



'Seeds of Change'

**Gender Equality
Through Agricultural
Research for Development
2-4 April 2019, Canberra**

Welcome from the conference convenors

Welcome to *Seeds of Change*: the first international conference on gender equality through agricultural research for development. This interdisciplinary conference brings together researchers and practitioners from diverse fields of social science and agriculture focussing on food/commodity/cash crops, subsistence/semi-subsistence sectors, supply chains, climate, forestry, fisheries, and water management. The conference is a collaboration between the Australian Centre for International Agricultural Research, the CGIAR Collaborative Platform for Gender Research and the University of Canberra.

We are thrilled to have participants from 45 countries. We look forward to a productive and stimulating time together and the beginning of many new networks and international connections in this important space.

Jayne Curnow

Research Program
Manager Social
Sciences, ACIAR

Barbara Pamphilon

Director, Australian Institute
for Sustainable Communities
UC

Rhiannon Pyburn

Coordinator
CGIAR Collaborative
Platform for Gender Research

Conference sponsors

We gratefully acknowledge the major sponsors of the conference.

- Australian Centre for International Agricultural Research (ACIAR)
- CGIAR Collaborative Platform for Gender Research
- CGIAR Research Program on Policies, Institutions and Markets
- University of Canberra (UC)

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Conference information

Conference venues

The conference will be held in Building 24 (**Ann Harding Centre**) and Building 25 (**Inspire Centre**). The Public Lecture (Wednesday evening) will be held in Building 14 (**Boiler House lecture theatre**).

Conference dinner (Tuesday evening) This will be held at the National Gallery of Australia. For those who have booked dinner, buses will leave from the front of Ann Harding Centre at 5pm prompt.

Campus maps can be found at <https://www.canberra.edu.au/maps>. There are maps for services, parking, safety/security and transport. Copies of these maps will be available at the registration desk. The University of Canberra is located on Ngunnawal Country.

Smoking area UC is a smoke free campus. Smokers, please speak to reception desk for directions.

Water You can drink the tap water and there are numerous water refill stations around campus.

Parents room Building 1B23A with nappy changing bench, children's toilet and wash basin.

Muslim prayer room Building 2A2 – please see the conference reception desk for an access card

Travel to the conference

Cab services

- Canberra Elite 13 22 27
- Cabxpress 1300 222 977
- Silver Service 13 31 00
- Wheelchair service 13 92 87 (book in advance)

Ride-share services Uber and Shebah (an all-women service) <https://shebah.com.au/ride/>

Buses <https://www.transport.act.gov.au/>

Parking Free parking will be available in the large parking lot opposite the Ann Harding Centre (P22)

Conference services

Registration desk This help desk will be staffed from Tuesday at 8.30 am to 5.30 pm Thursday. Lost property should be brought this desk.

Wifi Free internet services are available for conference participants. The login details can be found on the back of your conference nametag and will be posted at the venues

Dietary requirements If you have advised us of any special dietary needs, please make yourself known to the Ann Harding catering staff

Conference app There is a free conference app from Whova which can be downloaded through the Apple Store or the Android App Store You will have received an email with the download information. If you aren't directly added to the event and are asked for an event invitation code when accessing the event, please type in this invitation code: **SoC19** (Please do **not** share this invitation code with people who are NOT attendees of the event)

Conference evaluation

We'd love to hear your feedback in our online survey: surveymonkey.com/r/seedsofchange19. People who do not have easy internet access can fill in the survey at 5pm Thursday at the registration desk

Keep connected and join the conversation



for daily updates and livestreaming of panels, keynotes, interviews.
#SeedsOfChange19

Conference program
TUESDAY, 2 APRIL 2019

9.00AM	Registration opens		
9.30AM-12.25PM	Practice Workshop 1 Venue: AH Seminar 1 Using the project-level Women's Empowerment in Agriculture Index <i>Hazel Malapit, Jessica Heckert and Elena Martinez</i>	Practice Workshop 2 Venue: AH Seminar 2 Developing Gender-responsive Plant and Animal Breeding Programs: Principles, methods and tools <i>Ranjitha Puskur, Vivian Polar and Cynthia McDougall</i>	Practice Workshop 3 Venue: AH Conference Gender inclusive learning/research activities: The Family Farm Teams approach <i>Barbara Pamphilon, Gloria Nema and Jeromy Kavi</i>
12.30-1.10PM	Light lunch		
1.15-4.15PM	Practice Workshop 4 Venue: AH Conference Community Partnering for Local Development <i>Katherine Gibson and Ann Hill</i>	Practice Workshop 5 Venue: AH Seminar 2 A gender transformative approach in agrifood systems: What, Why and How? <i>Cynthia McDougall, Lone Badstue, Afrina Choudhury, Steven Cole, Marlene Elias and Ramona Ridolfi</i>	Practice Workshop 6 Venue: AH Seminar 1 Integrating gender into agriculture-nutrition research <i>Hazel Malapit, Jessica Heckert and Elena Martinez</i>
5.00PM	Buses leave Ann Harding Conference Centre for National Gallery of Australia (for those registered for Welcome Dinner)		
5.30-6.30PM	Drinks and Indigenous Collection Tour		
6.30PM	Welcome Dinner <ul style="list-style-type: none"> • MC: <i>Virginia Haussegger</i> (the UC 50/50 by 2030 Foundation http://www.5050foundation.edu.au/) • Welcome to country: <i>Violet Sheridan</i> • Conference opening <i>Professor Andrew Campbell, CEO of ACIAR</i> <i>Professor Barbara Pamphilon, UC</i> 		
9.45 pm	Shuttle buses leave National Gallery of Australia for University of Canberra accommodation (via drop-off points at Crowne Plaza, Civic, and Premier Inn, Belconnen)		

LEGEND			
AH Conference:	Ann Harding Conference Room	IC TEAL:	INSPIRE Centre TEAL Room
AH Seminar 1:	Ann Harding Seminar Room 1	IC Flex:	INSPIRE Centre Flex Space
AH Seminar 2:	Ann Harding Seminar Room 2	IC Studio:	INSPIRE Centre Studio
AH Foyer:	Ann Harding Foyer		

WEDNESDAY, 3 APRIL 2019

8.30AM	Registration opens
9.00 AM	Opening session: <i>Chair, Professor Barbara Pamphilon</i> Welcome to Country: <i>Aunty Roslyn Brown, UC Elder-in-Residence</i> Welcome to the University of Canberra: <i>Professor Deep Saini, Vice-Chancellor and President, University of Canberra</i> Venue: AH Conference
9.15-9.55AM	Keynote Address: Building gender equity from the bottom up in agricultural communities <i>Professor Katherine Gibson, Western Sydney University</i> <i>Chair: Professor Andrew Campbell</i> Venue: AH Conference
10.00-10.25AM	Keynote discussion groups Venue: AH Conference
10.30-10.55AM	Morning tea
11.00-12.25PM	Parallel Sessions 1 — page 6
12.30-1.25PM	Lunch — Film ‘Fished!: The fishing women of Mumbai’ Venue: AH Conference
1.30-2.25PM	Plenary Panel A conversation with men champions of gender equality: Challenging harmful masculinities for better development outcomes <i>Chairs: Cynthia McDougall and Rhiannon Pyburn with discussants Akhter Ahmed, Steven Cole, John McDermott, Philip Erick Otiemo Owitti, Surendran Rajaratnam</i> Venue: AH Conference
2.30-3.25PM	Parallel Sessions 2 — page 7
3.30-3.55PM	Afternoon tea
4.00-4.55PM	Parallel Sessions 3 — page 8
5.00-5.55PM	Speed Dating Poster Presentations – page 11 Venue: AH Foyer
6.00-7.00PM	Light meal
7.00-8.15PM	Public Lecture: Empowering Women, Improving Livelihoods — keys to rural development <i>Professor Naila Kabeer, London School of Economics</i> <i>Chair: Professor Barbara Pamphilon</i> Venue: Boiler House Lecture Theatre
8.15-9.00PM	Drinks, light refreshments and networking opportunity

THURSDAY, 4 APRIL 2019

9.00-9.55AM	<p>Keynote Address: Gender in Agricultural Research for Development as a Driver for Inclusive Transformation <i>Dr Jayne Curnow, Australian Centre for International Agricultural Research</i> <i>Ms Vicki Wilde, Bill & Melinda Gates Foundation</i> <i>Chair: Dr Jemimah Njuki</i> Venue: AH Conference</p>
10.00-10.25AM	<p>Keynote discussion groups Venue: AH Conference</p>
10.30-10.55AM	<p>Morning tea</p>
11.00-12.25PM	<p>Parallel Sessions 4 — page 9</p>
12.30-1.25PM	<p>Lunch — Film ‘Good Cooks’ Venue: AH Conference</p>
1.30-2.55PM	<p>Parallel Sessions 5 — page 10</p>
3.00-3.25PM	<p>Afternoon Tea</p>
3.30-4.30PM	<p>The challenges ahead: A provocations plenary <i>Chairs: Rhiannon Pyburn and Barbara Pamphilon with discussants Jayne Curnow, Cheryl Doss, Katherine Gibson, Naila Kabeer, Kuntala Lahiri-Dutt, Hazel Malapit, Gerard McEvilly, Cynthia McDougall, Sally Moyle, Ranjitha Puskur, Vicki Wilde</i> Venue: AH Conference</p>
4.30PM	<p>Closing session</p>

