and design

Monica Fisher, International Maize and Wheat Improvement Center (CIMMYT)

Paswel Marenya (CIMMYT)

New approaches of listening to farmer communities are needed to support impactful, demand-driven agricultural interventions. This study describes the process of co-creating with farmers and stakeholders in Malawi and

Zambia—a hybrid farmer feedback system that listens to farmers first and is socially inclusive. An initial design solution links the knowledge/content library of the GeoFarmer application with Viamo's interactive voice response (IVR), supplemented by participatory processes, in-person information exchanges, and community and household sensitization. Our objective is a feedback system where farmers across a spectrum of social groups regularly, spontaneously, and sustainably obtain information, provide and receive feedback, and network with their peers. Critical to designing an inclusive farmer feedback system is understanding and addressing social exclusion in agricultural information channels, including digital channels, and heightened exclusion faced by people with more than one social or economic vulnerability. Our design solution focuses on technology that even many resource-poor farmers have at their fingertips right now—basic phones (not smartphones). Viamo's IVR in local languages enables reaching and hearing from farmers with access to basic phones and encouraging participation of those who might otherwise be excluded due to limited literacy (ICT, reading and writing ability, national languages). Working with communities, we are devising approaches, using existing community resources, to give access to mobile phones to those in need. Various approaches (e.g., role models, household methodologies) are to be implemented to challenge and help positively transcend social norms that disadvantage some groups in agricultural information channels.

Digital agriculture platforms for gender equitable and inclusive benefits in Uganda's agri-food sector value chains

Susan Ajambo, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)
Enoch Kikulwe, Sylvester Ogutu, Eliud Birachi

Effective application of digital agricultural technologies (DAT) has emerged as a catalyst in addressing agri-food sector challenges related to productivity and efficiency. DATs have shown the potential to address bottlenecks in access to extension services, marketing systems, suitable financial products, and logistics, as well as supply chain management. This potential has generated enthusiasm among practitioners and entrepreneurs who strive to foster gender-equitable and inclusive development in value chains. However, there has also been caution against addressing gender disparities to "do no harm" with DAT. Some studies have highlighted how the trajectory of DAT can perpetuate inequalities and power imbalances. The CGIAR Initiative on Rethinking Food Markets conducted a scoping study to assess the influence of the DATs in Uganda's agri-food sector on gender inequalities and

inclusiveness. The study used a qualitative approach to collect data in two phases. The first phase involved conducting an inception workshop followed by key informant interviews with 39 service providers and enablers. The second phase involved case studies using 12 FGDs, 12 individual interviews and a validation workshop. Results showed that the DATs were simply being layered over existing gender inequalities and likely to exacerbate them. Also, the development of most DATs is business minded and does not have any social goals. There is a need for research on how the role of DAT can be modified—how to use, build and fund DATs for better, more equitable outcomes.

Impacts of a digital credit-insurance bundle for landless farmers: Evidence from a cluster randomized trial in Odisha, India

Subhransu Pattnaik, International Food Policy Research Institute (IFPRI)

Berber Kramer, Patrick S Ward

Smallholder farmers often lack documented land rights to serve as collateral for formal loans, and their livelihoods are inextricably linked to increasingly variable weather conditions. Resulting credit and risk constraints prevent them from making potentially profitable investments in their farms. We implemented a randomized evaluation of the impacts of KhetScore, an innovative credit scoring methodology that uses digital technologies to unlock credit and insurance for smallholders including landless farmers in Odisha, a state in eastern India. In our treatment group, where we offered loans and insurance based on the KhetScore methodology, farmers—and especially women—were more likely to purchase insurance, renew insurance coverage in subsequent years, and borrow from formal sources, without substituting formal loans for informal loans. Despite increased borrowing, households in the treatment group faced less difficulty in repaying loans, suggesting that KhetScore loans came with favorable terms that eased the burden of repayment. Moreover, the treatment increased agricultural revenues during the monsoon (Kharif) season and reduced costs in the dry (Rabi) season, enhancing profitability across both seasons. Finally, women in the treatment group reported significantly higher levels of empowerment and mental health, specifically reduced feelings of stress, than women in the control group. In conclusion, digital technologies can contribute substantially to agricultural risk management, resilience, and well-being among marginalized landless farmers.

ICT-based agricultural extension services and women's empowerment: Evidence from Nigeria and Ethiopia

Isabel Lambrecht, International Food Policy Research Institute (IFPRI)

Catherine Ragasa, Ning Ma, Steve Cole

Digital tools and extension services are promising options to deliver optimized agronomics at scale. Yet, technical solutions and advisory systems will fail to produce the intended outcomes if they do not manage to deliver their messages to farmers, or if farmers are unable to benefit from this advice. Women, in particular, often have less access to digital tools and also have less decision-making power in agriculture. Therefore, they may find it more difficult to benefit from these tools, to leverage them for more empowerment and for a more gender-equitable society. Our study provides a comprehensive analysis of the issues through the lens of the Reach-Benefit-Empowerment and Transform (RBET) framework through a combination of a strategic literature review related to gender in the rapidly developing field of ICT-based agricultural extension services on the one hand, and quantitative data analysis from two different settings—Ethiopia and Nigeria—on the other hand. We used original survey data collected in 2023 with one male and one female respondent (if available) from 900 households in Northern and Southwestern Ethiopia and 1,080 households in northern Nigeria, respectively. We analyzed which aspects or dimensions of empowerment are associated with ICT access, how this is influenced by other social markers such as economic status and age, and which gendered constraints are there for women to be reached, benefited and empowered through agricultural support tools. We reflected on the actions that might leverage digital tools toward a transformation for more gender-equitable relations within their households and communities.

3.1D · IMPROVING WOMEN'S STATUS AND ENHANCING NUTRITION OUTCOMES: INSIGHTS FROM PRACTICE

Empowering women and fostering child nutrition: Unlocking the potential of improved chicken breeds in Tanzania

Humphrey Jumba, International Livestock Research Institute (ILRI)

Immaculate Omondi, Alessandra Galie, Adolf Jeremiah, Amos Omoro

Improved chicken breeds have potential to enhance incomes and improve household nutrition among smallholder poultry farmers. However, there is limited evidence on whether (and how) this livestock intervention can support women's empowerment and improve child nutrition. This study explored the impact of the Women-in-Business (WiB) project, implemented by the International Livestock Research Institute in collaboration with other stakeholders in Tanzania's Kilimanjaro and Lindi regions from 2019 to 2022. The WiB aimed to empower women and improve child nutrition by providing increased access to improved chicken breeds, and also used social-media messaging to challenge gender norms that impede women's involvement in the poultry value chain. This study focused on two research questions: i) What is the relationship between access to improved chicken breeds, women's empowerment, and child nutrition? ii) How does addressing negative gender norms impact women's empowerment? Using a mixed-methods approach, we analyzed women-empowerment and child-nutrition data from repeat (baseline and endline) cross-sectional surveys of 192 households, and eight sex-separated focus group discussions with chicken farmers. According to quantitative results, access to improved chicken breeds and challenging harmful gender norms substantially increased the number of women achieving empowerment, and positively impacted child nutrition. Qualitative data supported the quantitative results, indicating that the availability of nutrient-rich eggs and chicken meat contributed to improved household dietary diversity and overall child nutrition. Our findings inform policy and strategic actions for gender-responsive and transformative agri-food systems, emphasizing innovations around improved chicken breeds.

Modality of food transfer, uptake of services and low birth weight: Evidence from Integrated Child Development Services in India

Sumedha Minocha, Cornell University

The importance of nutrition during the first 1,000 days of life, including in utero, the scope of food transfers as social safety net for pregnant women, and the limited evidence on relative effectiveness of food transfer modality on birth outcomes motivates this study. In 2013, in undivided Andhra Pradesh (AP)—now AP and Telangana—monthly take-home rations (THR) consisting of ready-to-cook food were replaced with daily provision of hot, cooked meals (HCM) consisting of milk and eggs, amongst other foods, for pregnant women as a part of a supplementary nutrition program of Integrated Child Development Services (ICDS) in India. I used a difference-in-difference model on India's

National Family Health Survey to compare the impact of food transfer modality via THR and HCM, on low birth weight (<2,500 g) as well as explore pathways underlying the impact. I found a significant and positive effect of HCM as compared to THR, with a 4–4.2% lower probability of low birth weight babies. I found that the effect is spread across the treatment years and states. The heterogeneity analysis suggests that poorest of the poor (bottom wealth quintile) and illiterate mothers are not benefitted from the HCM program, although the benefits are reaped across castes and religions. Moreover, the HCM program results in higher uptake of ICDS services including supplementary nutrition, health checkups at ICDS centers, and nutrition education, confirming both food and nonfood pathways underlying the impact. Overall, HCM as a form of food transfer for pregnant woman presents a scalable model for fighting maternal malnutrition in India.

Discovering gender-related uncommon practices for improved nutrition of mothers and children through the positive deviance approach in rural Madhya Pradesh

Nadine Bader, Deutsche Gesellschaft fuer Internationale Zusammenarbeit GmbH (GIZ)

Avani Verma, Susanne Milcher

The aim of the study was to discover uncommon practices among families with well-nourished mothers and young children living in equally low socioeconomic circumstances in rural Madhya Pradesh that lead to improved nutrition outcomes. A positive deviance (PD) inquiry was carried out with 23 families in seven villages, including semi-structured interviews with mothers and other household members and participatory observations. Successful uncommon practices were shortlisted, validated, and reflected upon in terms of feasibility in focus group discussions with fathers, grandparents, mothers, adolescent girls, and Anganwadi workers. Many of the discovered uncommon practices of the families were related to gender, such as supportive fathers undertaking conscious financial planning to ensure good nutrition for mother and child, attaining knowledge about good nutrition, not consuming alcohol, feeding the child in the morning before work, eating together, and joint decision-making (e.g., in family planning). The reflection with community showed willingness for adoption and dissemination of most practices. However, practices related to alcohol consumption and family planning require multiple actions beyond individual level. Hence, prioritization of doable practices needs to be guided by the community. Dialogues with young fathers talking about their children and relationships have potential to enhance their engagement. Enabling Anganwadi

workers as frontline workers and part of communities to engage in the promotion of these practices could be a lever toward improved nutrition outcomes but requires strengthening their capacities to interact with male members. The PD approach is a useful tool to identify and promote gender-related uncommon practices driven by the community.

Advancing women's nutrition leveraging women's groups and movements in South Asia: Potential opportunities

Monica Shrivastav, Population Council Consulting Pvt Ltd

Avishek Hazra, Vani Sethi, Krishna Wagh, Zivai Murira, Sapna Desai

Adolescent girls and women face multiple barriers to consume diverse and nutrient-rich diets, access to resources, and care for nutrition. Women's groups and movements have emerged as strong social, financial, and health forces with potential to address complex challenges in South Asia. Women's groups have a long history in the region, advancing women's representation in political space, improving education, reducing violence and addressing poverty. Extensive experimentations have been done through community-based women's groups to improve nutritional outcomes of women and children. To identify interventions, elicit pathways, and synthesize approaches of women's groups that address social determinants impacting nutrition, we did a scoping review and mapping study across six South Asian countries. Women's groups address diverse domains including microfinance, livelihoods, women's health, and nutrition and violence against women. They act at three levels—grassroots mobilization, programmatic actions, and policy advocacy toward creating an enabling environment and access to food and services. We identified two priorities—investment in integrated food-systems-rights pathways and building coalitions of women's organizations and movements. The basic tenets of group/movement-based engagement, i.e., women-centered and women-led programming, strengthening social capital and leadership while building networks and community advocacy, are instructive in how to improve future nutrition programming in South Asia. Working with women's groups and movements can ensure justice and equity in nutrition agendas, where women are at the forefront of deciding their priorities, demanding their rights and services, and through collective action, acting and pushing for social change and accountability.

3.1E · PROPOSED EQUITY PRINCIPLES FOR TRANSFORMATIVE INNOVATION, THROUGH A CRITICAL ANALYSIS OF AGRICULTURAL INNOVATION SYSTEMS FRAMEWORKS AND TOOLS (OPEN STREAM)

ORGANIZER: Erin McGuire, USAID Feed the Future Innovation Lab for Horticulture, UC Davis

SPEAKERS: Erin McGuire, USAID Feed the Future Innovation Lab for Horticulture, UC Davis

Maria Boa-Alvarado, Cornell University

Eva Marina Valencia Leñero, International Maize and Wheat Improvement Center (CIMMYT)

The objective of this proposed scientific session aims to introduce the Equity Principles for Transformative Innovation (Equity Principles), which have been recently submitted to a Special Collection Supplement in Agricultural Systems. This session aims to help researchers understand the importance of inclusive Agricultural Innovation System (AIS) frameworks, and Agricultural Research for Development (AR4D) tools, and how to incorporate them into their work on socially effective and responsible innovation and scaling.

The Equity Principles are a response to AIS frameworks and AR4D tools that consistently lack true integration of social differentiation or reflection on power and agency. The omission of these aspects often leads to unintended consequences and inequitable outcomes. Given the significant reliance on innovation and scaling in the AR4D community to achieve Sustainable Development Goals, it becomes crucial to consider the social aspects of these processes.

3.1F · CONCEPTUAL APPROACHES TO ADDRESS GENDER AND SOCIAL EQUITY IN AGRI-FOOD SYSTEM'S DEVELOPMENT

ORGANIZER: Cathy Rozel Farnworth, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

A conceptual framework of living labs for people: Fostering innovations for low-emissions food systems and social equity

Anne Rietveld, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Birgit Haberman; Ryan Nehring, Wei Zhang, Thomas Falk, Kibet Walter

This paper provides the conceptual basis for what we call Living Labs for People (LL4P). We define LL4P as an inclusive and diverse space for people to design, test, demonstrate and advance their socio-technical innovations and associated modes of governance within a facilitated organizational structure. Our specific aim with LL4P is to facilitate locally developed innovations for low-emission food systems that address social equity in four target countries: China, Colombia, Kenya and Vietnam. This conceptual paper outlines a framework to guide activities in each of those four countries. The LL4P draws on the living lab literature but tailors existing approaches for food systems in developing countries. Four country teams, made up of CGIAR researchers and national partners, adapt LL4P to the specific socio-ecological and cultural context and in line with each country's mitigation policy such as the Nationally Determined Contribution (NDC). Therefore, while this conceptual paper provides a rationale, framework and a set of guidelines, it will also incorporate distinct approaches from each of the four target countries in line the following principles: 1) gender and social inclusion; 2) the co-production of knowledge; 3) territorial governance and; 4) co-benefits contributing to the Sustainable Development Goals. The practical experience from applying this framework in the four case studies will generate learnings about alternative pathways for other Living Labs focused on low-emission food system development and social equity.

Integrating gender and social inclusion into behavior change frameworks in agri-food systems: The case of agroecological transformation

Rachel Voss, WorldFish

Sarah Freed, WorldFish; Anne Rietveld, Alliance Bioversity-CIAT; Thomas Falk, IFPRI; Rahma Adam, WorldFish

A systems perspective is crucial to understanding behavior-change processes in the agro-ecological transformation of agri-food systems. Systems-

level behavioral frameworks in agricultural systems commonly acknowledge the role of individual demographics, economic and governance factors, and social networks in shaping farmers', fishers' and pastoralists' decisions. However, behavior-change frameworks rarely account for wider social and relational structures that govern individual and collective behaviors, and are thus relatively gender blind. Social and relational factors are especially relevant to understanding behavior change among women and marginalized groups, whose opportunities and decisions are often constrained by norms and power inequities. We offer a novel conceptual framework for analyzing behavior change in agri-food systems by integrating multidisciplinary behavioral concepts into Ostrom's social-ecological systems framework. Critical is the notion of 'opportunity space', which is here influenced by resource access, social relations, behavioral norms, power and agency. Drawing from experiences in countries engaged in the CGIAR Initiative on Agroecology, we present a case study to illustrate how the framework can be used to more systematically integrate gender relations and equity concerns into behavioral analysis in the context of agri-food systems transformation.

A systems-based framework for understanding women's resilience pathways in agri-food systems

Cathy Rozel Farnworth, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Anne Rietveld, Meghajit Shijagurumayum, Diana Lopez-Ramirez, Rachel Voss, Angela Meentzen

Persistent gender and social inequities undermine agri-food systems' potential to contribute to inclusive and sustainable development. Systems thinking recognizes the interconnectedness and complexity of agri-food systems, emphasizing the need to consider various interrelated components and their dynamic interactions and highlights the need for integrated and transformative strategies that target multiple levels of the agri-food systems, from local to global. This session discusses four conceptual approaches that address gender equality and social inclusion in agri-food system development through the lens of systems thinking.

The four approaches have each been developed in the framework of a different CGIAR research initiative:

1) Developed by the Mitigate+ Initiative on Low-emission Food System Development, the conceptual basis of a Living Lab for People is detailed as an inclusive and diverse space for people to design, test and advance their socio-technical innovations and modes of governance within a facilitated organizational structure.

2) The Agroecology Initiative offers a framework for analyzing behavior change in agri-food systems by integrating behavioral concepts into the social-ecological systems framework. Critical is the concept of opportunity space.

3) From the HER+ initiative on Gender Equality, theoretical work on how women within agri-food systems can move towards improved resilience in a climate change world is highlighted. Five elements—gender norms, intersectionality, power and agency, personality and lifecycle—help to understand how women achieve resilience.

4) Building on participatory and feminist-ecological approaches, the Aquatic Food Initiative sets out five impact pathways to address gender and social equity in aquatic food systems.

Addressing women's invisibility in aquatic food systems; impact pathways towards gender and social equity

Rahma Adam, WorldFish

Aquatic food systems make significant contributions to sustainable development through generating employment; providing community and household

food and nutrition security; and strengthening family well-being, socioeconomic growth, poverty alleviation, climate resilience and environmental sustainability. SDG 5 makes an explicit commitment to “achieve gender equality and empower all women and girls” in their own right. Yet gender inequalities and barriers remain prevalent in rural areas of low-income countries, including where there is a high reliance on aquatic food systems. Although women make up half of the overall workforce throughout the fisheries and aquaculture value chains, and occupying critical roles, they constitute a disproportionately large percentage of the people engaged in the informal, lowest paid, least stable and least skilled segments of the workforce. Indeed, women participate in all parts of fish food systems, but are most visible in post-harvest processing and trade of fish. This invisibility of women creates a condition in which the role that women play in the aquatic food system is not given much weight by the policymakers, development practitioners, private sector and others. Building on multiple participatory and feminist-ecological methods, we lay out a conceptual framework for aquatic food systems that stipulate five impact pathways that can be used to address gender and social equity in aquatic food systems in low- and middle-income countries across the globe.

and old) through utilizing good communication, shared decision-making and planning skills as a family and extended family team, and recognizing the skills and capabilities of each family team member, is building gender equality, and further attracts and engages women and female youth in agricultural futures. Through photos and the voices of female adults and youth, the PNG project team will demonstrate the benefits of incorporating this approach in agricultural extension, with a particular focus on communication, team-capacity building, and context-relevant adaptations to the method, as well as the lessons learned.

Addressing gender-discriminative barriers to transform livestock agri-food systems: Approaches that work in livestock vaccine delivery in Northern Ghana

Nelly Njiru, International Livestock Research Institute (ILRI)

Alessandra Galie, Agnes Loriba

There has been considerable debate on how to develop gender-equitable agri-food innovations. Much of the debate is on whether gender-accommodative approaches (GAAs) and the more-recent gender-transformative approaches (GTAs) can work and how. Evidence on best pathways for gender-equitable agri-food innovations is limited. Livestock contributes to animal-source foods and to progress toward gender-equitable agri-food systems. Gender inequality reduces women's access to productive resources, including livestock vaccines, with negative consequences on livestock productivity and women's empowerment. We present results of a systematic assessment of interventions by a development project—the Women Rear—and their contribution to change in gender norms, access to livestock vaccines, and women's empowerment (WE). Qualitative data were collected from 25 single-sex and one mixed focus group discussions (FGDs) and 39 key informant interviews (KIIs) with different value chain actors to assess changes in gender norms that limit women's ability to access livestock vaccines and their empowerment, after the GT and the GA interventions. Resulting from GTAs, the restrictive gender norms started to relax. Prior to the project, women were not allowed to own livestock, state in any context that they owned them and sell them. Now they can do all three things (albeit at different degrees). Men appreciate that these changes reduced men's financial burden. Women's empowerment and critical consciousness are positively associated with changes in gender norms. We recommend pathways toward more-inclusive livestock research and innovation that contribute to women's empowerment and healthy livestock for inclusive agri-food systems.

Securing women's resource rights through gender-transformative approaches

Elisabeth Garner, CIFOR-ICRAF

The Global Initiative for Gender-transformative Approaches promotes and strengthens women's land rights through the integration of gender-transformative approaches in International Fund for Agricultural Development (IFAD) rural development interventions by sharing learning to improve policies, tools and practices across projects across six countries. Our approach systematizes the knowledge and lessons generated and uses the IFAD and CGIAR scientific and communications infrastructure to target decision-makers and development practitioners with demand-driven tools, guidelines, frameworks and knowledge products. This presentation will provide insights from the Bangladesh case study. A gender analysis, consisting of a sociolegal analysis with qualitative and quantitative data, provided insight into opportunities for social transformation within the context of an ongoing project. The main conclusion of the gender analysis in Bangladesh was that while dual-titling alone was not enough to change social attitudes about women's control and access to land, additional training nested in long-standing and intersectoral efforts in a geographic area fostered shifts in these attitudes. More broadly, by looking across the six countries, this initiative reinforces the importance of local and focused understanding of gender analysis to collaboratively design gender-transformative approaches. The Initiative is coordinated by IFAD and implemented in partnership with the Center for International Forestry Research and World Agroforestry (CIFOR-ICRAF), the International Food Policy Research Institute (IFPRI) and the Alliance of Bioversity International and the International Center for Tropical agriculture (CIAT).

What is the added value of applying a gender-transformative approach within a livelihoods intervention, in terms of accelerating lasting transformations in gender equality, food security and economic well-being?

Pranati Mohanraj, CARE USA

Maureen Miruka

This paper presents a comparative study, conducted by CARE, of a gender-transformative model for gender equality, compared against a typical gender-sensitive approach ('gender light'), both of which were integrated into a program for women's economic empowerment intervention, which included agriculture development

1.30-3.00

DAY 3 · Wednesday, October 11 · Parallel sessions

3.2A · GENDER TRANSFORMATIVE APPROACHES: REFLECTIONS ON RESOURCES AND INNOVATIONS

Challenging and transforming the social and gender norms through a wholistic PAR approach

Joros Sawi and Brenaldi Kunjip, University of Canberra

Brenaldi Kunjip, Kiteni Kurika, Lalen Simeon

An innovative, grassroots co-developed agricultural extension approach is challenging and transforming

the social and gender norms of rural and remote PNG subsistence farming families. The impacts on women and female youth are 'life changing'. Working with women, men, and female and male youth across PNG, the project explores challenges and successes in building gender-equitable approaches within an agricultural setting, and to further understand the future agricultural aspirations of PNG's female and male youth. Project participants and the Australian and PNG research teams developed a learning model that engages farming families through linguistically, culturally, and environmentally relevant methods. This wholistic approach prioritizes the empowerment of project participants, particularly female and male youth, in an agricultural setting, through the process of constructing and using participants' own knowledge, lived experience, concerns and languages. Changing family members' mindsets (male and female, young

and group-based savings and loans in Burundi. The gender-transformative (GT) approach was based on Freirean principles and followed an iterative cycle of critical reflection and action to analyze gender norms and build women's solidarity and collective action. It also engaged men equally in the processes of critical reflection on harmful gender norms. A three-arm mixed-methods impact evaluation was conducted, comparing the GT model with the 'gender light' model and a control (no gender focus). Cost-benefit data were collected from two main sources: project documentation and primary data from program participants. The GT model yielded a return of 5:1, compared to 3:1 return for a 'gender light' model and a 2:1 return for a model with no gender focus. The findings indicate that of the three models, the GT model is the most economically viable. Additionally, the evidence suggests that the 'gender light' approach initiated some important community discussions, but the GT approach catalyzed more sustainable and far-reaching gender-norm changes alongside significant achievements in improving household food security and economic well-being. We suggest that investing in a gender-transformative approach within a livelihoods intervention may have more far-reaching and sustainable effects accelerating lasting transformations in gender equality, food security and economic well-being.

3.2B · UNDERSTANDING YOUNG PEOPLE'S INVOLVEMENT WITH AGRI-FOOD SYSTEMS AND RURAL GEOGRAPHIES

Motivating factors influencing youth smallholder farmers to adopt sweet potato seed technology: A means-end chain approach

*Sarah Mayanja, International Potato Center (CIP)
Norman Kwikiriza, Janet Mwendu, Julius Okello,
John Jagwe and Joseph Ssekandi*

Sweet potato, with its nutritional benefits, high yield, and fast maturity, holds great potential for addressing food scarcity in arid areas. However, smallholder farmers in these regions face challenges in preserving sweet potato seed, particularly after prolonged dry spells. Lack of effective storage methods and difficulty in maintaining quality seed impede farmers from fully harnessing the crop's potential to enhance their food and income security. To address this issue, the Triple S (Sand, Storage, Sprouting) approach was introduced as a root-based technology for preserving

sweet potato seed. Despite its availability, farmers have shown inconsistent adoption of this technology. To gain insights into the motivators for adopting or dis-adopting the Triple S, this study employed the laddering technique and interviewed 60 randomly selected male and female youth farmers, categorized as users and non-users of the technology. Interviews revealed the attributes, consequences, and values associated with the technology, uncovering the underlying mental constructs that influence the adoption decisions of young farmers and the values that shape those choices. The findings highlight that personal values such as a healthy life, happiness, social security, achievement of personal goals, and peace of mind drive the adoption of the Triple S. Specifically, only female users mentioned peace of mind as a significant motivator. On the other hand, non-use of the technology was associated with negative values, including perceptions of being unhealthy, unhappy, and ashamed. The study underscores the importance of understanding mental constructs in designing effective strategies for technology uptake and provides policy recommendations to address this matter.

With, by and for young people: Strengths-based rural youth program development in Papua New Guinea

*Barbara Pamphilon, University of Canberra
Jo Caffery, Jocelyn Perry*

Across the world there is a growing recognition of the important place of youth in farming systems. Therefore, it is crucial to help young people see the many futures in agri-food systems and engage them in their formative years. This presentation will focus on the potential of the youth of Papua New Guinea (PNG), a low-middle income country to the north of Australia. As with many low-income countries, PNG is experiencing a youth bulge and high unemployment as many young people drift to the city where they typically do not find work. However, smallholder farmers are a key part of national food and nutritional security as they produce 85% of the country's food crops, hence there are many opportunities for PNG's young people in the agri-food system. Much of the current PNG research on youth focuses on the dangers of young people's risky behaviors to themselves and others, and on their many needs. This deficit-based approach sees young people in a risk or problem frame rather than for their strengths and as potential partners in development efforts. The presentation will show how a strengths-based program-development approach can turn the analysis from a deficit focus to understanding how an analysis of the sociocultural contexts of young people can identify what strengths can be built on, as well as identifying the diverse groups of young people.

It will illustrate how a place-based analysis can utilize individual, household, cultural, and organizational assets in the design of youth development programs.

Youth aspirations and how they shape interactions with food systems livelihoods: A comparative assessment of Albania, Bangladesh, and Ethiopia

Zenebe Uraguchi, Bern University of Applied Sciences

What drives the aspirations of youth in food systems? Using a systems approach, this longitudinal study critically analyzes the assumption of increased youth disengagement from food systems by taking the examples of Albania, Bangladesh, and Ethiopia—countries with a significant demographic cohort of youth. Youth interactions with food systems are uniquely shaped in the three countries by specific intersections with multiple factors including gender, wealth, health, location, and intergenerational relationships. The study highlights that barriers and choices of youth in food systems are mediated by a range of factors, such as skills development, investment/access to finance, and policy frameworks. The study is significant in three ways. First, the findings have practical implications for the design and implementation of multistakeholder initiatives that facilitate the transition of youth from education to the world of work. These initiatives in food systems tend to be prescriptive by focusing on demand-supply problems but neglecting the ecosystems around food systems where key barriers and opportunities lie. Second, it takes a holistic approach, just as with any other system or sector, to make food systems a viable source of livelihood for youth by suggesting how to design inclusive, sustainable, and scalable interventions in skills, information, and career advice; investment/access to finance; and youth-specific policy frameworks. Third, shifting food system dynamics and outcomes for improved interaction of youth with food systems requires understanding the inherent social tensions and struggles by focusing on the agency and organization that have been central and constant themes in youth empowerment.

Youth orientation in AR4D: Possible dimensions

Dorte Thorsen, Institute of Development Studies (IDS)

Youth is recognized as a key demographic in international agricultural and rural development. Young men and women hold large stakes in the future of sustainable agri-food systems, and they are recognized as an important target group for agricultural research for development (AR4D) interventions. This paper was

commissioned by the CGIAR GENDER Impact Platform with the aim of pushing the way we think about engaging with youth, who youth are, and how the diversity among youth can be reflected in AR4D to advance gender equality and inclusivity. In this presentation, we focus on conceptual approaches towards youth. Like any other generation, youth are diverse and differentiated, but the heterogeneity in young people's situations, capacities and experiences is sometimes ignored. Representations of youth frequently define youth as a simple, distinct and homogeneous demographic category, defined chiefly by age and often as gender-neutral personae or simple binary categorizations of male and female youth. Drawing on recent scholarly debates, we explore what insights can be gained from three alternative perspectives on youth: youth as a transitional phase of life; youth in a generational perspective; and youth as an identity and cultural resource for action. We argue that these perspectives constitute the building blocks of a relational conceptual framework that can guide youth-sensitive research and program design. We contend that it is vital to understand youth as a relational concept and status, in contrast to static and dogmatic framings, which mistakenly characterize youth as a mere age category or a standardized, universal experience.

3.2C · GENDER IN MECHANIZATION AND POST-HARVEST PROCESSING

Towards women's access to and adoption of mechanization: Analysis of farmer groups' services in Bangladesh

*Maria Jones, United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP)
Samantha Lindgren, Lavlu Mozumdar, Ghaida Alrawashdeh*

Sustainable mechanization can help reduce women smallholder farmers' time and labor burden while increasing farm productivity and building resilience. However, the reality is that most agricultural innovations and technologies do not cater to women's needs or preferences and are primarily designed for middle-income male farmers. While the adoption of mechanization in Bangladesh is rapidly increasing, women smallholder farmers face sociocultural constraints that can make operating machines difficult. Service providers have made agricultural mechanization more accessible to smallholder farmers; however, machinery service providers are predominantly men, which makes it difficult for women to learn about and access service providers. The objective of this study was to determine how to best scale agricultural

mechanization in conservative sociocultural settings in a gender-responsive manner. A needs assessment (n = 41) conducted in the Mymensingh and Barisal districts of Bangladesh through semi-structured interviews and focus groups revealed three key lessons for the scaling of mechanization to benefit women: a pivot in how we think about adoption is required, male mechanization service providers must be equipped to reach women farmers, and sustainable business models for group ownership of mechanization must be developed.

We don't know what we don't measure: Impacts of post-harvest fish processing technology on equity and equality

Nisha Marwaha, School of Global Development, University of East Anglia, Norwich, UK

Julie Bremner, Johanna Forster, Heather Gray, Natasha Grist, Matthew Heaton, Lee Hooper, Nitya Rao, Ghezal Sabir, Sudarshan Thakur, Abraham Wanyama, Liangzi Zhang

Fisheries and aquaculture are crucial sources of livelihood, food and nutrition—particularly for the global poor. Despite significant value in food systems, over one-third of the global aquatic harvest is currently lost or wasted. Appropriate postharvest practices and technology are crucial to reducing this loss and waste, improving quality and food safety, and extending shelf life and year-round availability. The lives of postharvest fisheries actors, over half of whom are women, are deeply affected by these technologies and wider changes in the sector. While the Blue Economy approach has focused on sustainability of ocean ecosystems and associated economic activities, there appears to be little attention on the postharvest sector and almost none on the equity and equality impacts on postharvest actors. As such, this systematic review focuses on the equity and equality outcomes of postharvest fish-processing technologies. We note trade-offs between enhanced productivity and incomes with the introduction of mechanized, formal technologies, and gender equality—as seen in women's control over resources and decision-making agency—with more traditional, informal technologies. We call for more data disaggregation and rigorous research to better understand the processes and outcomes of postharvest technologies on social justice outcomes alongside livelihood, food and health security.

A comparative analysis of men and women's use and (non) adoption of mechanization technology: Barriers and enablers from East and Southern Africa

Ojongetakah Enokenwa Baa, International Water Management Institute (IWMI)

Kristin Davis, Karen Nortje

Countries in East and Southern Africa face multiple challenges, including climate change impact, in addition to other crises such as land degradation, poor yields, food and nutrition insecurity, resource scarcity, ecosystem and biodiversity loss, and rapid population growth (Diaz et al. 2019). While these interact, the extent to which climate change will impact food systems and adaptations to future risks remains unanswered (Alexandridis et al. 2023). Women and youth's agricultural contributions to food and nutrition are significant, as they engage in subsistence farming and small- and medium-sized enterprises as agricultural agri-entrepreneurs. However, their agricultural activities are often hindered due to unequal ownership of quality farmland and the need for more capital, technology, information, and other resources to invest in agriculture. Technological advancement continues to show the potential to improve crop yields and productivity. Nevertheless, there is a need to explore why certain underlying behavioral and socioeconomic factors continue to shape and influence innovations' (non) adoption. The aim of this presentation is to: (i) discuss the specific mechanization technologies used by men and women across the East and Southern Africa One CGIAR Regional Integrated Initiative—Ukama Ustawi, and (ii) unpack the barriers and opportunities for the uptake of technologies by men, women, and youths for maize-mixed farming. The study followed a qualitative data-collection method with focused group discussions and key informant interviews in Kenya, Malawi, Zambia, and Zimbabwe. While the findings varied across the gender categories, they all indicated that a gender-responsive approach is needed to support technologies and innovations.