WEDNESDAY, 3 APRIL 2019: PARALLEL SESSION 1: 11.00AM-12.25PM

Venue: IC Studio	Venue: AH Conference	Venue: IC Flex	Venue: AH Seminar 1	Venue: AH Seminar 2	Venue: IC TEAL
Linkages between Agriculture, Nutrition, and Empowerment <i>Chair: Padmaja Ravula</i>	Land and Gender and Transformation <i>Chair: Cheryl Doss</i>	Transforming Household Gender Dynamics for FNS <i>Chair: Jayne Curnow</i>	Masculinities and Agriculture <i>Chair: Lee Nelson</i>	Gendered Roles and Farm Production <i>Chair: Kuntala Lahiri-Dutt</i>	Gender Integration Approaches: Lessons from the Field <i>Chair: Cynthia McDougall</i>
Do empowered people make healthier food choices?: An experimental analysis of men's and women's food choices among smallholder farming households in Guatemala <i>Diksha Arora</i>	Perceived tenure (in)security in the era of rural transformation: A gender-disaggregated analysis from Mozambique <i>Hosaena Ghebru</i>	What does it take to translate research into practice? <i>Sally Moyle</i>	Comparing empowerment transitions of men and women in rural Bangladesh <i>Audrey Pereira</i>	Young women farmers in Indonesia: at the intersection of gender, generation and class <i>Aprilia Ambarwati</i>	Integrating gender in agrifood systems research: Principles, pitfalls and ways forward <i>Julie Newton</i>
Giving visibility to invisible work: Embedding gendered patterns of work intensity in agriculture-nutrition research <i>Giacomo Zanella</i>	Gender, land transmission, and agrarian change in Cambodia <i>Alice Beban</i>	Learning to work as a farming family team: Farmer responses to a gender-inclusive approach to agriculture extension <i>Gloria Nema</i>	Measuring gender empowerment and its implications for food security in northern Vietnam <i>Christian Genova</i>	Labor scarcity and women's role in agricultural production: Evidence from Bangladesh <i>Berber Kramer</i>	Working innovatively for agricultural productivity enhancement and rural transformation through gender inclusiveness – A case study of Pakistan <i>Munawar Raza Kazmi</i>
Assessing livestock ownership, gendered decision-making and dietary quality among smallholder households in rural Timor-Leste <i>Gianna Bonis-Profumo</i>	Women's tenure security on collective lands: Implications for measurement and policy <i>Ruth Meinzen-Dick</i>	Gendered fields: Changing gender roles in agricultural production and the impacts on food production – evidence from Australia, Laos and Bangladesh <i>Margaret Alston</i>	How does poverty influence women's empowerment? Evidence from Papua New Guinea <i>Katrina Kosec</i>	The gendered pattern of unpaid care work and its implication for women's agricultural opportunities in Uganda <i>Brenda Boonabaana</i>	Lessons and outcomes from integrating gender across agriculture and food security programs in the Global South <i>Jemimah Njuki</i>
Using ethical community engagement to improve agriculture-nutrition links in resource poor communities: Lessons from the field <i>Michaela Cosijn</i>	Re-visiting gender, labour and production relations in Mashonaland Central Province, Zimbabwe <i>Rejoice Chipuriro</i>	Revisiting women empowerment through a cultural lens <i>Sarah De Smet</i>	The role of positive masculinities in improving food security: Examples from men's involvement in maternal and child health programmes in Rural Central Malawi <i>Elizabeth Mkandawire</i>	Deconstruction leisure time and workload: Case of women bean producers in Kenya <i>Eileen Bogweh Nchanji</i>	ROUNDTABLE 1 Don't diss my discipline – Synergising techos and "people" people <i>Gerard McEvilly</i> <i>Munawar Raza Kazmi</i>
Gender based perceptions of food, dietary behavior and practices in tribal regions of Telangana: A qualitative assessment of vulnerable population <i>Padmaja Ravula</i>	Gender, agricultural productivity, rural transformation and livelihoods in the wake of Zimbabwe's Fast Track Land Reform Programme: Experiences of elderly female headed households <i>Ignatius Gutsa</i>				

WEDNESDAY, 3 APRIL 2019: PARALLEL SESSION 2: 2.30-3.25PM

Venue: IC Studio	Venue: AH Conference	Venue: IC Flex	Venue: AH Seminar 1	Venue: AH Seminar 2	Venue: IC TEAL
Measuring Impacts on Nutrition and Empowerment <i>Chair: Agnes Quisumbing</i>	Markets and Labor <i>Chair: Patricia Kristjanson</i>	Gender Transformative Approaches: Strategies and Emerging Evidence <i>Chair: Sally Moyle</i>	Social Norms <i>Chair: Deborah Rubin</i>	Work and Decision-Making <i>Chair: Naila Kabeer</i>	Institutionalizing Gender Integration in Policy and AR4D <i>Chair: Ranjitha Puskur</i>
PANEL 1 Empowerment impacts of agricultural development projects in South Asia <i>Agnes Quisumbing</i> <i>Elizabeth Kirkwood</i> <i>Akhter Ahmed</i> <i>Neha Kumar</i> <i>William Thompson</i>	Developing measures of mobility for gendered studies of agricultural value chains <i>Jessica Heckert</i>	PANEL 2 Gender Transformative Approaches: Strategies and Emerging Evidence <i>Afrina Choudhury</i> <i>Cynthia McDougall</i> <i>Ramona Ridolfi</i> <i>Steven Cole</i>	How do gender norms influence adoption of and benefits from agricultural innovations in rural agricultural communities? Findings from research about barley and livestock in rural Rajasthan <i>Dina Najjar</i>	Woman farm employment, decision-making and sources of irrigation: A study on Upper and Lower Canal Areas of Uttar Pradesh, India <i>Indranil De</i>	Discursive translations of gender mainstreaming norms: The case of agricultural and climate change policies in Uganda <i>Mariola Acosta</i>
	Can Market Systems Interventions work for both men and women? Evidence from Bangladesh <i>Alan de Brauw</i>		Community typology framed by normative climate for agricultural innovation, empowerment, and poverty reduction <i>Lone Bech Badstue</i>	Impact of short-duration male migration on women's workload and autonomy: Evidence from rural India <i>Itishree Pattnaik</i>	Contesting gender: The translation of gender commitments into action in small-scale fisheries governance in the Pacific Islands <i>Sarah Lawless</i>
	Scrutinizing the 'feminization of agriculture' hypothesis: A study on the gendered evolution of labor force participation in agriculture and forestry in Indonesia <i>Kartika Sari Juniwaty</i>		Those who have jobs can travel alone: Norm emergence and opportunities for women's empowerment in agricultural interventions <i>Amanda Wendt</i>	Landscape Restoration in Kenya - Addressing Gender Equality <i>Markus Ihalainen</i> Land restoration and changing gender dynamics in the drylands of eastern Kenya <i>Mary Crossland</i>	Why gender focal person structures are not working in Rwanda and Uganda' national agricultural research organizations <i>Margaret Najjingo Mangheni</i>

WEDNESDAY, 3 APRIL 2019: PARALLEL SESSION 3: 4.00-4.55PM

Venue: IC Studio	Venue: AH Conference	Venue: IC Flex	Venue: AH Seminar 1	Venue: AH Seminar 2	Venue: IC TEAL
Integrating Nutrition and Gender in Agriculture Projects	Understanding Gendered Agricultural Households <i>Chair: Jennifer Twyman</i>	Assessing Impact on Gender Equality and Women's Empowerment <i>Chair: Deborah Hill</i>	Gender and Rural Transformation <i>Chair: Rhiannon Pyburn</i>	Factors Determining Labour Contributions <i>Chair: Kuntala Lahiri-Dutt</i>	Spotlight on Methods and Tools for Gender Integration: What's on the Horizon? <i>Chair: Cynthia McDougall</i>
ROUNDTABLE 2 Nutrition- AND Gender-Sensitive Agricultural Projects: Challenges and Opportunities <i>Neha Kumar Akhter Ahmed Masuma Younus Saiqa Siraj Avijit Choudhury</i>	Intra-household decision-making processes: What the qualitative and quantitative data tell us <i>Juliana Muriel Osorio</i>	PANEL 3 Assessing Impact on Gender Equality and Women's Empowerment <i>Vidya Sachita Reddy Vemireddy Maria del Milagro Nunez-Solis Katja Mikhailovich</i>	Learning from cross-country differences of female work participation in agriculture in the Eastern Gangetic Plain: The micro and macro connections <i>Sucharita Sen</i>	The role of caste in rural development when engaging women in a dairy extension program <i>Sobia Majeed</i>	Using wellbeing concept to measure economic and social impacts: A case study of the seaweed women's groups in Indonesian villages <i>Silva Larson</i>
			Feminization of agriculture through gender dynamics across scales <i>Alessandra Galie</i>	Determinants of gender based wage discrimination of agricultural wage laborer in Bangladesh <i>Wakilur Rahman</i>	Woman in agriculture, and climate risks: Hotspots for development <i>Nitya Chanana</i>
	Opportunities and constraints to youth involvement in small scale fisheries and aquaculture and youth aspirations: A case study of Kyon Ka Dun Village in the Irrawaddy Delta <i>Indika Arulingam</i>		Farms not arms: The role of women farmers in conflict-vulnerable communities in the Philippines <i>Anne Shangrila Fuentes</i>	The role of paid and unpaid labour on sorghum production in North and East Uganda <i>Reachel Gitundu</i>	The hidden mirror: Sexual orientation and gender identities in agriculture <i>Geoffrey O'Keefe</i>
				How can gender equity interventions in Nepal's agrobiodiversity become transformative in the rapidly changing rural livelihoods contexts? <i>Basundhara Bhattarai</i>	