Gender and demand stimulation for agricultural mechanization service use in Ethiopia

Moti Jaleta, International Maize and Wheat Improvement Center (CIMMYT)

Abdu Mohammed, Mesay Gebresilasse, Susan Godlonton

Agricultural mechanization is less developed in sub-Saharan Africa (SSA). Even in areas where there are

scale-appropriate mechanization services, their use by smallholders (especially by women farmers) is minimal due to various social and economic factors. Following a randomized control trial (RCT) approach in stimulating men and women farmers in machinery-service use for cereals threshing and collecting survey data from 841 women-headed and 1,116 men-headed households in East and Southwest Shewa Zones in Central Ethiopia, this paper assesses how gender of the household head affects the demand for mechanization services. Empirical results show that gender of a household head is associated with the use of machinery services. Younger household heads are more proactive in using incentives provided in stimulating machinery-service use for threshing. Regardless of the gender of household heads, there is a location difference on the intensity of mechanization-service use by smallholders. In most of the cases, the size of the cultivated farmland matters in mechanization-service use. Overall, subsidies have a significant effect in stimulating demand for mechanization services by smallholders. However, no significant difference was observed between men and women household heads in using the provided incentives for demand stimulation. This implies that availability of mechanization services alone does not guarantee use of these services by men and women farmers. It is essential to further explore the role of institutional setups in which smallholder farmers operate and the supply side challenges service providers have in reaching out to men and women farmers under poor rural infrastructure.

3.2D · SUPPORTING WOMEN'S ENTREPRENEURSHIP, EMPLOYMENT, AND ECONOMIC EMPOWERMENT IN AGRI-FOOD SYSTEMS

Opportunities for and constraints to women's empowerment in Tanzania's cashew value chain

Aika Aku, Sokoine University of Agriculture (SUA), Morogoro, Tanzania

David Mather, Elizabeth Bryan, Zena Mpenda and Venance Mpunde

Cashew is one of the cash crops mostly grown by smallholder farmers in Tanzania. It provides a major source of rural employment and income. Women provide 90% of labor in small-scale cashew processing and largely sell to the domestic market. However, women face constraints in increasing the productivity and profitability of small processing operations. This study assesses the effectiveness of an intervention that provided equipment and training to women's

cashew processing groups (WCPGs) in the Mtwara and Lindi regions, implemented by the Small Industries Development Organization (SIDO). The study uses mixed methods including in-depth interviews with women processors and local experts, and a quantitative survey of the costs and benefits of small processing facilities. The study found that WCPGs using improved processing equipment achieved a 25% productivity gain, on average, compared with control group WCPGs. However, groups receiving the equipment still face some constraints, including accessing raw cashew. These constraints limit the extent to which efficiency and quality gains can be converted into higher income, and access to markets to sell processed cashew, forcing these WCPGs to rely on sales-agent intermediaries, reducing profits and increasing the risk of losses. The effectiveness of the SIDO intervention was further limited by lack of cohesion of some groups. The results suggest that such interventions need to take a more holistic approach, recognizing the multiple challenges women face in agri-food systems. In addition to processing equipment, the SIDO intervention should target experienced, well-functioning processing groups; provide training on group management; facilitate market access and contract enforcement.

Digital financial services for empowering women in agri-food value chains in the Indonesian region

Rumanintya Lisaria Putri, National Research And Innovation Agency (BRIN), Republik Indonesia Saptana

This study seeks to explore the potential of digital financial services (DFS) and platforms to better serve the specific needs of rural women in the agri-food value chain (AFVC) to advance their financial inclusion, economic participation and opportunity. Based on an extensive literature review, available evidence and macro analysis of national-level statistical data, the study describes gender relations, DFS and AFVC in Indonesia, as well as identifies challenges in promoting women's empowerment and opportunities to be exploited by DFS initiatives. The research identified women's limited access to financial, productive, and capacity-building resources and limited decision-making roles over AFVCs as key challenges. More importantly, the research highlights four key areas of opportunity to be exploited: the suitability of designing DFS initiatives through an ecosystem approach, with an emphasis on partnerships and cooperation with multilevel stakeholders, including cooperatives and women's associations; the importance of tailored training and effective communication channels to reach women through DFS initiatives; the relevance of

DFS that accompanies it to the human touch and local presence through female agents; and the importance of collecting and analyzing sex-disaggregated data associated with the triple nexus. Recommendations are then presented to guide institutions, financial service providers, international organizations and civil society to design and deliver a more gender-responsive DFS in future initiatives.

Nurturing women-led agri-businesses: Unleashing the potential of women–women networks

Ranjitha Puskur, International Rice Research Institute (IRRI)

Niyati Singaraju, Caroline Muchiru, Sabdiyo Dido

VALUE4HER is a continental initiative of the Alliance for Green Revolution in Africa (AGRA) aimed at strengthening women's agribusiness enterprises and enhancing voice and advocacy across Africa. The initiative aims to increase the performance of women entrepreneurs through access to markets and trade, access to finance and investments, learning, networking, and global advocacy aimed at addressing some of the key barriers to women's business growth and market participation in agriculture. In 2021, the initiative provided innovation grants to 20 SMEs from nine African countries to catalyze market and learning networks and mentorship among women-led businesses. Each of these entrepreneurs connected with 20 micro and nano women entrepreneurs and collaborated with them and mentored them. This presentation highlights the short-term outcomes of this grant including the changes in financial, production and marketing management made by the women entrepreneurs; the enterprise characteristics like revenues and profit margins; and their attitudes and perceptions toward business growth and the role of the network and mentorship in influencing these changes. It also highlights some challenges the entrepreneurs face to grow their businesses, including their limited access to financial and risk management products, time poverty, limited mobility, and agency. The presentation also identifies areas that need more research to inform similar efforts at a larger scale, and to ensure that they responsibly contribute to women's economic empowerment through entrepreneurship.

Helpers, employees, and owners: Opportunities for women's empowerment in agricultural value chains

Manuel Francisco Moreno Bustamante, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Jennifer Twyman, Luisa Claros, Carlos Suazo, Jenny Wiegel, Mónica Chavarro

Currently there is little evidence on differentiated gender roles and empowerment in value chains in the Latin America region and few comparative analyses on value chains and between value chain nodes. In this study, we examine different indicators of women's empowerment among the production and processing nodes of two agricultural value chains—cashew and dairy—in Honduras to understand whether and how women's roles in the value chains are related to their empowerment. We used qualitative data collected in interviews, participatory workshops and focus groups, and quantitative data from intrahousehold surveys. Qualitative data assessed and compared men's and women's participation in productive tasks, decision-making, asset ownership, and gender norms and beliefs about appropriate activities within value chains. Quantitatively, we analyzed data on households, agricultural production, processing activities and women's empowerment indicators (using the A-WEAI). The results suggest that levels of empowerment differ (as measured by the A-WEAI) between value chains and at different levels of value chain nodes. Women in processing nodes have lower levels of empowerment than those in production nodes, which contrasts with literature results. Indeed, in other regions such as Africa or Asia, women's empowerment has been found higher in the processing node because of greater employment opportunities. In our case, the various indicators of empowerment show that women in processing nodes in Honduras face greater time burdens associated with employment and care, which contributes to lower empowerment. The relevance of the study lies in addressing methodological and knowledge gaps in the region.

3.2E · USING THE PROJECT-LEVEL WOMEN'S EMPOWERMENT IN AGRICULTURE INDEX FOR MARKET INCLUSION (PRO-WEAI+MI) (CAPACITY STRENGTHENING)

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Soumyajit Ray, International Food Policy Research Institute (IFPRI)*

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Current measures of women's empowerment in the agricultural sector focus heavily on agricultural production. Most rural households, however, rely on multiple income streams that include processing and marketing, and many interventions focus on women's empowerment within agricultural and non-agricultural market systems.

To address these needs, we have developed the optional add-on market inclusion (+MI) modules and indicators for the pro-WEAI, along with complementary qualitative protocols. The new indicators cover aspects of intrinsic, instrumental and collective agency and of the empowerment environment that might be addressed by gender transformative value-chain focused interventions. The accompanying qualitative protocols collect data with a range of actors across the market system. This learning lab will orient participants to these +MI add-on modules and the qualitative protocols and prepare them to use these resources. Overall, participants who complete this learning lab will be prepared to use pro-WEAI+MI in their studies. Specifically, the material covered will allow participants to:

1. Understand the evolution of the pro-WEAI+MI modules, the underlying principles of agency they are based on and their composite indicators.
2. Learn how to administer select pro-WEAI+MI modules, with the help of video demonstrations and accompanying discussions.
3. Calculate and interpret select market inclusion indicators and identify which indicators are useful for their projects—we will focus on indicator definitions and their interpretation.
4. Appreciate the value of accompanying qualitative work and incorporate the pro-WEAI+MI qualitative data collection tools into their work and interpret the findings.

3.2F · GENDER INTEGRATION ACROSS THE USAID FEED THE FUTURE INNOVATION LABS (PANEL)

ORGANIZER: Janelle Larson, Pennsylvania State University

SPEAKERS: Erin McGuire, Director of the Horticulture Innovation Lab at UC Davis

Elizabeth Bryan, Innovation Lab for Food Security Policy Research, Capacity, and Influence at Michigan State University

Rita Gurung, Food Safety Innovation Lab, Purdue University and Cornell University

Janelle Larson, Co-Chair, Innovation Lab Gender Affinity Group, Penn State; Horticulture Innovation Lab, UC Davis

Feed the Future Innovation Labs lead the research arm of the US Government's initiative for food security, globally. Led by US universities and in collaboration with in-country researchers, these Innovation Labs are central to advancing novel solutions that support US goals to reduce global hunger, poverty and undernutrition, in both the natural and social sciences. This session will explore how various innovation labs incorporate gender across the research and implementation cycle to ensure solutions are gender transformative. The discussion will touch on collaboration with natural scientists; capacity strengthening in US and international research institutions as well as community partners; and policy and program development, all with an eye to transforming gender relations.

3.30-5.00

DAY 3 · Wednesday, October 11 · Parallel sessions

3.3A · FROM HOTSPOTS TO HOPE: UNEARTHING GENDER NARRATIVES IN CLIMATE-TOUCHED TERRAINS

ORGANIZER: Els Lecoutere, CGIAR GENDER Impact Platform

The objective of the session is bringing together key pieces of primary research on gender equality in transforming agri-food systems in the face of climate change, conducted in the framework of a collaboration between IDRC, the GENDER Impact Platform, and CGIAR and external partners.

A research program was set up to identify pathways in changing food systems that allow for increasing gender equality. Climate change emerged as a significant and critical trend, simultaneously affecting agri-food systems and gender equality; hence this research focuses on the intersection of climate change, agri-food systems and gender equality. The conceptual framework builds on the gendered food systems frameworks, as well as recent frameworks linking climate change and gender equality in agri-food systems.

The session will briefly introduce how we identified climate-agriculture-gender inequality hotspots. The session will include two presentations of results of in-depth case studies examining the intersections of climate change, gender equality and agri-food systems in such hotspots, more particularly in Bangladesh and Zambia. This will be followed by two presentations of results of quasi-experimental impact studies testing the potential of interventions to address gender equality in food systems and in climate resilience in these hotspots. A representative of IDRC will attend, reflecting on the overarching learning and implications for gender equality and climate action in interventions.

The effects of interventions challenging gender norms and addressing access to resources on women's empowerment and intrahousehold gender equality of climate resilient capacities in hotspot areas in Bangladesh

*Els Lecoutere, CGIAR GENDER Impact Platform
Sadika Akhter, Esther Kihoro, Mohammed Kamruzzaman and Durjoy Dey*

In the face of transforming agri-food systems (AFS) and climate change, it is critical to uncover potential pathways through which gender equality and resilience of AFS can be simultaneously addressed. In this quasi-experimental impact study, we assess the effects of two interventions in Kishoreganj district in Bangladesh—a climate hotspot—on women's empowerment, intrahousehold gender equality of climate resilient capacities and AFS outcomes. One intervention addressed attitudes towards gender-based violence and gender norms (ECATTO); the other, access to resources and (extension) services for AFS activities (SHOUHARDO III). We use primary gender-disaggregated intrahousehold data collected in March 2023 from 412 households for the ECATTO and 1395 households for the SHOUHARDO III intervention (equal treatment and control proportions). We adopt matching and regression discontinuity as identification methods. We found that the ECATTO intervention increased awareness of women's rights and more positive attitudes towards women's political leadership among men and women. It also enhanced women's confidence in assuming societal leadership roles. As a result of SHOUHARDO III, women are more likely to adopt farming and livestock-rearing technologies and there are smaller intrahousehold differences in technology-adoption intensity. Within the SHOUHARDO III treatment group, the couple-sessions intervention that addresses intrahousehold resource allocation has an additional positive effect on gender equality in adoption. Both the ECATTO and SHOUHARDO III interventions have a positive effect on women's dietary diversity.

Situational analysis of climate change-agriculture-gender inequality hotspots in Bangladesh

*Sadika Akhter, International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR, B)
Els Lecoutere, Mohammed Kamruzzaman, Promit Barua Chowdhury, Dr. Aminur Rahman*

Study objective: Bangladesh is a climate-vulnerable country with gender inequality and inequity that reinforce gender-based constraints for women in agriculture. Climate change has been a critical challenge to achieving equality and transformative change in the agri-food systems of the country. A situational analysis was conducted in two gender inequality hotspots in the Dhaka and Barisal divisions. The objective of the situational analysis is to assess the challenges and opportunities for transformative change in agri-food systems under climate change. Methodology: A mixed-methods approach was employed, including a household survey with 1,230 participants from 615 households, in-depth interviews with 60 couples, four focus group discussions, and 25 key informant interviews. Data collection took place between June and August 2022. Results: The study reveals that natural disasters and climate change significantly impact crop production, livestock and fisheries in gender inequality hotspots in Bangladesh. Women primarily engage in homestead gardening and livestock rearing, while men have better access to agricultural resources and market opportunities. Despite women's involvement, gender disparities persist in losses, damages and family food consumption. Climate change further exacerbates these challenges by restricting women's market access compared to men's. Implications: Climate change impacts agriculture and reinforces gender inequalities in Bangladesh. The study emphasizes the importance of addressing gender disparities in accessing resources, market opportunities and decision-making power to achieve transformative change in agri-food systems to promote gender equality, empower women in agriculture and build resilience to climate change.

Uncovering the intersections of women's empowerment, gender equality in climate resilience capacities and agri-food system outcomes in climate hotspots for women in Zambia

*Esther Kihoro, International Livestock Research Institute (ILRI)
Els Lecoutere, Avni Mishra*

Women in agri-food systems in low- and middle-income countries are more likely than men to be adversely affected by climate change. They also have more limited adaptive and resilience capacities due to socioeconomic and cultural factors, including restricted access to resources, information, discriminatory gender norms, and limited decision-making power. This study tests hypotheses derived from gendered food-systems frameworks. It examines the extent to which women's empowerment in the household is associated with intrahousehold gender equality in access, knowledge and adoption of climate-smart practices in contexts experiencing significant climate change hazards and stressors. It also explores the strength of the association of different dimensions of women's empowerment with gender equality in access, knowledge and adoption of climate-smart practices. The study uses gender-disaggregated intrahousehold data from 199 dual households in climate-agriculture-gender hotspot areas of Zambia. The results provide some support for the hypothesis of a positive association between women's empowerment and intrahousehold gender equality in climate-smart climate resilience capacities, more specifically access to technical advice on climate-smart agriculture. The results support the hypothesis that different dimensions of women's empowerment—norms, intrinsic, instrumental, and collective agency—are differentially associated with intrahousehold gender equality in climate-resilience capacities. The findings highlight the complexity of the relationships between women's empowerment and gender equality in climate-resilience capacities in climate hotspots, emphasizing the need for context-specific analyses.