THURSDAY, 4 APRIL 2019: PARALLEL SESSION 4: 11.00AM-12.25PM

Venue: IC Studio	Venue: AH Conference	Venue: IC Flex	Venue: AH Seminar 1	Venue: AH Seminar 2	Venue: IC TEAL
Gender and Nutrition in Vegetable Value Chains <i>Chair: Libby Swanepoel</i>	Gender and Migration <i>Chair: Katrina Kosec</i>	Measuring Impact on Gender Equality and Women's Empowerment <i>Chair: Jo Caffery</i>	Gender and Technologies <i>Chair: Frank Place</i>	Agrarian Change and Gendered Division of Labour <i>Chair: Deepa Joshi</i>	Gender Integration in Value Chains and Market Systems Research: Strategies and Way Forward <i>Chair: Ranjitha Puskur</i>
Gender roles along the sweet potato seed value chains in Southern Ethiopia: Implications for promotion of nutritious orange flesh varieties <i>Birhanu Biazin</i>	The Monster-in-Law Effect: Linking qualitative observations to quantitative analysis on household structure, migration, and empowerment in Nepal <i>Audrey Pereira</i>	Facilitating transformative processes for measuring and promoting gender-behavior change in agriculture programming <i>Maureen Miruka</i>	Understanding the adoption of multiple packages of system of rice intensification in India and its gender implications <i>Poornima Varma</i>	Agrarian change, shifting gender relations and labour arrangements: An ethnographic exploration of the implications on women in agriculture in Punjab, India <i>Sabina Singh</i>	How empowering are agricultural value chains? Evidence from mixed-methods research from the Philippines <i>Catherine Ragasa</i>
Smallholder vegetable production, women's empowerment, and dietary diversity of children and adolescents in northern Vietnam <i>Christian Genova</i>	Rural transformation, empowerment, and agricultural linkages in Nepal <i>Kalyani Raghunathan</i>	Beyond income: A critical analysis of agency measurement in economic programming <i>Minal Cabraal</i>	Gender, intrahousehold seed system management, and technical efficiency <i>Jourdain Lokossou</i>	"I'm not a chocolate farmer, I'm just a housewife": Gendered divisions of labor for small-scale cacao production in Lampung and South-Sulawesi, Indonesia <i>Sarah Eissler</i>	What is possible in women's economic empowerment at the research business interface: The story of innovation in agricultural systems in Indonesia <i>Michaela Cosijn</i>
Gender in nutrition sensitive vegetables value chain for sustainable food system in Bangladesh <i>Mohammad Jahangir Alam</i>	The impacts of male outmigration on intra-household decision-making and agricultural production: The case of Nepal <i>Vanya Slavchevska</i>	Monitoring and evaluation for increased impact – A digital solution for enhancing women's access to agricultural information and extension services <i>Pranati Mohanraj</i>	Role of innovation networks to support the livestock extension systems of Pakistan <i>Hassan Warriach</i>	A descriptive analysis on the gendered distribution of labour and participation in household economic activities in Manipur, India <i>Meghajit Sharma Shijagurumayum</i>	The challenges with interdisciplinary collaboration in gender research: A value-chain study <i>Nozomi Kawarazuka</i>
Empowering women in seaweed utilisation for food: A cross-country peer-led approach <i>Libby Swanepoel</i>	When the 'strong arms' leave the farms <i>Elisabeth Simelton</i>		What influences smallholder adoption of proven agricultural technologies? <i>Silva Larson</i>		Gender inclusion and women's empowerment strategies to accelerate the uptake of innovations in smallholder-based supply chains <i>Rene Villano</i>
	Rural Outmigration-Feminization-Agricultural Production Nexus: Case of Vietnam <i>Eva Salve Bacud</i>		Where will the next generation of farmers go: Exploring gendered and intergenerational experiences of agrarian transformations in Ghana <i>Sofie Mortensen</i>		Is innovation gender neutral? Reflections on the Pili food processing industry of the Philippines <i>Cresilda M. Caning</i>

THURSDAY, 4 APRIL 2019: PARALLEL SESSION 5: 1.30-2.55PM

Venue: IC Studio	Venue: AH Conference	Venue: IC Flex	Venue: AH Seminar 1	Venue: AH Seminar 2	Venue: IC TEAL
Gender and Value Chains <i>Chair: Jemimah Njuki</i>	Empowerment <i>Chair: Agnes Quisumbing</i>	Innovative Practices Supporting Women's Work <i>Chair: Vicki Wilde</i>	Theory to Practice: A Social Norms Approach <i>Chair: Jo Caffery</i>	Agrifood Systems Research -Emerging Gender Integration Areas <i>Chair: Maureen Miruka</i>	Capacity Development for Gender Integration: Insights from Experience <i>Chair: Cynthia McDougall</i>
Understanding empowerment among informal milk traders in Peri-urban Nairobi: Informing an adaptation of the project-level Women's Empowerment in Agriculture Index <i>Emily Myers</i>	Women's empowerment in agriculture: Lessons from qualitative research <i>Ruth Meinzen-Dick</i>	Knowledge is power: Modeling the effect of interactive radio programming on women's empowerment and agricultural transformation in Malawi <i>Catherine Ragasa</i>	PANEL 4 Theory to Practice: A Social Norms Approach <i>Inga Mepham</i> <i>Neil Nuia</i> <i>Hannah Cunneen</i> <i>Cecilia Fonseca</i>	PANEL 5 Nutting out the problem: lens on gender in agro-forestry research for development in Indonesia <i>Samantha Grover</i> <i>Niken Sakuntaladewi</i> <i>Bondan Winarno</i> <i>Sri Lestari</i>	Expanding scope for gender integration and impact: Moving beyond individual empowerment to institutional engagement <i>Kenneth Macharia Mwangi</i>
Commercialization of the OFSP value chain in Mozambique – a gendered perspective <i>Sarah Mayanja</i>	Women farmers' participation in agricultural research processes: Implications for sustaining agriculture and food security in Ethiopia <i>Annet Mulema</i>	Proof of concept for the use of wearable sensors to monitor women and men's workload and mobility in Indonesian agricultural communities <i>Timothy Stewart</i>			ROUNDTABLE 3 True GRIT: Impacts of the Gender Research Integrated Training Program <i>Ann R. Tickamyer</i> <i>Carolyn Sachs</i> <i>Nozomi Kawarazuka</i> <i>Carolina Camacho Villa</i>
Gendered participation in the rice value chain: New insights from Kyela, Tanzania <i>Mesia Ilomo</i>	Who is empowered? An analysis of predictors of empowerment in six countries in Africa and Asia <i>Elena Martinez</i>	Designing options to narrow gender gaps in agricultural value chains using a resilience lens: Evidence from the Tahoua region of Niger <i>Caitlin Nordehn</i>	PANEL 6 Improving the agricultural value chain <i>Adhitya Marendra Kiloes</i> <i>Maligisa James Dotto</i> <i>Janelle Larson</i>	PANEL 7 Gender dynamics in seed systems: Insights and analysis <i>Rhiannon Pyburn</i> <i>Alessandra Galie</i> <i>Ranjitha Puskur</i> <i>Margaret McEwan</i> <i>Esther Njuguna</i> <i>Netsayi Mudege</i>	Gender integration in small-scale fisheries - The challenge of integration at scale <i>Danika Kleiber</i>
Gender dynamics in modern agricultural value chains <i>Aneela Afzal</i>	Empowered Bangladeshi women can make agriculture more resilient to climate change <i>Alessandro De Pinto</i>	When talk is not cheap. Boosting women's agribusinesses through dialogue: Results and lessons from Kenya and Vietnam <i>Leonie Hoijtink</i>			PANEL 8 Effective gender training for agricultural researchers: Lessons learned for best practice <i>Hale Ann Tufan</i> <i>Margaret Mangheni</i> <i>Brenda Boonabaana</i> <i>Michele Mbo'o-Tchouawou</i> <i>Pauline Bommett</i> <i>Franz Wong</i> <i>Ruth Meinzen-Dick</i> <i>Agnes Quisumbing,</i> <i>Hazel Malapit</i>
Gendered challenges of bargaining in agricultural value chains in the Eastern Gangetic Plains <i>Dipika Das</i>	Transforming forest landscapes through gender-responsive investments <i>Patricia Kristjanson</i>				