Climate hotspots gender impact assessment

*Keagan Kakwasha and Netsayi Mudege
Kwaku Arhin-Sam, Timothy Manyise*

The research objectives included assessing the effects of two aquaculture interventions on gender-equal access and control over resources, technology and information among smallholder farmers, evaluating the impact on climate resilience among smallholder fish farmers, and examining overall gender equality and women's empowerment in aquaculture. The research employed a mixed-method design, combining quantitative surveys, qualitative interviews and discussions. Data was collected from 322 households (644 respondents) in treatment districts and 178 households (356 respondents) in control districts. Data analysis involved descriptive analysis, impact analysis using average treatment effect propensity score matching, and a women's empowerment analysis using pro-WEAI. Women in treatment districts had a higher aggregate pro-WEAI score (0.88) than

those in control districts (0.83), indicating greater empowerment among women in the treatment areas. The proportion of empowered women was higher (65%) in treatment districts compared to control districts (58%). The average empowerment gap between women and men within households suggested reduced disparity between women and men farmers in treatment districts. The main indicators contributing to disempowerment among women in the treatment district were access to credit and decision-making, work–life balance, and visiting important locations. The interventions enhanced women's involvement in aquaculture; improved gender equality in access and control over resources, technology and information; promoted gender equality in climate-resilient practices; and enhanced women's empowerment. However, there was limited evidence to support improved gender equality regarding benefits from the food system.

3.3B · BUILDING WOMEN'S AGENCY: LEADERSHIP, KNOWLEDGE SHARING AND LEARNING

Changing the game: The role of women in experiential learning

Thomas Falk, International Food Policy Research Institute (IFPRI)

Lara Bartels, Björn Vollan, Ivo Steimanis

An emerging body of research explores the use of experiential learning games as an intervention to facilitate sustainable natural resource management. We conducted games with users of a local public good—a rainfed dam for irrigation—in 56 randomly selected villages in Madhya Pradesh, India. An additional 27 villages were randomly drawn as control sites. These communities depend on rainfed dams for complementary irrigation and our game reflected related key management challenges. Our study explores (1) the effect of playing the game on institutional and behavioral change; (2) how women's participation (not exogenously determined) in economic learning games is related to the interventions' outcomes and (3) what role women leaders play. We find a lasting direct treatment effect on actual dam maintenance while there is no effect on the existence of dam-management rules. Using economic games as a learning intervention in 56 Indian communities showed that involving more women led to greater success in sustainable water management two years after the intervention. Although participation of female leaders did not directly influence management improvements, their presence did increase women's participation in the games. Our study increased the confidence that games

can play a critical role in designing natural resource management interventions. These findings underscore the significance of involving women in game-based learning for sustainable resource management.

Female community-based agents: Archetypes and experience with farmers

Jasleen Kaur, 60 Decibels

Alliance for a Green Revolution (AGRA) has developed a Village Based Advisor (VBA) model to bring timely advice, access to inputs, technology and markets closer to smallholders in African countries. Through this model, AGRA identifies and trains lead farmers to be VBAs and support other farmers in the area. 60 Decibels conducted a study to help AGRA explore VBA archetypes and experience with farmers in Burkina Faso and Nigeria. We are also currently undertaking the last of the three studies to understand VBAs' journeys. The objective of the research is to help AGRA understand how to better support female VBAs and the female farmers they serve in order to catalyze agricultural transformation and food security. This presentation would therein convene a panel from AGRA, Tanager, and 60 Decibels to discuss: findings of the research related to: profile and motivation of VBAs, preparedness for this work, scale and type of services provided to farmers, and their effectiveness and impact as perceived by farmers; actionable recommendations and insights from the data collected across over 1,000 VBAs and 500+ farmers; and how further supporting VBAs through greater understanding of barriers, needs, and motivations, and capacity strengthening can help them play an important role among farmers—particularly female farmers.

The contribution of voluntary sustainability systems to enabling rural women's leadership

Miranda Morgan, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Marlène Elias

Njuki et al., (2021) find that women's leadership and decision-making at all levels constitute a particularly underresearched pathway to gender equality and justice in agri-food systems. To respond to this knowledge gap, this study investigates if and how voluntary sustainability systems (VSS) contribute to women's meaningful participation, representation and leadership in agri-food systems. Evidence was collected in two complementary ways: through a

strategic review of the existing evidence and by co-developing measurement approaches on women's leadership with key standards-setting organizations. The study shows that there has been some evidence of progress in women's representation and leadership as a result of VSS, even if overall change is slow and partial due to the range and depth of barriers to gender equality generally. Certain facets of VSS engagement seem to present particular obstacles to women's leadership, while gains are experienced where VSS have taken more proactive approaches, for example by supporting leadership quotas, women-only committees, offering women's leadership training and engaging men in efforts. The study also finds that despite the large-scale interest in cultivating 'women's leadership' (as a means or an end outcome) there remains a need to critically reflect on its underlying assumptions and desirability, on the ways it is being defined (especially vis-à-vis women's participation and empowerment) and on how we measure changes meaningfully. This new understanding of what works in women's leadership in VSS and how we know it is working is being co-developed and shared with a large network of VSS as part of an ongoing partnership with ISEAL.

Integration of Gender Equity and Social Inclusion (GESI) in the Agroforestry Project on Trees Outside the Forest in India (TOFI)

Babita Bohra, CIFOR-ICRAF

Rajendra Choudhary, Rajkumar Singh, Aqeel Rizvi, Archana Singh, Emily Jeanne Gallagher, Javed Rizvi, Manoj Dabas, Shiv Kumar Dhyani, and Chandrashekhara Biradar

The benefits derived from the expansion of trees outside forests (TOF) can vary greatly for women, men and other socially diverse groups due to their distinct roles, responsibilities, and access to resources like land and trees. Therefore, it is essential to ensure the meaningful participation of both women and men from diverse social and economic backgrounds in these initiatives. Additionally, interventions should be tailored to address their specific needs and interests to achieve an equitable distribution of benefits. Climate mitigation and restoration efforts often overlook gender considerations, resulting in unequal outcomes and reinforcing inequalities. A gender-responsive strategy promotes inclusive participation, fair benefit distribution and social equality. The Centre for International Forestry Research-World Agroforestry (CIFOR-ICRAF) and a consortium of partner organizations are implementing TOFI, a joint project of USAID and the Ministry of Environment, Forestry, and Climate Change that aims to ensure that women

and social groups are meaningfully included in TOFI's efforts to increase the area under the trees outside forests in India. To achieve its objectives, the project, which is currently in the implementation stage, is creating TOF innovation platforms, which make it easier to map value chains, markets and policies. To adapt the project to the specific characteristics of seven states, a comprehensive geographic gender assessment is conducted, providing a deeper understanding of gender dynamics in forestry and agroforestry projects. Assessment findings reveal valuable insights for gender mainstreaming in this field.

3.3C · ASSESSING THE LINKS BETWEEN GENDER NORMS, WOMEN'S EMPOWERMENT AND OTHER DEVELOPMENT OUTCOMES

Revisiting the dimensions and determinants of women's empowerment, and links to household food security in rural farming communities of Bangladesh

Sadika Haque, Bangladesh Agricultural University

Md. Salman, Md. Nazmul Hoque, Abdur Rouf Sarker

Women's empowerment and food security are critical issues in Bangladesh, particularly in rural farm households where women face several challenges that impede their empowerment and household food security. Therefore, this study aimed to assess the degree of women's empowerment (WE), investigate its determinants, measure household food security, and uncover the links between WE and household food security in rural farming communities of Bangladesh. The study collected primary data (350 households) using a random sampling technique and analyzed it using statistical methods such as the pro-WEAI index, Household Food Insecurity Access Scale (HFIAS), Poisson regression, and Partial Least Square Structural Equation Model (PLS-SEM). The study revealed that less than 1% of women in rural farm households in Bangladesh were empowered, and only 18% of households were food secure. Women's years of schooling, household size, farm types, and the presence of migrated members in households were positively associated with women's empowerment, while the distance of farms from households was negatively associated. The PLS-SEM showed that access to decisions on financial services, input in productive decisions (farm), and ownership of assets were negatively associated with household food insecurity, while mobility was positively associated. Furthermore, the study revealed that work balance, respect among household members, and attitude about

intimate partner violence were negatively associated with household food insecurity. In conclusion, the study highlights the need for developing a gender-inclusive food system governance and revised food policy to empower rural women and improve household food security in Bangladesh.

Women's empowerment, incomes and resilience in agri-food systems

Lauren Phillips, Food and Agriculture Organization of the United Nations (FAO)

Romina Cavatassi, Aslihan Arslan, Giuseppe Maggio

Women's empowerment is a fundamental objective in itself and in generating positive results for their households. In the existing literature on women's empowerment in the context of agriculture and agri-food systems there is a dearth of evidence regarding impact on livelihood outcomes, income and resilience to shocks. To address this research gap, the paper analyses the role of development projects which focused on women's empowerment in the agriculture and agri-food on household income and resilience. The analysis utilizes a comprehensive pooled dataset from the International Fund for Agricultural Development (IFAD), consisting of 24 IFAD rural development projects. In our analysis we identify treatment and comparison groups by distinguishing two types of projects: projects that improve women's decision-making power over the use of income and/or resources, and projects that do not contribute to such improvement—an important indicator of agency and empowerment. We find that there are appreciable benefits for household income and resilience in a significant number of households where women report an improvement in their empowerment. Building on this classification, the study extrapolates the achieved results to the entire investment portfolio and simulates the potential outcomes if all projects were focused on women's empowerment. Furthermore, the study calculates the achievable results in a scenario where investments of this nature cover half of the intended beneficiaries, estimating the corresponding impacts on income generation and resilience. Overall, this research highlights the critical role of women's empowerment in driving positive outcomes in agriculture, rural development, and the livelihoods of small-scale producers.

Women's empowerment, agriculture productivity and household resilience

Shweta Gupta, International Food Policy Research Institute (IFPRI)

Muzna Alvi

Empowering women and reducing gender inequality is widely recognized to contribute to agriculture growth, more civic engagement, lower economic deprivation, and better nutritional outcomes. We tested the relationship between women's empowerment and household-level agriculture, nutrition and resilience outcomes, using a survey of 1,553 households in the eastern state of Bihar, India, drawn from the membership list of JEEViKA, a collection of women's self-help groups. We administered the A-WEAI to both men and women within the same household to measure women's empowerment and community-level gender parity. Our results showed that about 82% women and 83% men were found to be disempowered in the sample while only 6% households achieved gender parity. Empowered women were found to have better control over key household decisions such as expenditure on health, food, child education and investing surplus money. Moreover, empowered women were concentrated among historically disadvantaged groups like lower castes and lower wealth quintiles, groups that have relatively egalitarian gender norms and higher participation of women in the workforce. However, such women were also found to be more food insecure than their disempowered counterparts, measured using food insecurity experience scale (FIES). More-empowered women were also less likely to report income loss and input shortages during COVID-19, have higher crop yield for non-wheat crops and reported better overall knowledge and adoption of farming practices. These results suggest women's empowerment is crucial to achieve sustained agricultural productivity and food security and should be an important basis of poverty alleviation programs in agrarian economies.

Exploring the impact of women's empowerment on health and nutritional status of children and women in India

Padigapati Venkata Naga Sindhuja, Indian Council of Agricultural Research (ICAR)

Alka Singh, Praveen K V

The focus on gender equality and women's empowerment are crucial in nurturing health and human development. Using unit-level data from NFHS-5 (Demographic and Health Survey data), we developed a women's empowerment index for India and assessed its impact on children's (0–59 months) and women's (15–49 years) health and nutritional outcomes. Principle component analysis was used to develop a survey-based women empowerment index (SWPER) based on six domains: domestic violence, decision-making, social independence, economic independence, access to health care, and age at critical life events. The internal reliability of the index was confirmed by

a Cronbach alpha value of 0.64. Bivariate analysis indicated that nearly one-third of women in India were highly empowered, with urban women (50.66%) having an edge compared to their rural counterparts (24.45%). Women's empowerment varied with their family wealth status and their state of residence. Logistic regression analysis was used to investigate the relationship between selected health and nutritional outcomes and women's empowerment. The results suggested that women's empowerment could significantly reduce children's stunting, wasting and underweight status; and anemia in women. The SWPER for India developed in this study could be used to compare the status of women's empowerment with other countries for which it is already available. Further, our findings highlight the importance of framing and implementing suitable policies and interventions to empower women, which could accelerate the progress of child and maternal nutrition in India.

3.3D · INSIGHTS INTO PATHWAYS BETWEEN WOMEN'S STATUS, GENDER DYNAMICS AND NUTRITION

The empowerment puzzle: Unmasking the role of women's empowerment in addressing undernutrition in India

Anjali Sharma, International Institute for Population Sciences (IIPS) Mumbai

India faces a significant challenge in addressing the target of SDGs set for nutrition for both mothers as well as children. A significant number of studies have identified that women's empowerment plays a vital role in determining their own health and nutritional status as well as that of their children. However, the majority of studies based on the National Family and Health Survey looked at empowerment in terms of a composite index of autonomy in decision-making, autonomy in mobility, financial autonomy, and attitude toward wifebeating. This study is a valuable addition to existing research by incorporating additional indicators and investigating their individual roles in understanding the prevalence of undernutrition among mothers and children. By utilizing the latest round of the National Family and Health Survey (2019–21), women's empowerment was assessed through five distinct dimensions: autonomy in decision-making and mobility, workforce participation, ownership of assets, attitude toward violence, and digital empowerment. Both bivariate and multivariate techniques were employed with two outcome variables (i.e., underweight children and underweight mothers). Findings indicated that the prevalence of undernutrition among both mother and

children decreases with increasing autonomy index, digital empowerment, and negative attitude toward wifebeating. However, two surprising findings were identified. Firstly, the prevalence of undernutrition was higher among both mothers and children if the mother was working in the agricultural sector. Secondly, the undernutrition among children was higher if the mother had ownership of assets. This requires further investigation for pathways through which these individual dimensions of women's empowerment play a role for determining undernutrition.

Invisible struggles: Unraveling intra-household gender disparities in nutrition among Indian children using National Family and Health Survey

Saif Nihal, International Institute for Population Sciences (IIPS) Mumbai

India has witnessed advancements in socioeconomic and health indicators, yet the persisting issue of gender inequality is a significant challenge. Son-preference and the deeply ingrained patriarchal structure of society is evident in health and nutritional outcomes (Mishra et al. 2004; Jose, 2017; Kennedy et al. 2020). A key determinant contributing to this gender inequality is the intrahousehold allocation of resources (Ramchandran, 2014). This study aims to investigate the intrahousehold sex differentials in the nutritional status of children during the first five years of life, through an intersectional approach. Using data from the fifth round of the NFHS, the study focuses on women who had given birth to a male and a female child within the five years preceding the survey. The findings reveal that 21% of women have a stunted female child but not a stunted male child, while 22% of households have a stunted male child. The gap widens when considering physiologic wasting, with 15% of female children being wasted compared to 19% of male children. The study further uncovers that if the first child is male, the prevalence of undernutrition is higher than if the child is female. If the second child is female, prevalence of undernutrition is highest. Differentials are not observed among women with higher education, greater wealth, living in urban areas, and are non-Hindu. This study marks the first-ever attempt to comprehend undernutrition within households based on the gender of children. It reveals that second-born female children are particularly vulnerable among socioeconomically disadvantaged groups, hindering progress toward achieving the SDGs by 2030.

Empowering women for enhanced child health: Exploring the relationship between women's empowerment dimensions and dietary diversity in Eastern Uganda

Shimali Fred, Makerere University

Margaret Najjingo Mangheni, Losira Nasirumbi Sanya

This study investigated the link between women's empowerment dimensions and dietary diversity for children in Eastern Uganda, emphasizing the role of empowering women in improving their children's nutrition. A cross-sectional survey involving 445 households with children aged between six months and five years was conducted in Bugiri and Iganga districts, Eastern Uganda. The project-level women's empowerment in agriculture index tool (Pro-WEAI) with an add-on module on dietary diversity was used to collect data to measure the different dimensions of women's empowerment. Dietary diversity was measured through a 24-hour recall method, according to FAO guidelines (2010) for categorizing food groups and generating dietary diversity scores (DDS). Results indicated an average DDS of 5.77, showing medium dietary attainment for children. There is a positive association between women's control over income and spousal respect, and dietary diversity scores for children. Women with control over income were more likely to provide diverse diets to their children. Social support networks of group membership and autonomy in income also promise to improve diets for children. However, women's inadequacy in attitudes toward domestic violence and workload were significantly and negatively associated with DDS for children. This study highlights that women's empowerment plays a vital role in promoting dietary diversity and improving child health. Findings emphasize the need to prioritize interventions that empower women to reduce workload and have control over income to enhance child nutrition, for attainment of the SDGs.

Do female-led decisions on food shopping and preparation in the household maintain diet diversity? Examining food safety and nutritional awareness and gender roles in consumer households in Nepal

Aditya R. Khanal, Makerere University

Rita K. Gurung, Agriculture and Forestry University, Nepal; Ram Hari Timilsina, Agriculture and Forestry University, Nepal

Food and nutrition security remain significant challenges in developing countries. We investigated food and nutritional awareness in Nepal and examined gender and household-level diet diversity. We used primary survey data collected in 2022 from 604 randomly selected consumer households from five major metropolitan areas of Nepal. We conducted in-person interviews with an available adult representative from each sampled household. 52% of respondents were female, and 62% of the respondents indicated themselves as the head of the household. Along with a household-level outlook on food and diet, we focused on fresh produce in shopping decisions and food safety awareness assessment. We created two measures of household-level diet diversity indices—first, diet diversity score (HDDS) and second, dietary meal composition of a typical week (WD). We found no significant differences in mean HDDS and WD scores between male- and female-headed households. However, the average HDDS and WD scores for the top 25th quantile of the score distribution were higher in male-headed households. Interestingly, the households where female members primarily buy fresh produce had significantly lower HDDS; females primarily preparing meals at home rarely went for meals away from home. Finally, using a set of questions on food safety on fresh produce, the male head of the household appears to have a greater understanding or awareness of food safety. We found significant positive effects of income and awareness on HDDS. Given the roles women play in food systems and households, our study suggests awareness and educational programs emphasize the ensured participation of women.