POSTERS

Anam Afzal	Impact of gender inclusion within a Pakistan based dairy extension program on household nutrition
Diksha Arora	Understanding gender and social inclusive aspects influencing adoption and effects of Climate- Smart Agricultural practices- a methodological development
Edward Bikketi	Analysing the gender yield gap in sorghum productivity; Evidence from smallholder farmers in drylands of Uganda
Tania Carolina Camacho Villa	Gendered perspectives and changing roles in the break of the intergenerational heritage and transmission of agricultural-based livelihoods, knowledge and genetic resources in rural Mexico
Laura Coady	Where does the field end? Defining and mapping the agricultural lives of women for the Invisible Farmer Project (Australia)
Kristie Drucza	The gendering of Ethiopia's agriculture policies
Sarah Eissler	Gender and sustainable intensification: the case of wild gardens in northwest Cambodia
Emily Gibson	Role of fish in diets and nutrition of women and under 5's in coastal communities of eastern Indonesia
Zinat Hasiba	Not recognizing women actors in aquaculture: Does the private sector lose business?
Tuti Herawati	Which household play gender equity; A case from peatland-based community in Riau province Indonesia
Humera Iqbal	The role of women for sustainable future through leadership and communication skills development across the world
Francois Iradukunda	Understanding gender roles and practices in innovation processes: A case study of Banana Xanthomonas Wilt (BXW) disease management in Burundi
Juan Gonzalo Jaramillo Mejia	The leading role of indigenous rural women putting food on the table in subsistence agricultural farms in rural Mexico: the decisive role of social protection and the changing role of men?
Jeromy Kavi	Transforming Papua New Guinea's rural households through the family farm team approach
Gina Koczberski	Twenty years of economic empowerment for smallholder women in Papua New Guinea. A case study from West New Britain
Meab Mdimi	Improving women's livelihoods and health: How value chain analysis can enhance both women's equality and vegetables' contribution to nutrition
Htun Myint	Improving understanding of gender roles in goat and sheep production in Myanmar
Losira Nasirumbi Sanya	Elucidating why gender matters for breeding: The case of cooking banana varieties in Uganda
Eileen Bogweh Nchanji	Commodity corridor approach: Facilitating gender integration in development research at different scales in Africa
Huong Thu Nguyen	Seeds of change and rays of hope in the Philippines and Vietnam: Towards gender mainstreaming in agricultural diversification in a cross Southeast Asian perspective
Lydia O'Meara	Factors influencing dietary diversity of smallholder Farming Families in Rural Fiji
Maria Ogunnaike	Influence of gender empowerment on nutritional outcomes of pre-school children of rural farm households in Southern Nigeria
Joshua Okonya	Intra-household gender differences in decision-making and responsibilities for pest and disease management in sweet potato (Uganda)
Hellen Opie	Gender differentiation of farmers' knowledge, trait preference and its impacts on sorghum and millets seed systems of Uganda
Alexandra Peralta	The role of male and female social networks on cocoa production in Vanuatu
Fatema Sarker	Gender inclusiveness in urban agriculture: Potentialities and challenges of mushroom cultivation
Jessica Scott	Productivity and the promise of integrated rice-fish systems: How gender will shape the success or failure of this rural transformation in Myanmar
Daniel Sumner	Gender-responsive Integrated Pest Management (IPM) approaches in Vietnam: Lessons learned and insights to promote and strengthen gender integration
Sajida Taj	Analyzing gender social networks and collaboration in rural Punjab, Pakistan
Chheat Tom	Karuna Battambang target group: Small landholder farmers (Cambodia)
Jennifer Twyman	Gender equity considerations in food systems for healthier diets

Abstracts: papers

Acosta, Mariola : mariola.acosta@wur.nl with van Wessel, M.; Ampaire, E.; Jassogne, L.; and Feindt, P. *Discursive translations of gender mainstreaming norms: the case of agricultural and climate change policies in Uganda*. While the international norm on gender mainstreaming, UN-backed since 1995, has been widely adopted in national policies, gender inequalities are rarely systematically addressed on the ground. To explain this limited effectiveness, this paper takes a discourse analytical perspective on gender policy and budgeting, with a focus on the translation of the international norm into domestic norms and policies. An in-depth, inductive analysis of 107 policy documents in Uganda examines how the gender mainstreaming norm has been translated at three administrative levels: national, district, sub-county. The analysis finds that during the process of drafting national and sub-national documents, certain gender discourses were either neglected or completely ignored (neglecting gender discourse), gender discourses at sub-national level remained static (gender inertia), prescriptions remained at a very generic level (shrinking gender norms), and gender mainstreaming exercises co-existed with certain contradictory normative cultural understandings (embracing discursive hybridity). Finally, the lack of relevant budgets indicated that gender mainstreaming largely stopped at the discursive level and did not extend to meaningful policy instruments (minimizing budgets). Our findings suggest that the formulation of a global strategy will likely not suffice in dealing with highly localized and context specific gender dynamics, and in dealing with structurally embedded gender inequalities. In this way, the assumption that international gender norms could significantly affect local patriarchal contexts needs to be reassessed. While the institutionalization of gender mainstreaming might be helpful for gaining legitimacy and public awareness on the matter, other strategies will likely need to be in place for its success.

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Gender dynamics in modern agricultural value chains. Creating Shared Value (CSV) is amongst the most debated contemporary business models. This model suggests that as the produce moves across different steps so should the value generated by it. In Pakistani Agricultural landscape, two players namely British American Tobacco (BAT) and Nestle have followed CSV. We studied the farming households working with both of these companies to ascertain their social and gender development claims. A random sample of fifty female farmers was chosen for each company. Though both companies could significantly improve their business indicators they appeared to differ strikingly in their social and gender indicators. Nestle led the social indicators distantly followed by BAT. Such comparison enabled us to assess factors that shape success in gender and social development in conjunction with profitability. We concluded that gender development doesn't happen as a fallout of better economic situation of the farmers. Gender Development has to be actively pursued. Nestle targeted gender development because females play a critical role in dairy and livestock management. However BAT never actively sought gender development because women play less important role in tobacco growing. Secondly, we concluded that female managed farms surpassed performance of their male managed counterparts. However we must bear in mind that in both the cases respective companies were actively assisting these female farmers in procuring their raw materials and selling their produce. Thirdly, whenever CSV enhanced farm household income, there came an equitable, not necessarily an equal, distribution of this increased wealth across all family members including women and children.

Alam, Mohammad Jahangir alambau2003@yahoo.com or mjahangir.alam@bau.edu.bd with Choudhury, Dipok K., and Ratna, Nazmun N.

Gender in nutrition sensitive vegetables value chain for sustainable food system in Bangladesh. Small farmers in South Asia face various barriers to achieve nutritional security. In this paper we focus how integration to Fruit & Vegetable (F&V) value chain by technological intervention can help female farmers in Bangladesh to have nutritional improvement and dietary diversity. F&V value chain remains inefficient in rural Bangladesh because of fragmented value chains, numerous actors in the value chain, inadequate infrastructure in terms of transportation and storage facilities and social barriers and taboos immensely important for female farmers. Besides, that higher retail price, less accessibility to the markets and lack of awareness regarding nutritional benefits more particularly by women putting additional pressure to achieve the nutritional outcomes. Our preliminary survey indicates that farmers are interested to participate in the 'LOOP' aggregation service introduced by 'Digital Green' (an international NGO) under which farmers sell their vegetables and access markets through village level aggregators. By using an android app for transaction entry and SMS receipts, this intervention not only ensures reduced explicit and implicit costs, and increased profits, and consequently increases material wellbeing of farmers. We apply the conceptual framework of Women Empowerment in Agriculture Index (WEAI) and investigates how, and to what extent LOOP ensures nutritional improvement for households with female LOOP farmers by employing system dynamics modelling approach.

Alston, Margaret. Margaret.alston@newcastle.edu.au

Gendered fields: Changing gender roles in agricultural production and the impacts on food production – evidence from Australia, Laos and Bangladesh. Gendered labour roles in agriculture have been changing as women increase their physical labour contribution and participation in agricultural production. These changes are a result of a number of significant factors including particularly the uncertain production resulting from

climate changes and environmental disasters, the consequent economic uncertainty and the social adjustments required within families to ensure income viability. Yet despite evidence from across the region that women play an increasingly significant role in agriculture and that food security is dependent on complex gendered relations, agriculture continues to be framed by industry leaders and media representations as a male-dominated activity. This in turn is facilitated by land ownership and inheritance practices being largely controlled by men and by policies and media representations that overlook women's contributions. Yet it is increasingly evident that food security is threatened by a lack of acknowledgement of the increasing significance of women and by a failure to address the need for policy support and training for women. I present evidence from three studies – these were undertaken in the Murray-Darling Basin of Australia, in Laos and in Bangladesh. Each of these studies reveal not only the dominance of family-based production but also the changing gender dynamics in labour allocation including both on farm / agricultural unit and in the sourcing of off-farm remittance income. Drawing on these studies, I outline rapidly developing trends and the actions that are necessary to address both the invisibility of women and global food security.