3.3E · TOWARDS GENDER TRANSFORMATIVE FOOD SYSTEMS: DO WE NEED TO FOCUS ON INDIGENOUS COMMUNITIES MORE? (PANEL)

ORGANIZER: Nazmun N. Ratna, Lincoln University

CHAIR: Chubbamenla Jamir, Government of Nagaland, India

SPEAKERS: Nazmun N. Ratna, Lincoln University, New Zealand

Grady Walker, University of Reading

PANELLISTS: Sucharita Sen, JNU Pratyaya Jagannath, National Rural Livelihood Mission Sudeshna Maya Sen, World Food Programme

The literature on the food and nutrition security of tribal and/or indigenous communities in the mountain and hill regions remains opaque, despite the prevalence of malnutrition and food insecurity. Empirical evidence on the gendered dimensions of challenges in the agri-food system in the indigenous communities in the Hindu Kush Himalaya (HKH) region is even more limited. In this session, we focus on the need for gender-transformative approaches (GTA) in the HKH region, which extends over eight countries from Afghanistan in the west to Myanmar in the east.

The panel session, chaired by Dr. Chubbamenla Jamir, Project Director, Climate Studies and Knowledge Solutions Centre, Government of Nagaland, India, is designed with following format:

Part 1: Keynote paper *Traditional food and nutrition security: Findings from Nagaland and Assam* by Associate Professor Nazmun N. Ratna, Faculty of Agribusiness and Commerce, Lincoln University, New Zealand.

Part 2: Research pitches on innovative methods for gender-transformative approaches:

1. Using storytelling as a tool for an inclusive and gendered approach to ensuring food security and sustaining livelihoods by Dr Grady Walker, University of Reading.
2. TBA: by Dr Chi Huyen Truong, ICIMOD.

Part 3: Panel discussion on inclusive agri-food systems in the HKH region:

- Dr Dolly Kikon, Associate Professor, University of Melbourne
- Dr Sucharita Sen, Professor, Centre for the Study of Regional Development, Jawaharlal Nehru University
- Ken Shimizu, FAO Country Representative for Nepal and Bhutan
- Khet Khet Shein, Gender Analyst for UNDP Myanmar
- CGIAR expert: TBA.

3.3F · A FEMINIST POLITICAL ECONOMY-ECOLOGY OF NATURAL RESOURCE MANAGEMENT

Politics of participation in Integrated Watershed Development Programmes in Bundelkhand, India: Insights from a gender and social inclusion perspective

Ananya Chakraborty, World Resources Institute R. Padmaja, Kavitha Kasala (ICRISAT)

The Integrated Watershed Development Programme (IWDP) is key for rejuvenation and improvement of water-scarce landscapes in India. Despite policy guidelines, there has been limited success in ensuring community

participation and inclusion in IWDPs, especially for women and people from vulnerable social groups. This study attempted to explore the politics of inclusion and exclusion because local hierarchies of caste and gender inhibit decision-making, access to services, participation and benefits from IWDPs. Mixed methods, comprising of sex-disaggregated information from a survey of 222 households combined with qualitative and participatory tools, were used to understand the barriers and enabling conditions for inclusion in the IWDP. The main findings indicate that men from the larger landowning community were more likely to participate in the village-level watershed committee (WSC) and benefit from the program compared to others. The practical needs of women—based on their gender roles such as fetching water, grazing small ruminants, and collecting firewood for cooking—still continue to be valid in these locations, and these roles were overlooked when designing some interventions. The project did not acknowledge or address gender barriers that inhibit women from participating in WSCs, such as lower levels of literacy, gender norms around mobility and interaction of women, and knowledge of skills like driving vehicles. We argue that building sustainable watershed structures need to hinge on the dual pillars of inclusive participation, and equitable distribution and local governance of program outcomes. Issues of gender and social inclusion need to be integrated within the planning and design phases rather than treating them as supplementary concerns.

'Exclusion' in community water governance in Bangladesh: An overlooked social issue

Indu K Sharma, International Water Management Institute (IWMI)

Bangladesh's water management shifted toward a decentralized system in the 1990s, with more power to community, including the water management groups (WMGs). Empirical evidence, however, suggests unequal access to water among women and marginalized populations. To zoom into this, we reviewed studies published after 2000 to synthesize evidence on access to water among women and marginalized people, their recognition and representation in institutions, and barriers to those, in Bangladesh. The data extracted from 42 studies were coded in ATLAS Ti and analyzed thematically using social equity and feminist political ecology theories. The findings suggest a disconnect in the policy-practice landscape. Women, landless, and fishers were rarely included in the executive committees of WMGs despite their recognition in water management guidelines. Power dynamics significantly determined their representation and/or access to water. Technocratic policies, a lack of clear implementation strategy, a centralized water management system with a lack of local government involvement, fragmentation and lack of coordination across institutions, persistent

socioeconomic barriers, and the capture of elite based on economic, political, and resource ownerships are key barriers resulting in exclusion in water management. Our review highlights recommendations to strengthen institutions and engage and empower communities. A clear policy implementation strategy incorporating power dynamics, enhancing the role of local institutions, a strong monitoring and evaluation system, community engagement and empowerment and setting boundary rules, a transformative approach to addressing broader social barriers to inequality are key recommendations to inclusive water governance.

Natural farming promotion in low-input, remote districts: A feminist political ecological analysis

Carly E. Nichols, University of Iowa
Nidhi Kumari

There is a push toward natural, chemical-free farming in India, reflected in the National Mission on Natural Farming (NMNF). Working to promote on-farm bio-input preparations and agro-ecological practices, the NMNF notably prioritizes working among “traditionally low or no fertilizer input users... generally confined to hilly, tribal, high forestland districts,” ostensibly viewing these areas as more amenable to chemical-free farming. This research examined the social and gendered implications of this policy as it unfolds in two Scheduled Tribe (ST)-dominated, hilly districts in Madhya Pradesh. Building on longer-term qualitative and ethnographic research, we used semi-structured interviews with women and men farmers to address the research questions: what are historically marginalized farmers’ relationships with chemical agriculture, and what are their feelings toward natural, chemical-free production? Our analysis began with the recent rise in chemical weedicide use, which dramatically reduced the need for the feminized labor of manual-weeding labor, a particularly difficult task. We found that in this context, the push for natural farming—particularly the focus on producing on-farm bio inputs—was unattractive to women who were either only first enjoying the fruits of less laborious production or who were marginal farmers that principally relied on labor work. Yet we also highlighted uneven impacts of weedicide adoption on women along the lines of class, and pointed to opportunities natural farming policy has to better address structural conditions that make chemical agriculture attractive to resource-poor women farmers. We conclude with suggestions to make NMNF more gender sensitive and economically just.

Gendered access to assets and resources in small-scale fisheries and aquaculture in East Africa: Insights from feminist political ecology framework

Kevin Okuko, WorldFish

Participation in small-scale fisheries and aquaculture has assumed a gendered approach, with men predominating resource and asset ownership. Despite their growing food provisioning responsibilities, women’s traditional reproductive tasks and inheritance roles appear to explain their limited resources and asset ownership or lack thereof. This productive resource and asset position is underpinned by power dynamics steeped in the sociocultural setting. This study aimed at understanding how unequal resource and asset disposition influence men’s and women’s participation in the sector in East Africa. Using a feminist political ecology framework, this study explored intersecting resource and asset inequality and power imbalance to demonstrate the impact of gendered resource and asset access in fisheries and aquaculture development. The study applied a systematic literature review to identify 18 studies published between 2017 and 2023 in selected electronic databases including Google Scholar, Scopus, Science Direct and JSTOR. Findings revealed that fisheries and aquaculture are resource-intensive, with social, cultural and gender ideologies contributing to gendered participation. In light of the prevailing food insecurity situation in the region and the unprecedented feminization of fisheries and aquaculture value chains, the study concludes that women’s role in small-scale fisheries and aquaculture value chains can grow if gender disparities and power imbalance in asset and resource ownership are advanced. It thus recommends a reconceptualization of the role and identities of women in aligning with the complex food insecurity realities within the fisheries and aquaculture value chains. Moreover, findings signal that multidisciplinary research is needed to further enhance knowledge. Researchers may benefit from this study by taking a glance at past studies and exploring the unmapped research projects for the future.

9.00-10.30

DAY 4 · Thursday, October 12 · Parallel sessions

4.1A · ADAPTING TO CHANGE: RESILIENCE AND ADAPTATION IN AGRI-FOOD SYSTEMS

Framework for climate resilience in food systems with a gendered lens

Nikita Tank, Indian Institute of Management, Ahmedabad

Drishti Vishwanath, Anjali Choudhary

With the acknowledgment of climate change as a key development concern, the concept of climate resilience to combat its impacts has gained research and policy impetus. Further, there has been a growing emphasis on gender in climate resilience, given that women are documented as experiencing greater vulnerabilities and adaptation challenges. In the domain of agriculture and food systems, various studies develop a conceptual framework, as well as identify resilience indicators within these; for example, Waldick identifies key drivers of climate resilience (governance, demographics, markets, etc.) within a framework, and Lipper identifies potential pathways of climate-smart agriculture (CSA). Huyer expands Lipper’s framework to integrate gender and social inclusive dimensions. Given the multiplicity of interpretations and frameworks, this study seeks to: (a) examine the existing frameworks on climate resilience and gender in food systems through a systematic review, and (b) build on and strengthen these to develop an encompassing framework considering various contexts and intersectionalities, drawing from field learnings in Odisha, India. This is a mixed-methods study including secondary data and information synthesis, focus group discussions and qualitative interviews of stakeholders in food systems. The framework can serve as a comprehensive conceptual and practical diagnostic tool for policymakers to apply across different agriculture and food subsystems (such as crops, livestock, fisheries and aquaculture), for local and state contexts.

Examining climate resilience strategies and adaptation measures through a gendered lens in India

Drishti Vishwanath, Indian Institute of Management, Ahmedabad

Nikita Tank, Anjali Choudhary

Climate change has emerged as a challenge that has risen up the global development agenda, with anticipated adverse impacts on agricultural production and food security. Furthermore its disproportionate impacts on women, contributing to increased work burden and adaptation challenges, have been documented extensively. Given this, the concept of ‘climate resilience,’ has gained traction in development planning. Several climate-resilient strategies have been identified in the literature in the context of food systems; these include adoption of improved varieties, water and nitrogen management, agro-ecological intensification, soil health improvement, micro irrigation, among others. In this study, we seek to: (a) map climate resilient and adaptation strategies, as well as recommended climate-smart agricultural practices documented across policy documents, extension and training manuals of the Indian government, as well as key intervention programs and priorities documented in the nongovernmental development organization ecosystem, with a focus on the state of Odisha; and (b) review gender considerations embedded, as well as the evidence of impacts of these strategies on women, in agriculture and food systems. We seek to understand how climate resilience has been understood through a policy and gender lens. This study develops a map of adaptation and resilient strategies through secondary information and data synthesis, and expands the same to include a contextual consideration of the ‘perception of resilience’—supported by primary field interviews and focused group discussions held with agriculture food systems stakeholders in Odisha, India. Finally, it indicates the areas wherein greater intervention is needed.

Are empowered women more resilient to agricultural shocks? Evidence from women smallholder farmers in Uganda

Losira Nasirumbi Sanya, Makerere University

Florence Kyoheirwe Muhanguzi, Susan Namirembe Kavuma, Brenda Boonabaana, Grace Bantebya Kyomuhendo, Nargiza Ludgate, Laura Meinzen-Dick, Lawrence Lubyayi

This paper draws implications for understanding the link between empowerment and resilience among rural and smallholder agricultural communities in developing contexts. While existing evidence shows that women's empowerment promotes their individual and household well-being, women smallholder farmers continue to exhibit limited capacity to cope with climate change-induced agricultural shocks. This is exacerbated by the existing social systems and structures which hinder women's resilience and empowerment. Using a mixed-methods approach involving the project-level Women's Empowerment in Agricultural Index (pro-WEAI) tool and an add-on module on resilience, our research explored the relationship between women's empowerment and resilience. The findings indicate that women in the target districts are exposed to multiple agricultural shocks and stressors. Our findings further show that women's empowerment is linked to social and gender norms associated with women's identity which also limit their coping ability to agricultural shocks. Women's empowerment is associated with higher ability to recover, better access to financial services, and asset and social network indices. We conclude that women's empowerment has strong potential to enhance resilience capacity to agricultural shocks among women smallholder farmers. This makes it imperative to address the underlying factors (including social and gender norms) that hinder women's empowerment as a key strategy to enhancing women smallholder farmers' resilience to agricultural shocks in Uganda. Additionally, interventions targeting climate change-induced agricultural shocks need to apply gender-transformative approaches to challenge the effect of social systems and structures on enhancing women's empowerment and strengthening their resilience capacity.

Enhancing gender equality and women's resilience through climate mitigation in agri-food systems

Katie Tavenner, International Rice Research Institute (IRRI)

Chandana Rajasekharan Bindu, Abiyot Anbacha, Ranjitha Puskur

Climate mitigation technologies and practices have the potential to enhance gender equality and women's resilience to climate change, if underlying gender norms, intersectional social differences, and sociocultural dynamics are addressed in agri-food systems. This is the key takeaway from a 2023 IRRI scoping review of literature and learnings on gender and climate mitigation across six sectors—agro-ecology, agroforestry, conservation agriculture, improved livestock management, renewable energy, and water conservation. Using a three-prong methodology to gather data based on scientific studies, key informant interviews, and learning on the theme in close consultation with IRRI social and biophysical scientists, the study reviewed which climate mitigation activities had been tested and adopted by women farmers, considering mediating intersectional sociocultural dynamics. In collating good examples of gender-responsive climate mitigation interventions, different technologies, such as solar market gardens, biodigesters, and drought-resilient seeds reduce women's labor burden, boost incomes, and promote more equal gender relations. Low-emissions dairy development, integrated landscape management and crop diversification, among other climate mitigation practices, also enhance women's resilience to climate change. Strategies for addressing gender inequalities in climate mitigation are diverse and include co-designing and co-implementing interventions with women's collectives and cooperatives, using social media to challenge discriminatory gender norms, and using drone technology to bridge gender gaps in access to climate services and information. Implications for the study include the need to engender climate advocacy, investment, and action across sectors.

4.1B · WOMEN'S TIME USE AND GENDER GAPS IN AGRICULTURAL WORK AND RURAL DEVELOPMENT

Women in agriculture work for longer hours than those not into agriculture

Anil Kumar, ICAR-Central Institute for Women in Agriculture (ICAR-CIWA), Bhubaneswar

Ananta Sarkar

Work participation of women is governed by social norms, which places on them an unfair burden of unpaid work, thereby reducing the opportunity to participate in gainful employment; acquiring new skills; or indulge in leisure, socialization, or recreational activities. The discourse on women's emancipation also needs to look into the underlying intersectionality like social groups, economic status, religion, etc. Within this

ambit, it is also necessary to know how those women who practice agriculture differ from those who do not. Using the unit-level data of the first time-use study held in 2019 in India involving 137,730 males and 134,319 females in rural areas, we report the daily work pattern of men and women practicing agriculture contrasted with those who do not. We found that women practicing agriculture work for 622 minutes per day as opposed to 515 minutes for those who do not.

Closing gender gaps in developing countries: Impacts on poverty, diets and food security

James Thurlow, International Food Policy Research Institute (IFPRI)

Stephanie Levy

Women earn less than men, not only in agriculture, but across the broader agri-food system. Recent analyses by the World Bank found that, in Ethiopia and Nigeria, women working in agriculture earn a third less than men, with even larger gender gaps outside agriculture. This is partly due to discrimination in the workplace, but also women's more-limited access to productive resources, including education and finance. The CGIAR Foresight initiative and the World Bank's Gender Innovation Lab are using economywide models linked to household surveys to measure the impacts of closing gender-earnings gaps on national economies and agri-food systems and on household poverty, diet quality, and food security. Results from Ethiopia and Nigeria indicated that closing gender gaps in and beyond agriculture could raise national GDP by around 3% and reduce national poverty and hunger headcount rates by around 2 percentage points. This is equivalent to lifting 6 million women and men out of poverty across the two countries and reducing the risk of undernourishment for 2 million people. Benefits are not limited to women engaged in rural agriculture—the broader economy and population also benefits significantly. To our knowledge, this is the first collaboration between foresight modelers and household-impact evaluation experts to assess the broader benefits of closing gender gaps in developing countries. Our analysis provides new evidence on the importance of gender-intentional policies and investments, and our model-based approach allows for greater engagement with new decision-making audiences, such as the Ministries of Finance and Planning.

Why are women more food insecure than men? Exploring socio-economic drivers and the role of COVID-19 in widening the global gender gap

Erdgin Mane, Food and Agriculture Organization of the United Nations (FAO)

Annarita Macchioni Giaquinto, Carlo Cafiero, Sara Viviani, Gustavo Anriquez

Women are more food insecure than men globally and in every region. This paper investigates the global gender gap in food insecurity and its evolution following the COVID-19 pandemic. Using the food insecurity experience scale (FIES) data collected from over 700,000 individuals across 121 countries, our empirical analysis showed that individuals aged 25–34, regardless of gender, and women in rural areas had been disproportionately affected by the pandemic. Our analysis also confirmed that intersectional inequalities played a crucial role, with individuals in the age groups of 15–24 and 65+ being more food secure, while females aged 25–34 were more food secure than those aged 35–64. The differences by sex, residence, and age were significant even after controlling for income, education, employment, marital status, and household composition, indicating that other unobserved factors, including gender norms and discrimination, continue to hinder women's food security. The econometric model allowed us to estimate the food security elasticity to income, which we then used to simulate the potential gains in food security if we eliminate the gender gaps in farm productivity and wages in agri-food systems. Finally, using coarsened exact matching (CEM) and entropy balancing (EB) matching techniques, we estimated that at least 57% of the current gap in food insecurity between women and men would be reduced by eliminating gender gaps in education, labor force participation, and income. Our results highlight the persistence of gender disparity in food security and offer evidence-based policy recommendations to support SDG 2.

Who does what: A novel tool to rapidly assess intrahousehold participation in agriculture and food-related tasks

Neha Kumar, International Food Policy Research Institute (IFPRI)

There are many steps needed to get food on plates—all of which take resources and time. Yet we do not know how different household members are contributing their time. Neither do we have simple tools to measure their contributions to household tasks in

household surveys. The aim of the current study is to develop and test a tool to understand how household tasks—ranging from agricultural to food preparation and care activities—are allocated across household members. Using data from about 5,000 households in five districts across India, Bangladesh and Nepal, we explore how task allocation varies with the sex and age of the household members and identify gender gaps in task sharing within the household. We find that, across the three countries, agricultural tasks are shared among household members, with men engaged in a large number of tasks and women supporting in a few tasks. For tasks related to food preparation, we observe that men are primarily involved in purchasing foods and everything else is done by women (and girls). Unlike standard time-allocation modules that typically interview one or two members of a household, our approach enables us to map what each household member is contributing. The findings will deepen our understanding of how food is prepared and consumed, which is essential to develop feasible and sustainable solutions for healthy diets in South Asia.

4.1C · MEASURING WOMEN'S EMPOWERMENT AND GENDER EQUALITY IN NATIONAL STATISTICAL SYSTEMS AND NATIONAL AGRI-FOOD POLICY PROCESSES

ORGANIZER: Catherine Ragasa, International Food Policy Research Institute (IFPRI)

This session will present four new measurement tools, indices, or scorecards to help governments and their partners measure and track progress in women's empowerment and gender equality in national agri-food and climate policy processes and national statistical systems. These tools fill an important knowledge and measurement gap and aim to identify entry points and influence policy dialogues around accountability towards gender, nutrition and climate-resilience goals.

The first tool is the Women's Empowerment in Agri-food System Governance (WEAGov) assessment tool that measures gender consideration, women's inclusion and women's influence in three stages of the agri-food policy process—design, implementation and evaluation—via policy and institutional mapping, policy content analysis, organizational and expert surveys and focus group discussions. The second tool is the Gender in Agriculture Policy tool (GaPo) used to assess 83 main agricultural policies of low, lower-middle and upper-middle-income economies. The third tool is the Women's Empowerment Metric for National Statistical Systems (WEMNS), which captures indicators

and survey questions to help measure women's empowerment in national statistical systems. The fourth tool is a national scorecard to support gender-responsive and nutrition-sensitive monitoring of climate policies, investments and actions. The scorecard is comprised of several domains reflective of policy decisions (e.g., level of gender integration in policy design); policy processes (e.g., women's leadership and participation in policy design and implementation); and outcome indicators (e.g., women's access to key resources and services).

The four presentations will include the details of the measurement and results from different country pilots.

Women's Empowerment in Agri-food Systems Governance (WEAGov): A new assessment framework

Jordan Kyle, International Food Policy Research Institute (IFPRI)

Catherine Ragasa

The Women's Empowerment in Agri-food Systems Governance framework (WEAGov) is a diagnostic, theory-based tool developed by IFPRI to help evaluate the extent to which women are empowered across the national-level policy cycle related to agri-food systems. All too often, women's voices are missing from the agri-food policy process, even when women are disproportionately employed in the sector and disproportionately affected by shocks and climate change. WEAGov provides a way to identify gaps and opportunities to raise women's voice and agency at different stages of the policy cycle, as well as a basis for monitoring progress in women's empowerment in agri-food systems governance within and across countries over time. The assessment framework proposes 17 operational indicators to identify women's consideration, inclusion and influence across different stages of the policy process. We introduce rapid assessment tools to measure these 17 indicators through a variety of sources. Empirical application of the assessment tool in Nigeria relied on surveys with 250 purposively sampled agri-food systems experts; surveys with 140 different organizations involved in the agri-food systems policy process across federal and state agri-food systems ministries, independent agencies, civil society organizations and private-sector entities; and a validation workshop with local experts. In a time when donors, research communities and policymakers are increasingly focused on women's empowerment, WEAGov offers a practical framework through which practitioners and researchers can assess when and where opportunities may exist to enhance women's voice in the policy decisions that shape their lives and livelihoods.

Assessing gender-responsive and nutrition-sensitive adaptation and mitigation actions using a national scorecard

Marilyn Magalhaes, International Food Policy Research Institute (IFPRI)

Elizabeth Bryan, Claudia Ringler

Women and men have different levels of exposure and sensitivity to climate change, given their different livelihood roles and other contextual factors. Moreover, given women's relatively lower levels of adaptive capacity, they are often less likely to take up climate-smart practices in agri-food systems or influence decisions about which response options are chosen. These limitations contribute to differential well-being outcomes for men and women, such as nutritional status. They also reduce women's potential contributions to increasing the climate resilience of food systems, and to meeting the greenhouse gas mitigation objectives of the agriculture sector. Despite growing evidence of these gender inequalities, few monitoring and evaluation frameworks have been developed to assess and monitor the gendered impacts of adaptation and mitigation interventions in the agricultural sector. The lack of reliable and timely metrics makes it harder to assess whether such interventions are effective in reducing gender inequalities, and meeting food security and nutrition objectives. The GCAN project is developing a national scorecard to support gender-responsive and nutrition-sensitive monitoring of climate policies, investments and actions—informed by an extensive literature review, key informant interviews and stakeholder consultations. The scorecard is comprised of several domains reflective of policy decisions (e.g., level of gender integration in policy design), policy processes (e.g., women's leadership and participation in policy design and implementation) and outcome indicators (e.g., women's access to resources and services). The scorecard will be used to inform policy discussions about accountability toward the gender and nutrition objectives of climate actions.

Measuring collective agency in agri-food systems

Ruth Meinzen-Dick, International Food Policy Research Institute (IFPRI)

Hagar ElDidi, Audrey Pereira, Jessica Heckert, Katrina Kosec, Eileen Nchanji, Greg Seymour

Collective agency is a critical component of women's empowerment within and beyond the household. Women often rely on groups to identify and achieve

goals that advance them professionally, socially, economically and politically. However, a lack of clear measures of collective agency has hampered efforts to study when groups are effective and why, and how is group effectiveness is shaped by features of the group and factors external to the group. Lack of clarity about the underlying concepts of collective agency, collective efficacy and collective action hampers efforts to develop systematic measures. This has resulted in a limited evidence base about the effectiveness and equity of different group-based approaches and governance arrangements for empowering women of different backgrounds beyond the household. We conduct a synthetic review of the terms used; and develop a conceptual framework for collective agency by applying Kabeer's framework of resources, agency and achievements to the collective level, and examining the literature on collective agency, collective action and collective efficacy. We also draw from the proceedings of an expert workshop on conceptual foundations and measures of collective agency, with particular attention to conceptual clarity, applicability across contexts, costs, and feasibility of application within development project contexts. We discuss the challenges of developing a common instrument to measure collective agency in theory and practice—with examples of indicators of particular constructs drawn from a portfolio of projects—and offer a list of criteria for effective and holistic measurement of collective agency.

Gender integration in agricultural policies: Uncovering strengths, gaps, and implications for gender equality and rural women's empowerment

Mariola Acosta and Libor Stloukal, Food and Agriculture Organization of the United Nations (FAO)

Martha Osorio, Lauren Phillips, Ivanna Valverde, Silvia Vilimelis López, Verdiana Biagioni Gazzoli

The last decade has seen growing commitment to tackling gender inequalities in agriculture. The formulation of gender-responsive agricultural policies is central for ensuring that the vision, priorities, and implementation strategies that are set nationally for the sector take due account of the gender-differentiated needs and constraints of men and women. The objective of this study is to examine the extent and manner in which agricultural-related policies integrate gender equality and rural women's empowerment concerns, and to identify strengths and gaps in policy-formulation processes. The study applies the Gender in Agricultural Policies Analysis tool (GAPo) to assess 83 main agricultural policies of low, lower-middle, and upper-middle-income economies.

Our results show that although 17% of the reviewed agricultural policies fail to recognize and address gender inequality within the sector, most policies integrate gender consideration to some extent. At the same time, our analysis reveals notable gaps in policy formulation. These gaps include a limited ambition of the proposed gender interventions, a lack of women's meaningful participation in policy development, and inadequate recognition of discriminatory social norms. Furthermore, important challenges such as gender-based violence and climate change receive insufficient consideration. We discuss the importance of these gaps and suggest measures to ensure more gender-responsive policy-making, to improve the lives and well-being of women engaged in agriculture.

4.1D · MAKING CLIMATE-SMART AGRICULTURE WORK FOR WOMEN: TAKING STOCK OF EVIDENCE AND IMPLICATIONS FOR POLICY AND PRACTICE (PANEL)

ORGANIZER: Ranjitha Puskur, International Rice Research Institute (IRRI)

PRESENTERS: Aayushi Malhotra and Ranjitha Puskur, International Rice Research Institute (IRRI)

*PANELISTS: Arabinda Padhee, Department of Ag and Farmers Empowerment, Odisha
Vicki Wilde, Bill and Melinda Gates Foundation
Alka Singh, Indian Agricultural Research Institute
Maureen Miruka, CARE International
Aditi Mukherjee, CGIAR*

Elizabeth Bryan, International Food Policy Research Institute (IFPRI)

Vinny Madhuri, Bayer

As climate change intensifies, its negative impacts on agriculture and food systems are also accelerating, particularly affecting the smallholder vulnerable farmers, the majority of whom are women in developing countries. Climate Smart Agriculture (CSA) is designed to contribute to productivity enhancement, and support adaptation and mitigation to build resilience of farmers. However, the evidence on the factors influencing adoption of CSA by women farmers, and the consequent impacts, is scarce.

This session presents the key evidence on this topic emerging from a range of activities undertaken by the CGIAR GENDER Impact Platform on this topic,

including a systematic review, evidence mapping and evidence generation projects, while drawing on other available literature. The session will put a spotlight on gender-responsive climate finance, mitigation, private sector engagement and data needs that can accelerate adoption of CSA by women to build their resilience. It also highlights the key evidence and learning gaps that emerged from a learning agenda that was co-created by multiple stakeholders. Building on this information, a panel of experts from NARS, CGIAR, government, donors, development practitioners and the private sector deliberate on the policy, investment, and practice implications for their respective domains.

The panel will be moderated by Ranjitha Puskur and the panel will include:

- Dr Arabinda Padhee, PS, DAFE, Odisha, India
- Dr Himanshu Pathak, ICAR
- Dr Alka Singh, IARI
- Mr Karl Deering, CARE International
- Ms Elizabeth Hernandez, Corteva
- Dr Aditi Mukherjee, CGIAR
- Ms Vicki Wilde, BMGF

4.1E · INNOVATION WITH/FOR WOMEN

Are weeds really an issue in zero tillage systems? Farmer insights from the Eastern Gangetic Plains of South Asia

Anjana Chaudhary, International Maize and Wheat Improvement Center (CIMMYT)

Bhavya Suri, Pragya Timsina, Emma Karki, Akriti Sharma, Rama Sharma, Hom Nath Gartaula, Brendan Brown

A large amount of literature has now proven that zero tillage (ZT) as a part of Conservation Agriculture-based Sustainable Intensification (CASI) practices has the potential to help smallholder farmers in the Eastern Gangetic Plains (EGP) of South Asia transition to more productive, profitable, and sustainable production systems. Despite this, changes in weed management under ZT are commonly identified as a constraint to wider adoption, based primarily on quantitative investigations. Yet the contribution of this to farmers' evaluation and adoption behavior remain underexplored. To address this, we explore farmers' perceptions on CASI-based herbicide weed management systems using semi-structured interviews from six locations across the EGP. This study identifies a divergence in experiences with herbicides, both geographically (with more negative reports from Sunsari and Bihar than

other locations) and in terms of user typologies (where users are overwhelmingly positive, and nonusers are overwhelmingly negative). This divergence suggests that an information void exists that has the potential to contribute strongly to the negative evaluation of CASI, as well as potentially negative changes in household labor dynamics. To overcome this, promotional efforts should target education and training programs that address how to effectively spray, potentially with increased emphasis on weather forecasting use. This will ensure equitable outcomes for household members, and increased interest and use of CASI can be enabled.

Identifying and selecting sociotechnical innovations for women's empowerment and resilience: A framework for conducting situation analysis

Hom N. Gartaula, International Rice Research Institute (IRRI)

Prama Mukhopadhyay, Eileen Nchanji, Ranjitha Puskur, Dessalegn Molla, Everisto Mpedza, Cosmos Lutomia

Accelerating technology adoption in an equitable and sustainable manner requires a deep understanding of external and internal drivers, social and gender norms, as well as institutional, policy, and regulatory contexts. The complexity of these contexts calls for an approach that involves multistakeholder collaboration and engagement of local communities in the process of co-designing sociotechnical innovation bundles (STIBs). As part of CGIAR's initiative on gender equality, we are piloting STIBs in selected learning labs in Africa and Asia, and co-developing relevant methods and tools for identifying, prioritizing, and co-designing STIBs. In this session, we present a framework that will guide the process for conducting situation analysis, the process of identifying the entry points for designing and implementing the context-specific and gender-responsive STIBs in a participatory manner with the farmers and other relevant stakeholders. The specific objectives of this framework are: (1) to assist research and development actors who are interested in using STIBs in their programs in designing and conducting situation analysis to understand the local context regarding the social and technical innovations, the sociocultural, economic, ecological/ climatic, and political environments; and (2) to provide general principles, methods and tools that can be applied to conduct situation analysis and present results. In this session, we will share the framework we have developed for conducting situation analysis to identify and select social and technical innovations as entry points for co-designing STIBs in a participatory manner,

using tailored tools, techniques and protocols for data collection, analysis, and engaging stakeholders in the process.

Gender analysis of climate-stressed rice-based systems in Mali

*Fatoumata Diabate, Africa Rice Center (AfricaRice)
Gaudiose Mujawamariya*

Agriculture and livestock represent the main income-generating activity for women and youth in the rural areas of Mali. It is expected that climate change will lead to a reduction in food production due to changes in rainfall patterns and temperature in Africa (Awojobi and Tetteh, 2017), and Mali is facing the same challenges. To cope with such climate-induced stress, women and youth need information and access to climate-smart technologies. This study analyzes the role of women in rice-based systems heavily affected by climate stress, and their access to resources on climate-smart agriculture (CSA) and Climate Information Services (CIS) in Mali. Mixed methods were applied: a quantitative study covered 766 male and female respondents in 383 households and a qualitative investigation engaged 134 women and 155 men in 34 focus group, plus 29 key informants in the major rice-growing regions in Mali. The study showed large gaps between female and male farmers' access to resources: specific gender constraints in the rice-based activity include access to land, improved seeds, rice farming, machinery, formal credit facilities, extension services, labor force, fertilizers and climate information. Particularly, the willingness to maintain women in the conditions of dependency was observed, hence, they were likely to abandon rice production or remain in labor-wage activities due to multiple climate-related challenges they were facing.

Can partnerships improve the Indonesian oil palm smallholders' inclusivity?