Ambarwati, Aprilia apriliambarwati@gmail.com with Chazali, Charina; Wijaya, Hanny; and White, Ben *Young women farmers in Indonesia : At the intersection of class, generation and gender*. Using case studies drawn from a larger study *Becoming a young farmer: young peoples pathways into farming in four countries*, this paper explores the experiences of young women farmers in five villages in Central Java/Yogyakarta and Flores, Indonesia. After a brief overview of young women and farming in Indonesia, and the five research villages, the main part of the paper focuses on the diversities and similarities of young women's pathways into farming, taking a life-course perspective (including histories of out-migration prior to farming), and their engagement with intersecting structures of gender, generation and class in matters of access to resources, pluriactivity and recognition as farmers. The last part of the paper reflects on the insights gained and their broader implications for gender equality in future agri-food systems.

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Do empowered people make healthier food choices?: An experimental analysis of men's and women's food choices among smallholder farming households in Guatemala. For Guatemalan smallholder farming households who are producing as well as consuming units, this paper evaluates the choices that men and women make between different food items using a choice experiment methodology. Additionally, the survey includes WEAI module, household diet diversity and farm production module. We focus solely on couple households in order to understand the links between intra-household dynamics and food choices. The experiment, first, provides nutritional information of various food items to the respondents, and then, asks the participants to report their choices from a list of food items, which includes a wide variety of locally produced goods as well as locally sold food items, for three different levels of hypothetical incomes. As the income increases, individuals select more food items or increase the quantities of already selected items. We employ the WHO nutrient profiling model to convert food choices into food scores for healthy and unhealthy items. Using the experiment and survey data, we analyze the links between food choices, and men's and women's empowerment indicators and the gender gap in empowerment, controlling for socio-economic characteristics of the household and the individuals. In order to conduct an intra-household analysis of food choices, we include the responses of the man, the woman and the couple together in a multiple multivariate regression. The results help to understand the factors influencing food choices of men and women, which will help inform policy targeting nutrition and health.

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Opportunities and constraints to youth involvement in aquaculture and youth aspirations: A case study of Kyon Ka Dun village in the Irrawaddy Delta. Despite emerging interest in the involvement of youth in agriculture, there exists limited knowledge with regard to the fisheries sector. We present the results of a CGIAR Research Program study in 8 countries across Africa and Asia-Pacific, examining existing knowledge on the opportunities and challenges to youth involvement in aquaculture and small-scale fisheries, and the preliminary results of a subsequent study in the Ayeyarwady Delta, Myanmar. The first study, based on a literature review and key informant interviews, confirms the scarcity of knowledge on youth involvement in fisheries as well as in the broader agriculture sector. We find that young people face significant challenges including challenges of access compounded by gerontocratic socio-cultural systems, associations with low social status and interactions with ecosystems of declining productivity. We also find that understanding youth aspirations is an important first step in looking at youth engagement with fisheries (and the broader agricultural sector). The ongoing study in Kyonkadun Village (Ayeyarwady Delta) explores this by looking at how the aspirations and livelihood strategies of paddy-farming, fishing and other households intersect with the personal aspirations and circumstances of youth to create different outcomes for different youth. We find that youth aspirations and outcomes, including migration, are mediated by many interacting factors including gender, age, educational attainment, the type of farming the household engages in, socioeconomic status and social and cultural norms.

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Rural Outmigration-Feminization-Agricultural Production Nexus: Case of Vietnam. Although migration has recognizable impacts on poverty alleviation and welfare improvement especially among poor farming-dependent households, there is little understanding about its implications for farm production and members staying behind, particularly women farmers. Remittances through migration could support diversification of farm production. It could also result in a shift to less labour-intensive crops due to lower labour availability. This paper attempts to uncover implications of labour migration patterns for farm diversification, gendered division of labour, and women's agency. This is based on a survey of 578 rice farming households in North, Central, and South Vietnam. The findings suggest that migrant households have more diversified production where they grow two or more crops in addition to rice. This appeared to be more apparent in households with international migration where 60% of them are growing rice along with short-term industrial crops and perennial fruit crops. Meanwhile, farm-related investments for rice production including purchase of fertilizers and pesticides declined with migration.

While men's labour participation decreases in migrant households, women's labour increases in majority of production stages. Only few migrant households (5%) hire additional labour implying that migration, even with the receipt of remittances, fails to compensate for lost labour. Women's engagement in salaried work also declines, while their unpaid work increases. The study also finds increasing feminization of farm management among migrant households.

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Community typology framed by normative climate for agricultural innovation, empowerment, and poverty reduction. This paper employs the concepts of gender norms and agency to advance understanding of inclusive agricultural innovation processes and their contributions to empowerment and poverty reduction at the village level. We present a community typology informed by normative influences on how people assess conditions and trends for village women and men to make important decisions (or to exercise agency) and for local households to escape poverty. The typology is comprised of three village types - transforming, climbing and churning - with each type depicting a different normative climate and trajectory of change in agency and poverty levels. Across "transforming" villages with significant increases in people's agency and poverty reduction, we found a highly inclusive normative climate that is fuelling gender equality and agricultural innovation, as well as infrastructural improvements, expanded markets, and male labour migration. The research, part of the GENNOVATE initiative, includes a qualitative comparative methodology and dataset of 79 village cases from 17 countries.

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Gender, land transmission, family relations and agrarian change in Cambodia.

In contexts where state social service provision is absent, land inheritance is a key way in which young rural people gain stability and wealth, and older people secure care through providing land to children who look after them. In Cambodia, the state is absent in the everyday practices of social service provision in rural upland areas, and informal moral economies guiding land inheritance vary widely within and between communities. But as Cambodia's agrarian landscape radically alters with the influx of agribusiness companies, migrant farmers and commercial boom crops, the state is increasingly present as the mediator of global capital, and the state is present on paper with the development of social security laws and policy. In this paper, we analyse the paradoxical absent presence of the state in rural Cambodia. We focus on the ways rapid socio-political forces are transforming rural communities and contributing to land scarcity and the devaluing of agricultural livelihoods. This throws into question social norms guiding inheritance practices, and can exacerbate gender and age inequalities in contexts where matrilineal and bilateral inheritance norms have previously provided some agency for women. Based on a large sample of semi-directive qualitative interviews carried out in the Cambodian provinces of Kampong Thom, Kratie and Ratanakiri with both indigenous and Khmer communities by members of the DEMETER (gender, land and the right to food) research team in 2015 and 2016, this paper seeks to make visible the changing role of intra-familial land rights against a backdrop of rural transformation.

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How can gender equity interventions in Nepal's agrobiodiversity become transformative in the rapidly changing rural livelihoods contexts? Despite notable policy reforms on gender inclusive development, gender inequality persists in agrobiodiversity management in Nepal. In this paper, I present an in-depth case study to demonstrate how the persistence of gender-based inequality in agrobiodiversity management has, or is likely to have, impacted the local institutional capacity to respond to increased incidence of drought and changing attitudes towards farming that leads to abandonment of some agricultural crops. Informed by feminist political ecology and social ecological systems concepts related to resilience and transformation, this paper analyses the narratives of men and women farmers from a farming village in Kaski district in Nepal, together with insights from government and non-government service providers engaged in agrobiodiversity management and rural livelihoods. This paper argues against three common assumption that guide current policy and practice of gender equality interventions in agrobiodiversity management: that improving women's access to scientific

knowledge on the management of agrobiodiversity may not necessarily lead to positive gender equity outcomes; that critical mass approach may not be an effective solution to gender equity unless it mobilizes women's voice genuinely; that community focused approach to agrobiodiversity management actually narrows down the conceptual understanding of gender equity and misses out the scale dimension. I further argue for a need to go beyond the current approaches which consider gender relations in silo and as local level issue, and instead as a holistic approach to agrobiodiversity that engages key agents of gender transformative change across multiple levels.

Biazin, Birhanu, B.temesgen@cgiar.org with Mudege, N.; McEwan, M.; Brouwer, R.; and Low, J. *Gender roles along the sweetpotato seed value chains in Southern Ethiopia: Implications for promotion of nutritious orange flesh varieties*. Ethiopia is one of top producers and suppliers of sweetpotato in Africa. However there is little knowledge about the gender roles and challenges along the seed value chains. This study was undertaken to fill this gap by examining the gender roles and challenges in two study districts, Dilla Zuria and Aleta Chuk, in Southern Ethiopia. A combination of qualitative and quantitative research methods was used. (16 sex disaggregated focus group discussions with an average of 8 participants each, 136 farm households structured questionnaire). Therefore, the involvements of men and women family members along the different activities of seed production and marketing could be rated under both men and women-headed households. The data were analyzed using gender relations approach as an analytical lens. The Statistical Software for Social Sciences was used to conduct descriptive statistics and mean separations. Both men and women FGD participants agreed that sweetpotato is one of the five main crops in terms of area coverage in both study sites. In terms of use as household food, sweetpotato was ranked as the fourth important crop in Aleta Chuko and the fifth in Dilla Zuria, respectively. Women in men-headed households have significantly ($\alpha < 0.05$) higher involvements in application of organic fertilizers on the farms, collection of sweetpotato vines for livestock feed and small volume marketing of vines in village markets at both study sites. However, the roles of men in men-headed households were significantly higher than women in land preparations, weeding/hoeing and farm gate marketing of sweetpotato vines in large volumes. All the retailers of sweetpotato vines at both village and district markets were women either because men were less skillful at retailing or men are embarrassed to do sweetpotato retailing. Despite the significant roles of women in men-headed households in sweetpotato seed production and marketing, their access to extension and training was significantly ($\alpha < 0.001$) lower than men at both study sites. This was mainly because men are seen as smallholder owners or farmers and women as helpers. The fact that men focused on income and women on food and the better access to extension by men implied gender inequalities and restrictions in the opportunities for women to engage with government bodies and better income opportunities at the same level as men. In order to achieve successful upgrading of the newly introduced orange-flesh sweetpotato value chains, gender transformative approaches are needed to ensure that women equally participate in extension services and trainings, large volume marketing and related entrepreneurial opportunities.

Bonis-Profumo, Gianna gianna.bonis-profumo@cdu.edu.au with Stacey, Natasha; and Brimblecombe, Julie *Assessing livestock husbandry, gendered decision-making and dietary quality among smallholder households in rural Timor-Leste*. In Timor-Leste, the majority of rural populations are semi-subsistence farmers who raise livestock, yet diets consistently lack protein and child malnutrition is high. This longitudinal mixed-methods study aimed to examine gender relations, particularly women's agency, related to livestock husbandry, their sale, and animal-source food (ASF) consumption among smallholder households in Timor-Leste. Data collected in two districts over a 12 month period included seasonal livestock herd size, and an adapted Abbreviated Women's Empowerment in Agriculture Index administered to mothers and male adults in dual-headed households (n=282). Semi-structured interviews (n=30) explored social norms around the intra-household distribution of ASF. Seasonal child and maternal dietary diversity and ASF intake quantified their dietary quality. Most women and men considered livestock as household assets and made decisions jointly. Compared to other productive activities, raising livestock displayed the highest self-efficacy for women. Mothers had more autonomy to sell eggs and chickens than pigs or buffalo. Despite women frequently reported as the sole decision-makers for small ASF purchases, the qualitative results suggest a greater disparity in control over household resources than indicated by the quantitative data. No differences in ASF allocation according to gender were identified, while eggs were often prioritised to children. Seasonality influenced ASF intake and less than a quarter of mothers and children 6-23 months old achieved dietary diversity adequacy. Women display stronger agency in small livestock management despite unequal bargaining power informed by traditional gender norms. Findings suggest that programs focusing on poultry have potential to support women's empowerment and dietary quality outcomes.

Boonabaana, Brenda boonabrenda@yahoo.com with Musiimenta, Peace; Ahikire, Josephine; and Najjingo-Mangheni, Margaret *The gendered pattern of unpaid care work and its implication for women's agricultural opportunities in Uganda*. Unpaid care work is a fundamental barrier to poverty reduction, equitable and sustainable communities. This paper interrogates the implication of the gendered pattern of unpaid care work on women's

engagement in, and benefits from agriculture in Uganda. It also documents the social norms that reinforce the burden of unpaid care work. The volume of care work by women and men was assessed using a 24 hour recall of their activities in a typical day. Findings depict a heavy burden of unpaid care work on women as follows: Work that produces products for sale (12 hrs for women; 17 hrs men); paid labour and paid services (9hrs for women; 27hrs men); unpaid care work (32 hours for women; 20 hrs for men); unpaid production of products for home consumption (21hrs for women; 10 hrs for men); unpaid community work (4.3hrs for women; 0.6 hrs for men) and non-work time (94hrs for women; 106 hrs for men). The unpaid care burden on women has implications for their engagement in agricultural opportunities and well-being. The paper is part of a bigger study commissioned by Oxfam (Uganda) that drew on the Rapid Care Analysis (RCA) methodology structured around the “Triple R” framework, that proposes recognition, reduction, and redistribution of unpaid care work, informed by a set of 8 exercises (Kidder & Piotti, 2013). The paper will contribute to understanding the relationship between the care economy, gender and agricultural development.

Cabraal, Minal minal.cabraal-MDF@thepalladiumgroup.com with Saif, Samira; and Piracha, Maryam *Beyond income: A critical analysis of agency measurement in economic programming*. This paper presents findings from a recent critical analysis undertaken by the Market Development Facility, into how women’s agency is understood and measured in relation to an increased household income. MDF, an Australian-funded programme, is currently operating in Fiji, Timor-Leste, Papua New Guinea, Sri Lanka and Pakistan. Whilst it is understood that Women’s Economic Empowerment (WEE) is achieved through both agency and access, access has traditionally dominated programs’ efforts, as agency is more difficult to grasp and measure. Agency is multi-dimensional, yet often, simplistic assumptions are made about household income on women’s agency. The paper begins by exploring the effect of increased household income on WEE in the context of complex household dynamics, which showcases how access to economic inputs, information, opportunities or services impact agency. We explore an early conceptual framework that evaluates women’s power to make and act on economic decisions across seven dimensions. The framework is applied to identify the impact of different types of access interventions, using cases and findings from the five MDF countries. These dimensions show that access interventions can impact agency and therefore, overall economic empowerment. It can be powerful to have women at the point of transaction and interventions which focus on women who play supporting roles in economic activity, can also have positive impacts on empowerment. Through the presentation, we hope to explore how this conceptual framework can be developed into a tool to help teams navigate agency better and will encourage participants to share their thoughts and experiences regarding their own approaches.

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Is innovation gender neutral? Reflections on the Pili food processing industry of the Philippines. Innovation is the result of novel combinations created by the entrepreneur. It is acknowledged that the successful operation of organizations in almost all industries is becoming highly dependent on their ability to produce innovations. It was also argued that the presence of females in top management improves managerial task performance leading to better firm performance. In this study, I used the OSLO Innovation Measurement Framework to analyze the business practices of Pili processors and determine if gender plays a factor in embedding innovation in the organization. This framework specifies four types of innovation, namely: product, process, marketing, and organizational innovation. Results showed that, being in a mature industry, the entrepreneurs are implementing more of marketing and organizational innovation strategies. They are active in establishing linkage and networks with government agencies as a strategy to generate new product ideas and market channels. Product strategies meant looking for new products ideas while marketing innovation practices are evident in their continuous search for new sales channels, continuing effort to find new ways to promote their goods, and use of branding and packaging as a differentiation strategy. Organizational innovation practices are evident in the participatory leadership culture within the business. Further, the entrepreneurs are establishing relationships with other businesses and government agencies. Findings showed that such efforts greatly contributed to the sustainability of their businesses.

Chanana, Nitya n.chanana@cgiar.org with Aggarwal, Pramod; and Khatri-Chhetri, Arun

Woman in agriculture, and climate risks: Hotspots for development. There is rising interest among research and development practitioners to arrive at impact driven solutions in the field of gender and climate change adaptation. Gender integration in climate change adaptation interventions can be better targeted by being linked with type of climatic risks experienced by women farmers, their social profile and their needs based on the role they play in agriculture. This study presents a GIS based methodology to identify hotspots where climate change adaptation and gender based interventions, focussed on women, could be prioritized. The methodology is illustrated for India. ‘Hotspots’ are defined in the study as regions with high concentrations of women farmers impacted by a high degree of climatic risk, including drought, extreme rainfall and heat waves. The results suggest 36 hotspots across 10 states in India, where large number of women farmers are impacted by high levels of climatic risks. The target population in these hotspots comprise 14.4% of the total women farmers in the country. A socioeconomic characterization of the hotspot population highlights barriers, such as labor, credit and market access for female cultivators and lower wage rates for female labourers in these hotspots. Based on

the constraints as well as the climatic risks faced by these women in the hotspots, the potential of climate-smart agriculture technologies and practices is emphasized (including an example of Betul, one of the hotspot districts). Additionally, a comparison of past research with the results of the study highlights the potential to learn from those efforts for efficient scalability of gender and climate change adaptation interventions.

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Re-visiting gender, labour and production relations in Mashonaland Central Province, Zimbabwe. Labour and production is steeped in the historicity of gender and power relations. Localised labour and production relations reflect and are reflected in the larger political and economic macrocosm. As these macrocosms are not rigid, but fluid, so are the labour and production relations. This paper examines how the labour and production relations evolved in rural areas by situating its gaze on the gendered labor and production relations in Mashonaland Central Province of Zimbabwe. It traces the history of labour and production relations, influenced by the economic, political and social power relations in Zimbabwe. Traditionally men and women shared different but complimentary roles bastardised at the onset of the colonial project when gender relations were impacted by the accompanying capitalist mode of production. Labour became paid for men and unpaid for women who remained in the rural areas. In this paper, I describe how this trend has been upset in Zimbabwe under the current land reform program, including how gender, labour and production relations are being contested as suddenly, some black women farmers now own land and control production. The paper draws from the experiences of 22 elderly women farmers in Mashonaland Central Province who participated in the land reform. It demonstrates how these women navigated the gendered land issues, to exercise their own agency and engage in agriculture in their different capacities. African women farmers are not a homogenous group, they consist women whose daily struggles are shaped by their socio cultural and economic positions and varied land interests.