Diana Chalil, Universitas Sumatera Utara

Partnerships are widely applied to improve smallholder inclusivity in the value chain. The results are not always as expected. This study was conducted to analyze the factors influencing smallholder inclusivity. Oil palm smallholders were chosen, considering that palm oil is the largest agribusiness in Indonesia, and more than 40% of the total land area belongs to smallholders. The data were collected from 480 partnered and nonpartnered smallholders from four oil palm center provinces in Indonesia—namely North Sumatra, South Sumatra, Riau, and Jambi—and analyzed with a generalized linear model. Inclusivity

as the dependent variable was measured using four components: reward, ownership, voice, and risk. The five possible influencing factors—contract, technical knowledge/skill, technical supervision, partnership, and participation in smallholder groups—were included as the independent variables. The results show that out of all the factors, only contract and technical knowledge/skill significantly influenced smallholder inclusivity. This result explains that partnerships are not enough to improve smallholder inclusivity unless it is implemented effectively. Partnered samples have different levels of relationships. Partnerships with contracts are intensive and consistent; and have been maintained long enough to appear to provide better selling prices, group assets, means of communication, and risk management for smallholders. Based on the results, some recommendations are proposed to improve the partnerships of Indonesian oil palm smallholders.

4.1F · GENDER DYNAMICS IN COLLECTIVE ACTION, DELIBERATIONS AND GROUP BEHAVIOR

A gender and social inclusion lens on resilience in the context of climate change, COVID and other shocks and stresses

Katrina Kosec, International Food Policy Research Institute (IFPRI)

Amanda Clayton, Boniface Dulani, Amanda Robinson

Interventions to combat climate change often strive to promote gender balance so that men and women have an equal right to participate in and benefit from these programs. Yet whether and how women's participation affects climate governance is still poorly understood. We examine the causal effect of women's representation in climate-related deliberations using the case of communally managed forests in rural Malawi. We run a lab-in-the-field experiment that randomly varies the gender composition of six-member groups asked to deliberate and then vote on solutions to combat deforestation. We find that women have relatively more influence in group decisions when they make up a larger share of the group. Our initial results suggest that this is due to women being increasingly recognized for their contributions, rather than substantial changes in participants' speech patterns in groups with more women. When women are in the majority, they are more likely to sway group decisions to meet their pre-treatment preferences. These findings suggest that including women in decision-making can

shift deliberative processes and outcomes in support of historically marginalized resource users.

Gender inclusion in the designing and implementation of multistakeholder dialogues in Zambia

Everisto Mapedza, International Water Management Institute (IWMI)

Marie-Charlotte Buisson, Munyaradzi Mutenje, Winnie Kasoma Pele, Netsayi Mudege, Lizzy Muzungaire and Victor Siamudaala, Agness Chiley, Keagan Kakwasha

Meaningfully engaging women in accessing and controlling benefits from agriculture and the broader development agenda has largely remained a source of disillusionment within the development arena. More recently, there has been an increase in the use of Multistakeholder Platforms (MSP) by several actors within CGIAR and beyond. Multistakeholder dialogues aim to ensure that there is a discussion on challenges facing communities within the different landscapes and how solutions are crafted to address the challenges through practical development interventions. This paper, firstly, engages with literature on MSPs and how gender equality and social inclusion can be made intentional by including women and youths in the processes. Secondly, through the practical implementation of the Aquatic Foods Initiative in Zambia, the actual assessments and practical implementation are being monitored and critiqued through the process documentation of MSP implementation to ensure that women and youths are included. The documentation goes beyond inclusion to document the outcomes of women and youth inclusion. Thirdly, this paper situates MSPs within the CGIAR's MSPs' broader community of practice to draw further common threads across different contexts, different resources and across different scales. The early findings demonstrate that it is possible to engage women and youths in the designing, implementation, monitoring and evaluation of the MSPs. Such engagement needs to be intentional and must invest time and resources in ensuring that participation goes beyond attendance to informing and influencing the priorities and even going further to ensure those priorities are implemented and reflected upon.

Resilience strategies of rural households in India: A behavioral perspective

Disha Bose, Indian Institute of Management, Ahmedabad

Vidya Vemireddy

Agrarian resilience consists of diverse mechanisms that support groups to respond to changes in agriculture. Women's participation in diversified livelihoods is considered to accelerate growth, reduce poverty and augment resilience. As a result of their employment, women also participate in organizations such as self-help groups and cooperatives that impact behavioral factors, influencing resilience in the long run. We argue that households where women are active members of such organizations are more likely to exhibit prosocial behavior. Such behavior promotes social esteem as well as forms a mitigation strategy, enhancing their resilience. We utilize a novel dataset built from a primary data survey conducted in Anantapur, Andhra Pradesh, India, and use logit regression techniques.

We show that a female board member of any organization increases the likelihood of donation during calamities. It also shows that a female who is actively involved in the organizations is also more likely to donate. We argue that women in such organizations are not only concerned about their social esteem, but also have an expectation that in the future, in the event of any calamity or emergency, they too would require help. Such behavioral mechanisms form a mitigation strategy for these households, building on their resilience. Thus, this paper aims to identify pathways of rural households to resilience through behavioral mechanisms. Rural economies are characterized by internal social relations and linkages that can exert an influence on people's resilient behavior as manifested through their response to larger changes like climate risks, environmental changes, economic reforms and globalization.

Measuring women's agency in agro-ecological food systems transformation

Swati Renduchintala, Bangor University, CIFOR - ICRAF, Andhra Pradesh Community Managed Natural Farming (APCNF)

Agro-ecology-based natural farming has emerged as a sustainable and socially just alternative to the "green revolution"-based food systems. The Andhra Pradesh Community-managed Natural Farming programme (APCNF) has been driving the agro-ecological movement in India from conventional farming to nature-based solutions. With 630,000 farmers enrolled to date, the program credits the social movement of women self-help groups and their federations as the crucial ingredient for transformation. This paper looks at the work in APCNF in academic lenses to answer: "Do women collectives and their federations play a substantial role in enabling and improving women's agency by transformation to natural farming?" The agency is measured by the decision-making abilities of women in Andhra Pradesh to trace the journey

of transformation through: Why did they decide to transform to natural farming? When did they decide to initiate this shift to natural farming? Who helped them in this process of shift? How did they begin the process of transformation? Where did they start and continue with the transformation? So, we determine "does feminization of agro-ecology help in improving the agency of women?" which in turn helps in scaling agro-ecology. Through in-depth study and data from the three major agroclimatic zones of Rayalseema, Delta areas and tribal areas, this paper also explores the gradients of women across geographies and social strata. The findings of the paper would help in establishing focused gender-based policy for sustainable food systems transformations. It also paves a path to explore the agency beyond the farmgate in value chains and beyond.

11.00-12.30

DAY 4 · Thursday, October 12 · Parallel sessions

4.2A · STRENGTHENING WOMEN'S EMPOWERMENT FOR BETTER AGRICULTURAL OUTCOMES: QUALITATIVE AND QUANTITATIVE EVIDENCE FROM INDIA AND GUATEMALA

ORGANIZER: Kalyani Raghunathan, International Food Policy Research Institute (IFPRI)

This session brings together three papers using both qualitative and quantitative methods under the Applying New Evidence for Women's Empowerment (ANEW) project, led by the International Food Policy Research Institute (IFPRI) and supported by the Walmart Foundation. Each of the agriculture development projects under ANEW aimed to improve agricultural outcomes, household economic well-being and women's empowerment through interventions delivered through farmer collectives, like farmer producer organizations (FPOs).

In this session, we present evidence from two of the four projects in India and Guatemala on the link between women's empowerment and agricultural outcomes, and the role that FPO membership and other factors play in moderating that relationship. The first paper uses household-level data on close to 800 households and OLS regressions to establish the association between economic outcomes of interest and measures of women's empowerment in the context of high-value agricultural value chains in Guatemala. The authors then assess how hypothesized moderating factors reinforce or dampen the overall association. The second paper uses data from 1200 households in one state in India to assess the role that FPOs play in enhancing women's empowerment and improving their agronomic practices, agricultural yields and revenues, using difference-in-difference models with matching. Finally, the third paper draws on key informant interviews and focus group discussions with respondents in India to examine constraints on and facilitators of women's and men's participation in

FPOs, and the perception of benefits these collectives provide.

Our insights are of relevance to collective-based agricultural development projects that aim to target women.

Identifying pathways that affect the relationship between empowerment and economic outcomes

Florencia Paz, International Food Policy Research Institute (IFPRI)

Jessica Heckert, Greg Seymour, Kalyani Raghunathan

Several studies have demonstrated a positive relationship between women's empowerment and their economic outcomes, but less is known about the factors that moderate this association. Unpacking possible pathways to impact is important, especially for the design and implementation of agricultural development projects that target women or aim to improve gender-related outcomes. We use primary data on roughly 800 agricultural households in Guatemala to examine factors that could potentially moderate this relationship. We measure empowerment for a woman and man in each household using the project-level Women's Empowerment in Agriculture Index for Market Inclusion. We measure household-level economic outcomes using total household income from all sources, and agricultural yield and revenues for specific crops. We identify key moderating factors of interest through a review of existing evidence and exploratory data analysis. Among others, these factors include freedom of movement, access to a safe and healthy work environment, and sound business practices—all of which have a strong theoretical or empirical connection to economic outcomes. We first use OLS regression models to study how our economic outcomes of interest are related to our measures of women's empowerment. We then interact women's empowerment with each of the hypothesized moderating factors to test the strength of the relationship and whether they reinforce or dampen

the overall association. Our results can potentially inform the design of agricultural development projects, enabling them to better empower women farmers and enhance impacts on economic well-being.

Assessing the impact of farmer producer organizations on women's empowerment and agricultural outcomes: A quasi-experimental study

Soumyajit Ray, International Food Policy Research Institute (IFPRI)

Kalyani Raghunathan, Jessica Heckert

In India, farmer producer organizations (FPOs) promote collective action among small and marginalized farmers, especially women. By facilitating resource pooling and coordination of production activities, improving market access, and providing training and extension, FPOs can contribute to higher agricultural incomes for smallholder farmers. Women's FPOs also help formalize women's roles in agriculture, offer them remunerative employment, and enhance their engagement across the value chain. We use two rounds of panel data on 1,200 households in the eastern Indian state of Jharkhand to assess the impact of women-only FPOs. The FPO interventions we evaluate are threefold: strengthening collectives, coordinating and improving agricultural practices, and providing gender-based training. Women FPO members in the treatment arm received these interventions; those in the control arm did not. We match treatment and control blocks based on economic and developmental characteristics from secondary data sources, and then match individuals using baseline survey characteristics. We estimate impacts using difference-in-difference models with nearest neighbour matching techniques—with household assets, agricultural yields and profits, and women's empowerment as our primary and secondary outcomes. We find some impact of FPO interventions on agricultural outcomes, but mixed evidence of their impact on women's empowerment. This research contributes to the existing body of literature by rigorously assessing the impact of FPOs on agriculture-related and women's empowerment-related outcomes. The findings will provide policymakers and practitioners with insights into designing strategies to promote sustainable agricultural growth and gender equity.

Barriers and facilitators to women's participation in farmer producer organisations: Exploring the potential for women's empowerment and collective efficacy

Arundhita Bhanjdeo, Independent consultant

Over the last decade in India, farmer producer organizations (FPOs) have emerged as a means of collectivizing smallholder farmers and providing them access to extension, innovation, and market services. FPOs that center women farmers, traditionally at a disadvantage vis-à-vis their male counterparts in access to resources and extension, can serve to enhance women's agency and collective action in agricultural value chains. We used 59 key informant interviews and nine focus group discussions to examine the constraints to, and facilitators of, women's and men's participation in three women-only FPOs in Jharkhand, an eastern Indian state. The FPO intervention we evaluated provided members with both agricultural and gender-based inputs to improve agronomic practices, market linkages, agricultural yields and profits, and the role of women both within the FPO and within their households and communities. We provided contextual insights on 'what works' to empower women in this context. Women's perceptions of the benefits from FPO membership were heterogeneous. Our qualitative analysis suggests a nuanced picture of women's autonomy and decision-making within and outside their household, further shaped by women's and men's perception of shifts in women's access to resources and services. The emerging lessons provide inputs for development implementers and policymakers to recognize diverse contextual barriers in designing FPO interventions to enable and enhance women empowerment outcomes. The research also contributes to the body of knowledge on local gender norms and understanding of empowerment.

4.2B · EXPLORING INTERSECTIONALITY IN GENDER INEQUALITY AND GENDER TRANSFORMATIVE PROCESSES

Drivers of gender inequality in employment participation and intensity in African agriculture

Carlo Azzarri, International Food Policy Research Institute (IFPRI)

Gianluigi Nico

An estimated 224 million people 15 years old and above are directly engaged in agriculture in Africa, corresponding to nearly half of the total employed population in the continent. Women play a crucial role in African agriculture, representing 45% of total agricultural employment. However, their role still appears to be limited to subsistence production, and their work intensity in productive agricultural activities is much lower compared to men, leading to the risk of cementing, or even increasing, preexisting gender inequalities. Understanding gender inequality in intensity of participation in agricultural employment and, in turn, in agricultural livelihoods, remains largely an empirical question. Using a multivariate econometric framework, the objective of this paper is to identify and quantify sex-specific drivers of gender inequality in agricultural employment. We use a novel individual-level dataset—mostly drawn on LFS—comprising 31 countries, representing 80% of all African population, fitting a double-hurdle model to jointly estimate labor participation and time intensity in agriculture, to quantify sex-specific factors that prevent women from engaging in agriculture or reduce their work intensity due to gendered time-competing demands. We find strong evidence of a sex-specific effect in case of caretaking responsibilities: overall, for one additional nonworking dependent within the household, the intensity of work in agricultural employment increases by almost one hour per week, although it decreases by more than seven hours for women compared to men. Implications of our results call for policy action to render caretaking services more affordable to increase work participation and intensity especially among female farmers.

Furthering the ambition: Advancing an intersectional lens into gender-transformative work in agri-food systems

*Diana E. Lopez, KIT - Royal Tropical Institute
Rhiannon Pyburn*

Intersectionality provides a powerful framework for understanding the intricate connections between different dimensions of social identity and their influence on individual experiences of discrimination and privilege. When applied to gender-transformative approaches (GTAs) in agri-food systems, intersectionality becomes critical for unraveling inequalities, including how existing inequalities are exacerbated by shocks and long-term stressors such as malnutrition, conflict, and climate change. The literature on GTAs in agri-food systems underscores the need to consider diverse identities and experiences to guide the design of gender-transformative (GT) interventions. Nevertheless, to date, only fragmented efforts embed an intersectional lens into their gender-

transformative work, and operationalization of intersectionality is limited. Our literature review (2010–2023) confirms this: out of 94 sources on GTAs only 30 mention intersectionality with few empirical studies. The limited use of an intersectional approach in current GT work translates into a lack of empirical evidence while it reveals the necessity for further exploration and implementation, stressing the need for better evidence to understand the effectiveness of GT approaches and their outcomes in achieving gender equality. In this paper, we profile opportunities for adopting an intersectional lens in GT work with an emphasis on diverse experiences of women smallholder farmers from Ghana and Mexico. Our analysis suggests that by centering the experiences of individuals from diverse backgrounds in a systematic, context-specific way, GT interventions can transcend current limitations. Furthermore, through a critical examination of power structures, GTAs grounded in intersectionality can pave the way for social justice within existing agri-food systems.

Within the invisible web: Gender-based violence in agricultural streams of Canada's Temporary Foreign Worker Program

*Silvia Sarapura, University of Guelph
Charlotte Potter, Regan Zink, Margarita Fontecha,
Nicole Cupolo*

Canada's agricultural sector relies heavily on labor from temporary foreign agricultural workers (TFAWs). However, TFAWs experience complex vulnerabilities resulting from structural inequalities and discrimination within Canada's Temporary Foreign Worker Program (TFWP). Multiple, diverse, intersecting social identities of TFAWs (e.g., gender, age, race, nationality, etc.) compound, making TFAWs more or less vulnerable to gender-based violence (GBV) and discrimination in Canada and at home. This scoping review contributes to conceptual and practical knowledge regarding GBV in Canada's agricultural TFWP. This research was guided by four objectives: (1) collect documented evidence regarding GBV and TFAWs in the agricultural sector, (2) describe how GBV is experienced differently by diverse groups of TFAWs in Ontario, Quebec and British Columbia, (3) understand how policies address or confront GBV experienced by TFAWs in these three provinces, and (4) outline existing infrastructure that supports TFAWs and how supports can be enhanced to better support TFAWs who experience GBV. Using a gender-transformative approach informed by systems thinking and intersectionality, this study examined how structures and institutions (formal and informal) create and exacerbate inequalities between TFAW. This study found that literature on TFAWs in Canada is gender-blind, with limited discussion or reporting on GBV

within the program. National and transnational policies impacting the TFWP establish and maintain structural vulnerabilities and power imbalances, making TFAWs less likely to report grievances. If workers are to be adequately protected, holistic, cohesive, and diversified support mechanisms are needed to support TFAWs' access to rights, services, and protections against GBV in Canada.