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Using ethical community engagement to improve agriculture-nutrition links in resource poor communities: Lessons from the field. Current NSA guidance highlights the various constraints and assumptions which influence improved nutrition outcomes. The factors that mediate these pathways are multifaceted, interrelated and often require cross-sectoral cooperation. They are also in many ways governed by the wider use of contemporary agricultural development approaches which rarely afford sufficient consideration of the inequities that serve to exclude and further marginalise intended beneficiaries. A multilateral project funded by the Australian Centre for International Agriculture Research has acknowledged these barriers to participation and inclusion and is trialling an ethical community engagement (ECE) approach to development interventions. ECE challenges the fundamental structure of how development projects are pursued, allowing for community-driven, inclusive, and more equitable participation and decision-making for programs aiming to improve the lives of the poor. Promoting Socially Inclusive and Sustainable Agriculture Intensification in West Bengal and Bangladesh (SIAGI) has been in a unique position to explore how current international guidance on NSA plays out in very resource poor, traditionally marginalised communities, where food insecurity is very high. In the course of working this way, the SIAGI team have encountered multiple challenges in applying currently available international guidance on NSA and has documented our learnings. This paper shares our experiences in applying an ECE approach when considering agriculture-nutrition links with a view to improving the health and nutrition environment in resource poor communities.

Cosijn, Michaela michaela.cosijn@csiro.au with Astrina, Ajeng Ayu; Thei, Ruth Stella; Rosmiliwati; Roesmanto, Joko; and Noviryani, Mely

What is possible in women's economic empowerment at the research business interface: The story of innovation in agricultural systems in Indonesia. The Commonwealth Scientific and Industrial Research Organisation, the Department of Foreign Affairs and Trade and the Government of Indonesia have been working for 4 years to increase farm incomes of 10,000 smallholder farmers in eastern Indonesia in the Applied Research and Innovation Systems in Agriculture Project. Working across 6 agricultural commodities, some where women were already highly engaged (maize, shallots and cassava) to those traditionally dominated by men (sugar, beef and dairy), the project has sought to strengthen linkages between research institutes and private sector companies. The project focused on innovation in market systems so that they are more favourable for both male and female smallholder farmers, with women's economic empowerment being the strategy to increasing gender equality. Using a gender lens throughout the project, there have been both unexpected successes, especially in the male dominated livestock sectors and some less successful interventions, such as sugar. It is clear that there are now other opportunities emerging, such as in the post-harvest for women which have been untapped. This paper shares what has been possible: our experiences and lessons learnt in applying women's economic approaches across the 6 value chains in East Java, Madura, Lombok and Sumbawa, and how women's lives have changed through the project, as well as researcher and private sector ways of working. It also looks at the challenges of the research environment and business environments and what needs to happen in the future for women's involvement to be truly meaningful.

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Land restoration and changing gender dynamics in the drylands of eastern Kenya. With unprecedented global commitment to land restoration, it is critical to understand the implications of different restoration technologies on men and women's time and labour, so as to meet their needs, address constraints and ensure that the benefits of restoration outweigh the costs. In the drylands of eastern Kenya, a high proportion of men seek off-farm employment to diversify their livelihoods, often leaving women to take on increasing responsibility for managing both home and farm. These changing household demographics have potential implications on access to resources such as extension services and labour, as well as control over farming decisions and thus, consequently, the uptake and success of land restoration practices. This mix-methods study involving over 1800 farmers provides insights into the implications of two on-farm land restoration technologies (planting basins and tree planting) on men and women's time, labour and access to resources, amid male out-migration. Our findings suggest both conflictual and collaborative aspects of gender relations may influence labour allocation and decision-making power within the household, and men and women may re-negotiate these relations according to changes in their bargaining power and external factors like agricultural extension and policy.

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Gendered challenges of bargaining in agricultural value chains in the Eastern Gangetic Plains

In South Asia, the Eastern Gangetic Plain (EGP) region portrays extreme poverty and climatic stress with deeply entrenched socio-economic inequalities amongst class, caste, ethnic group and tenancy types. The region also shows increased males' migration in search of better employment in foreign countries. There is rise in de-facto and de-jure women headed households, with more women making decisions in farming. Women are facing empowerment opportunities however, are also exposed to gendered vulnerabilities. While agricultural commercialisation has increased market possibilities for smallholders, women farmers often face difficulties to make more profit, access markets, receive appropriate prices for products and meet delivery needs. The value creation of their products is linked with bargaining power as better bargaining leads to greater benefit. The aim of this study is to understand the complex dynamics of bargaining power of smallholder women farmers in agricultural value chain. It explores how gender norms constraint or facilitate the women smallholder farmers bargaining process to participate in different elements of agricultural value chain of Eastern Gangetic Plain. The study was implemented in four villages of the Eastern Gangetic Plains (60 interviews and 4 focus groups discussions from the sites). *Findings:* Women smallholders often display low levels of bargaining power due to a lack of productive resources, low literacy and numeracy knowledge that is worsen by unequal gender norms. While intersectionality among women smallholder farmers is noted some gendered challenges, they faced are access to information on price and markets, mobility, household task and size of family. Despite the effort smallholder women farmers are putting on fields the major chunk of benefit from agricultural yield is made by traders in the agricultural value chain. The ability to bargain as a producer is vital to achieve adequate benefits and better livelihoods, particularly for the women farmers who are new to selling their products to the commercial markets.

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Woman farm employment, decision-making and sources of irrigation: A study on upper and lower canal areas of Uttar Pradesh, India. Based on two related surveys conducted in Upper Ganga Canal Area (UCA) and Lower Ganga Canal Area (LCA) in north India, this paper tries to understand empowerment & decision making amongst women in two regions of Uttar Pradesh (UP) state brought about by different configurations of irrigation. The primary source of irrigation in UCA is canal and supplementary source is groundwater. The primary source in LCA is groundwater and supplementary source is canal. Overall, average farm wage rate of women is higher in LCA than UCA. In general, canal irrigation does not benefit women with respect to opportunities to take decisions. Chances of taking decisions increase when women are heads of households, more so in LCA as compared to UCA. The study observes that predominant source of irrigation does not benefit women in terms of employment but the supplementary sources do. Female workforce participation falls as more months of canal irrigation is available in UCA and a higher percentage of farmers avail groundwater irrigation in LCA. More months of canal irrigation in LCA and more farmers using groundwater irrigation in UCA improves female employment. Additional water resource with same coverage has positive impact on female. A higher number of months of more quantity of canal irrigation water in UCA impacts female employment positively but negatively in LCA. The higher the agriculture is driven by market forces such as input market of water, the more the women stand benefitted with respect to employment, land leasing, decision making ability and wage rate.

De Brauw, Alan a.debrauw@cgiar.org with Rubin, D.; Myers, E.; Kramer, B.; Murphy, M.; and Saiful, I. *Can market systems interventions work for both men and women? Evidence from Bangladesh.* The market systems approach is becoming a more common approach to agricultural interventions in developing countries. The approach generally involves a donor giving grants and support to specific firms ("lead" firms) within value chains to help them overcome what are otherwise endemic trust and quality control issues that hinder production. In this paper, we use results of a mixed methods impact evaluation on the jute value chain,

associated with the Bangladesh Agricultural Value Chain (AVC) project to highlight how market systems interventions must be carefully designed not to neglect gender issues. The quantitative component of the evaluation collected the project level Women's Empowerment in Agriculture (pro-WEAI) to measure whether the randomized intervention components affect women's empowerment. We find that the AVC interventions in the jute value chain were not gender sensitive, in conflict with their mandate; not surprisingly, we find no major quantitative impacts on women's empowerment. Therefore, we use the qualitative results therefore better illuminate the barriers to and opportunities for men's and women's participation in the jute value chain. The qualitative results include a local perspective of women's empowerment, building upon perspectives among respondents on women's mobility, education, decision-making, group membership, and the importance of respect as a social value. The results therefore explore ways that the market systems interventions could generally be made more gender sensitive, given that the qualitative work ensured there are ways to find opportunities to engage women in the jute value chain that remain locally viewed as respectable.

De Pinto, Alessandro a.depinto@cgiar.org with Seymour, Greg; Bryan, Elizabeth; and Bhandari, Prapti *Empowered Bangladeshi women can make agriculture more resilient to climate change*. Literature shows how climate change will likely affect several of the dimensions that determine people's food security status from direct availability of food products to their accessibility. Crop diversification represents a farm-level response that reduces exposure to climate-related risks, a method to cope with the changing climate and a way to enhance the resilience of farming systems. Crop diversification has also been shown in some instances to contribute to increased diet diversity, reduction of micronutrient deficiencies and malnutrition. In fact, the Bangladeshi government has enacted initiatives such as the Crop Diversification Programme to encourage and support agricultural diversification. At the same time, existing literature indicates that women empowerment enhances technical efficiency and increases women's agricultural productivity and women empowerment is linked to diversified diets and positively associated with better child nutrition outcomes. In this study we "close the loop" in the literature and analyse the role that women empowerment plays in crop diversification. Specifically, we use a series of econometric techniques to evaluate whether there is sufficient evidence to claim that a higher level of empowerment lead to greater diversity in the allocation of farmland to agricultural crops. Our results reveal that indeed some aspects of women empowerment, but not all, lead to forms of diversification in production, to a more diversified use of farmland, and to a transition for cereal production to other uses. These findings provide some clear pathways for interventions that can offset the negative impact of climate change.