The empowering journey: Nepalese women transforming from margins to empowerment

*Raju Jati, Group of Helping Hands (SAHAS) Nepal
Rumi Maharjan*

Nepalese women are facing increased burden in managing household chores and farming roles due to climate change and male outmigration, resulting in them being left behind in the development process. The situation is dire for poor and marginalized women, such as Dalits, who suffer the intersectionality of caste and gender-based discrimination, violence, educational disparities, lack of political participation, and are deprived of basic human rights and opportunities. In this context, SAHAS Nepal, an NGO, implemented a three-year gender-focused project of empowering and enhancing resilient food systems in a Dalit women's group in the Dhading district, a mid-hill region of central Nepal. The project has led to the empowerment of the Dalit women's group and promotion of climate-resilient farming practices in them. This contributed to their transformative changes in building resilient and sustainable food systems and their socioeconomic empowerment, and more importantly in achieving dignity in society, thereby challenging existing inequities. Members of this group have been elected to local government positions and now have access to decision-making and government resources. This Dalit women's group has emerged as role model for society and other communities. To examine the impact of the project and to explore the intricate details of the change process, a comprehensive qualitative study was conducted that included in-depth interviews and FGDs with members of the women's group. The information was analyzed thematically to understand the socioeconomic transformation highlighting the journey of the women's group. The study provides insights on women's socioeconomic transformation, benefiting policymakers and development organizations.

4.2C · MIND THE POLICY-IMPLEMENTATION GAP. GENDER IN AGRICULTURE AND FOOD SYSTEMS POLICIES

Gender equality and women's empowerment in rural transformation: From evidence to public action

Vanya Slavchevska, Food and Agriculture Organization of the United Nations (FAO)

Tacko Ndiaye, Mariola Acosta, Maurizio Furst, Clara Park, Omnia Rizk, Ilaria Sisto, Erdgin Mane

The slow, limited, and uneven progress on women's empowerment and gender equality over the last decade clearly shows that rural transformation, with its focus on efficiency and productivity, is leaving women behind in addition to having negative impacts on the environment and nutrition. New inclusive models of rural transformation are called for. The study argues that treating gender equality and women's empowerment as key in the process of rural transformation will lead to a more inclusive and resilient transformation of rural spaces. Women's empowerment and gender equality are critical for the welfare of all women and girls, as well as instrumental for the achievement of other objectives, including increased household incomes and food security, dietary diversity, and resilience. To inform such models, this study critically assesses how rural transformation along with strategies to address climate change and nutrition, influence changes in women's livelihoods and empowerment. It identifies key levers for enabling a transformation process that is resilient and truly inclusive: one that accelerates empowerment, guarantees women's full and equal rights, and enables a gender-equal access to better livelihoods, food security and nutrition. Empowerment cannot be achieved through economic development alone; it requires transforming the laws, policies and practices that constrain women's agency and achievements as well as dedicated investments to bridge the gaps between policies and outcomes on the ground. However, a detailed analysis shows that agricultural policies and investment plans do not adequately integrate gender equality considerations. The implications for inclusive rural transformation are discussed.

Understanding the gap between gender-equality and social-inclusion policy and implementation in the energy sector: The case of Nepal

Marlène Buchy, International Water Management Institute (IWMI)

Shristi Shakya

Social norms are often put forward to explain resistance to gender equality and social inclusion (GESI) and women continue to be largely absent from decision-making positions in the energy sector worldwide. However, there is limited research on institutional mechanisms of policymaking and implementation at different scales within a federal system. Using Nepal as a case study, this paper explores why, despite commitments, progress toward GESI objectives in the energy sector has been slow. Based on a review of energy policies, and interviews at federal, provincial, and local government spheres, this paper focuses on the institutional and policy processes at play within the energy sector and between the three spheres of the federal system. It examines the extent to which these processes undermine inclusion. Understanding the broader institutional processes helps to identify different bottlenecks compromising progress in GESI: those which are linked to deficient policy regimes which cannot be addressed solely through additional GESI-focused interventions, and those which can be characterized as resistant to GESI-related issues. The aim of this research is also to understand why Nepal's public energy institutions, despite a constitutional commitment to gender equality and nondiscrimination seem so reluctant to mainstream GESI within its policies and practice. The paper concludes that GESI implementation in the energy sector suffers from limited human resources, a narrow conceptual framing, and delays in policy development and implementation within different spheres of the federal system. Moreover, shortcomings related to GESI policymaking and implementation should be considered within the broader context of federalism.

The implications of gender inclusive policies in climate resilience and local food systems

Mary Kuira, Hivos

Mumbi Mugo

Climate change is already undermining food systems, contributing to a rise in global hunger and threatening the livelihoods of millions of farmers. Since women are more adversely affected by climate change due to their

social and cultural roles, adaptive responses call for integration of gender inclusiveness in climate-resilient policies. Funded by the Global Affairs Canada through Seed Change, Hivos is implementing a six-year program (2021–27)—Rural Women Cultivating Change—aimed at enhancing gender equality and empowerment of rural women in Ethiopia, Tanzania and Kenya. With a focus on the intersection between women's rights and climate adaptation in order to better support sustainable and equitable resource management, agricultural production and access to markets, the program took the initiative of mapping the gender policy issues in climate resilience and local food systems in four implementing counties in Kenya (Nakuru, Baringo, Kitui and Laikipia). The findings indicate that the policy development and implementation processes had not deliberately included women and youths during planning, communication and implementation, resulting in policies that are not adequately gender sensitive. The low level of awareness about the policies (40%) among the women farmers and public officers shows ineffective approaches to dissemination to local communities—resulting in poor accountability mechanisms from the policymakers. The program has already signed memoranda of understanding with the four county governments, who are in the process of reviewing the climate-resilient and food policies to ensure gender inclusiveness and streamlining the policy-development processes to ensure women's representation.

Entangled impacts, differential capacities: A relational lens on gender-responsive social protection and climate resilience in southern Bangladesh

Tanaya DuttaGupta, International Livestock Research Institute (ILRI)

Shalini Roy

The combined effects of climate change, COVID-19 and rising prices shape vulnerabilities of rural communities, differentiated by gender, livelihood, asset ownership (including land and livestock), and type of social protection received. Do gender-responsive social-protection and complementary programs targeting rural women help strengthen capacities to cope with and adapt to overlapping shocks and stresses? And do they simultaneously reinforce vulnerabilities and reproduce inequalities, as unintended consequences? Based on multi-sited fieldwork conducted in villages of Khulna, Bagerhat and Patuakhali districts of southern Bangladesh in 2022, this study employs a relational approach to focus on gender relations within households and broader power dynamics at community level. Data was collected through focus group discussions and semi-structured interviews with

households where women were direct beneficiaries of either the Transfer Modality Research Initiative or the Vulnerable Group Development Program. With qualitative analysis guided by iterative deductive and inductive coding approaches, key findings indicate: (a) impacts of sudden-onset cyclonic events and the slower, gradual effects of salinization are gendered, experienced as water insecurity, paradoxical for a context with abundance of water, and (b) while cash, food and training components from past programs help households cope with future shocks and provide short-term support, there is a risk that efforts to sustain their livelihoods may result in enhanced and uneven labor and debt burdens, perpetuating socially differentiated vicious cycles. Critical evaluation of such synergies and trade-offs are necessary for leveraging social protection for pathways to inclusive and transformative resilience.

4.2D · INNOVATIONS FOR EQUITY: HOW TO UNTAP THE GENDER-TRANSFORMATIVE POTENTIAL OF INNOVATIONS IN THE AGRI-FOOD SECTOR (PANEL)

ORGANIZER: Till Rockenbauch, Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)

PANELISTS: Suhela Khan, UN Women

Nozomi Kawarazuka, International Potato Center (CIP)

Sharmishtha Basu, Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)

Margreet van der Burg, Wageningen University

C.S Reddy, Mahila Abhivruddhi Society, Andhra Pradesh (APMAS)

Since 2021, the GIZ Fund for the Promotion of Innovation in Agriculture (i4Ag) promotes cross-cutting innovations that contribute to a climate-resilient transformation of the agri-food sector. Innovations are understood to introduce new practices or change existing ones. Moreover, innovations are understood to be inherently gendered in nature. Hence, in order to ensure maximum benefit, i4Ag addresses gender aspects in the design, implementation and evaluation of innovations.

Drawing on the experience of implementing innovations at the nexus of rice cultivation and climate action in South Asia, this panel session will bring together practitioners and international experts from research and policy. Considering the opportunities and challenges of gender-responsive innovations in

the field, the panel will discuss and reflect on entry points and strategies to raise the level of ambition and to untap the gender-transformative potential of innovations in the agri-food sector.

In doing so, this panel session will link insights from project implementation to wider critical debates on the transformation of agri-food systems and the role of feminist development policy.

Contributing organizations/panellists: GIZ (TBD); University of Wageningen (Margreet van der Burg); UN Women (Suhela Khan); CIP (Nozomi Kawarazuka, TBC) and OLAM (TBD).

4.2E · STRENGTHENING CAPACITIES OF EXTENSION ADVISORY SERVICE (EAS) PROVIDERS IN MAKING FOOD SYSTEMS GENDER- AND NUTRITION-SENSITIVE: MANAGE EXPERIENCES (CAPACITY STRENGTHENING)

ORGANIZER: Veenita Kumari, National Institute of Agricultural Extension Management (MANAGE)

PRESENTERS: Veenita Kumari, National Institute of Agricultural Extension Management (MANAGE) Hyderabad

J. Shirisha, National Institute of Agricultural Extension Management (MANAGE)

Even after several decades of green revolution, malnutrition continues to be a major development challenge in most South Asian countries, and India has a major share of the malnourished population in the region. The nutritional issues in India are complex and therefore require a multifaceted, multidisciplinary solution. One facet of the solution is enriching knowledge about the causes of and solutions to malnutrition at the farm- and household-level through agricultural extension. Disseminating nutrition-sensitive agricultural knowledge is not currently an activity of agricultural extension in India, but there is a great potential for integrating it through the well-established network of extension advisory services (EAS). This will require being carefully focused on the needs of rural communities and considering gender dimensions, that are closely linked with nutrition-sensitive agriculture. In this session, we present the training approach that the National Institute of Agricultural Extension Management (MANAGE) uses for strengthening capacities of extension advisory service (EAS) providers in making food systems gender- and nutrition-sensitive, and MANAGE's experiences implementing this training in India's extension system.

We demonstrate the usefulness of the training for supporting extension agents working at the grassroots level, NGO partners in the agriculture sector, policymakers, and advocacy organizations to promote and support nutrition-sensitive agriculture among men and women farmers by making their local food basket diverse. The training is of relevance to professionals across contexts working in the agriculture sector.

4.2F · GENDER GAPS IN FOOD SECURITY AND MARKETS: EXPLORING THE ROLE OF CULTURAL AND SOCIAL NORMS

Investigating the interaction between built food environments and intrahousehold gastronomy of low-income farming households through the gender lens: A photovoice study

Arindam Samaddar, International Rice Research Institute (IRRI)

Deep Banerjee, Jhoanne Ynion, Marie Claire Custodio, Prakashan Chellattan Veetil

To meet the SDG of eradicating hunger and malnutrition by 2030, development of sustainable food and market systems has become a policy priority particularly for low- and middle-income countries such as India. Interventions promoting sustainable agriculture, small-scale farming, and equitable access to markets contribute to food and nutrition security, particularly for economically vulnerable groups. This study explored the factors that may influence food purchases by low-income households in Nalanda, Bihar. Households were selected based on the multidimensional poverty index and geospatial habitat clustering. Participants' interactions with the food environment was investigated using the photovoice approach, followed by exploratory interviews with male and female household members. The photo collages were coded according to the key elements of the food environment, while content analysis of the interviews was conducted based on the constructs of the socioecological model and the gastronomic systems research framework. Results showed that male household members are primarily responsible in engaging with the retail food environment where factors like availability, accessibility, and convenience influence their purchasing behavior. Females are responsible for addressing intrahousehold food needs and overseeing the household's gastronomy (eating occasions, food pairing, ingredients, etc.) with traditions and sociocultural structures having an

impact on how often they interact with markets. The decision to buy food is a calibrated equilibrium which results from the repetitive interaction of the household's gastronomy and built food environment elements. Men and women may not have equal access to resources, but they possess distinct decision-making authorities.

To eat or not to eat: Uncovering gender normative biases in Food Environment

Meghajit Sharma Shijagurumayum, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Anne Rietveld, Cathy Rozel Farnworth

Gender and social norms shape everyday life. Some norms lie so deep and are so fully naturalized that they lie below the level of conscious awareness. In the context of food environments, such norms might be deeply biased against women's nutrition, food security, and health interests, impeding women's options to build resilient livelihoods. We studied gender norms across multiple scales of the food environment as part of a larger study which examined normative constraints within food systems in relation to women's economic resilience in a context of climate change. We asked if restrictive gender norms limit women's adaptive capacity to climate change to build and maintain their livelihoods. Our data collection consisted of a systematic literature review complemented with analysis of secondary data from the GENNOVATE database. For the systematic literature review we selected literature in Web of Science on the basis of search terms adhering to 'food environment,' cross-referenced with 'gender' and 'women.' The selected 108 articles were reviewed and an annotated bibliography was produced. Results indicated that gender-based food discrimination is common across the world, albeit modes and severity vary, with women being disadvantaged both in terms of food-intake quantity (quantity) and quality (nutrients). One prominent normative bias which was reported across geographies was women forgoing their portion of food to ensure sufficiency for the rest of the family members. Further, they were reported to eat less nutritious food and/or to provide men household members with more nutritious foods—particularly animal-source foods. Such behavior is widely accepted and rationalized with connections to women's care role, while negative impacts remain unrecognized. We conclude that interventions frequently fail to consider how gender and social norms shape food policies and interventions, leading to continuing biases against women. We draw out a set of recommendations on how to better support women's adaptive capacity in this context.

An intercultural analysis of the pathways from women's water insecurity to food insecurity and maternal and child health in Indigenous communities of the Peruvian Amazon

Pamela Giselle Katic, University of Greenwich

Indigenous Peoples' food systems are inextricably connected to land, which in turn is interwoven with issues of self-determination, livelihoods, health, cultural and spiritual heritage, and gender. While mounting evidence shows that food security and nutrition are negatively affected by water insecurity, experiential water security measures have not yet been used to explore relationships with other outcomes of public health interest. We therefore sought to fill this knowledge gap by quantifying the relationship between household water and food insecurity and maternal and child health outcomes (maternal and child anaemia, child stunting, and maternal body mass index). We also aimed to determine whether sociocultural norms, women's time use, and economic well-being mediated these relationships. Data were drawn from a Newton Fund project working with Awajun women in the Peruvian Amazon and analyzed using generalized structural equation models. Our results highlight the need for economists (and other researchers alike) to measure water security using indicators that are close to maternal experiences with water, and culturally and contextually grounded, to enable a complete understanding of how water insecurity relates to food security, nutrition, and many other indicators of health and well-being.

Exploring women and youth engagement in aquaculture: Mixed-methods evidence in Ghana

Catherine Ragasa, International Food Policy Research Institute (IFPRI)

Andrea Vos, Eva Nimorme, Froukje Kruijssen, Julie Newton

This paper identifies the challenges, aspirations, and entry points for greater participation and empowerment of youth and women in the fast-growing aquaculture value chain in Ghana. Data was collected from three survey rounds of 400 fish farmers; 32 key informants' interviews; and 5 FGDs with female-only, female-youth-only, and male-youth-only groups. Four study highlights are as follows. First, the study shows that respondents all indicated they wanted to continue or start aquaculture and expand to other stages of the value chain (hatchery, feed formulation, processing).

Second, this study shows how norms and attitudes differently impact women, who are often discouraged because of their gender; and young men, who are often teased with being a fisherman when studying aquaculture and who have less access to finance and skills development. Third, intersectionality allowed us to understand that aquaculture is easy for women to combine with reproductive work if the farm is located close to home, and seen as very tedious if it is isolated. Fourth, this study also sought to understand quality of participation. Qualitative interviews showed that income and financial security is just one of the factors that determines quality of participation in the aquaculture chain. Other important factors for those involved in aquaculture included social recognition by neighbours, the community, and beyond. For women specifically, being a grow-out farmer or processor allowed them to gain their own income and feel self-reliant while combining their work with childcare and housework.



GENDER Impact Platform

GENDER (Generating Evidence and New Directions for Equitable Results) puts equality at the forefront of global agricultural research for development to kick-start a process of genuine change towards greater gender equality, improved opportunities for youth and social inclusion.

GENDER is a CGIAR impact platform that synthesizes and amplifies research, fills gaps, builds capacity and sets directions to enable CGIAR to have maximum impact. CGIAR is a global research partnership for a food-secure future dedicated to transforming food, land and water systems in a climate crisis.

GENDER is grateful for the support of CGIAR Trust Fund contributors.

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