De Smet, Sarah desmetsarah7@gmail.com and Boros, Smaranda *Revisiting women empowerment through a cultural lens*. Women empowerment is defined by Kabeer as a process by which disempowered women acquire the ability to make strategic life choices. Internalized cultural subordination by the disempowered ones however might reflect choices which stem from and serve to reinforce women's subordinate status. Therefore, some external influence is often needed for change to occur. For institutions that facilitate this change process however, it is important to not impose their own cultural values or assumptions about empowerment. Using the Van Tulder model, we offer a critical analysis of how implicit assumptions and values on the side of facilitators impacted a participatory intervention for empowering women in agriculture in Ethiopia. The argumentation is built around the cultural value of power distance, as defined by Hofstede (1980). We discuss how differences in power distance between the facilitator and local community affected an empowerment methodology at the level of assumptions, approach, intended and actual results. We reflect on how such empowerment methodologies, aimed at shifting power structures towards gender equality in high power distance cultures like Ethiopia, need to tailor their approach taking into account the difference in cultural values, from the very definition and operationalization of gender empowerment to sampling of participants and methods of facilitation and evaluation of results.

Eissler, Sarah Sarah.e.eissler@gmail.com *"I'm not a chocolate farmer, I'm just a housewife": Gendered divisions of labor for small-scale cacao production in Lampung and South-Sulawesi, Indonesia*. In small-scale cocoa producing households, women's labor contributions are essential to the sustainable supply of quality and demanded cocoa production. Yet, women's work is often overlooked, unrecognized, or reduced as it is in the form of unpaid labor or care tasks. Much of the current literature is contextualized to West Africa, the leading global producing region of cacao. None has yet to examine the gender dynamics of small-scale cacao production in Indonesia, the third largest global producer of cacao. In this study, results are presented from an exploratory mixed-method case study across two provinces in Indonesia to determine the roles of men and women in small-scale cocoa production. Quantitative data on divisions of labor was assessed from a random sample of 221 small-scale cacao producers. Qualitative data was assessed from 11 focus group discussions with 117 small-scale cacao producers, and 65 in-depth interviews. Results indicate that women are actively involved in small-scale cocoa production in Indonesia, however to varying degrees. Women's participation is greatly influenced by socio-cultural norms and hindered by lack of access to training, skill building, or resources. Climate change has tangible impacts on both men and women's activities in the cocoa value chain, requiring various adaptation strategies that have implication for production. With impacts of anthropogenic climate change continuing to increase in frequency

and severity, it is essential to address women's participation in the Indonesian cocoa value chain to increase capacity, skills, and empowerment.

Fuentes, Anne Shangrila asyfuentes@gmail.com and Johnson, Mary

Farms not arms: The role of women farmers in conflict-vulnerable communities in the Philippines. This paper features the narratives of Filipina women (farmers and leaders) who are transforming their rural communities through strengthened social networks, increased levels of trust and resourceful livelihood initiatives. For over four decades, the Autonomous Region of Muslim Mindanao has experienced a multi-faceted conflict situation that involves numerous separatist groups, as well as clans, criminal gangs and political elites. The protracted conflict is complex and has resulted in high rates of poverty and displacement

Within this setting a project entitled "Improving the methods and impacts of agricultural extension in conflict areas of Mindanao, Philippines" commenced in late 2013, with an aim to develop and subsequently apply an improved model for agricultural extension in conflict areas of Mindanao. The extension model, known as LIFE (Livelihood Improvement through Facilitated Extension), is based on three broad strategies: (1) improve access to technical innovations, (2) build community social capital, and (3) collaborate closely with local institutional partners. Initial project surveys show that during times of conflict small holder farmers were prevented from moving freely, cut off from their markets, and isolated from networking opportunities with other farmers, government and non-government support services and information providers. However, later studies reveal that conflict-related and economic constraints resulted in a gender role transformation. Women assume community and group organisation, income generation, decision making and leadership roles that are traditionally performed by men. Women develop their self-confidence, falgis (striving for their dreams) and have more agnafat (hope) for the future.

Galiè, Alessandra a.galie@cgiar.org with Pfeifer, Catherine; and Oloo, Stephen

Feminization of agriculture through gender dynamics across scales. Feminization of agriculture is a phenomenon observed in many countries, particularly in the developing world, where women's participation in the agricultural sector increases relative to men (who are increasingly involved in non-agricultural activities). Feminization of agriculture is rooted in gender dynamics at intra-household level where gendered social structures influence individuals' opportunities (e.g. availability of on or off farm work), choices (e.g. accepting an off-farm job while hiring labour to look after the children) and ability to act (e.g. having the freedom or mindset to take up available opportunities and acts on choices made). However, gender dynamics are predominantly studied at intra-household and sometimes at community level; little is understood about how intra-household gender dynamics influence phenomena at the higher scales (e.g. landscape, national, regional or global) such as feminization of agriculture. Studying what gender dynamics affect the feminization of agriculture and how, can also help appreciate what causes the phenomenon and how it may change the agricultural landscape in the future. The project behind this paper aims to develop a methodology to examine how intra-household gender-dynamics scale to community, landscape, regional and national levels — and influence the feminization of agriculture observed in the East Africa region with a focus on livestock as an example. The study engages with an interdisciplinary mixed-method approach in developing a conceptual framework on the main determinants of the phenomenon and their correlation across scales.

Genova, Christian II christianll.genova@adelaide.edu.au with Umberger, Wendy; Newman, Suzie; and Peralta, Alexandra

Smallholder vegetable production, women's empowerment, and dietary diversity of children and adolescents in northern Vietnam. Many households in Southeast Asia suffer from low dietary diversity, which is a leading cause of persistent undernutrition. Children and adolescents are especially vulnerable to undernutrition, since they require energy and nutrient-dense food to maximise their full physical and cognitive potential. This paper investigates the determinants of dietary diversity for children aged six months to 17 years from smallholder farming households in Lao Cai Province, Vietnam. Three pathways that link agriculture with household diets and dietary diversity scores: vegetable production diversity, market engagement, and women's empowerment, are considered. Regressions are estimated for the pooled, age- and gender-disaggregated samples using a Poisson Generalised Linear Model to explore associations between individual Dietary Diversity Score (DDS) and variables representing the three pathways, and other covariates. Both measures of market engagement, market access and market participation, are associated with significant improvements in DDS. For preschool girls, increased market access is significantly associated with an increase in DDS by up to two food groups. Household income and the educational attainment of the food preparer are statistically significant covariates associated with improved DDS for children. Improving nutritional knowledge of the main food preparer, promoting market engagement, and implementing interventions targeted at the low-lying and low vegetable density per capita areas may lead to improvements in dietary diversity.

Genova, Christian II christianll.genova@adelaide.edu.au with Umberger, W.; Newman, S.; and Urbano, M. *Measuring gender empowerment and its implications for food security in northern Vietnam.* Gender equality is crucial to achieve household food security. Recent literature suggests that women in Southeast Asia do have access to resources and assets, and some control of income with men, due largely to how family farms are

operated. In Vietnam, many resource-poor rural households operate as a family farming system, wherein farm operation is primarily dependent on family manual and animal labour, and thereby shared amongst men and women. Nonetheless, information about gender equality, including divisions of labour and control of resources, among the ethnic minority communities, many of whom are considered among the most vulnerable groups in the country, remains unexplored. This study investigates the gender equality status of women and men from ethnic minority communities in Lao Cai province, northwest Vietnam, and how it affects their household food security using a cross-sectional data set of 510 households. A modified version of the Abbreviated-Women's Empowerment in Agriculture (A-WEAI) is used to assess the degree to which men and women decision-makers are empowered using five domains: (1) decisions about agricultural production, (2) access to and decision-making power about productive resources, (3) control of use of income, (4) leadership, and (5) time allocation. Household food security is measured using the Household Food Insecurity Access Scale (HFIAS). Understanding gender empowerment and its association on household food security among the ethnic minority communities in northern Vietnam can help the Government of Vietnam formulate policies that are focussed on the dimensions where the gaps in empowerment exist.

Ghebru, Hosaena Hosaena.ghebru@cgiar.org and Girmachew, Fikirte

Perceived tenure (in)security in the era of rural transformation: A gender-disaggregated analysis from Mozambique. This study examines drivers of tenure insecurity in Mozambique using the 2014 National Agricultural Survey and a supplemental survey with detailed gender-disaggregated land tenure data. Perceived risk of land loss and perceived risk of private land dispute are used as proxy indicators for land tenure insecurity. Results reveal, overall, public tenure risk is the real threat to women's tenure security while private tenure risks are more of threat to tenure security of men. However, a gender-disaggregated analysis reveals that public tenure risk is higher among female spouses as compared to male heads within the same household. Results also show that legal literacy has significant positive effect on the likelihood of female respondents' (both as a head and spouse) expressing fear of land loss while the opposite is true for male respondents. Showing the level of social and economic marginalization that disfavors female heads in Mozambique, being indigenous (non-migrant) individual seems to be significantly associated with perceived tenure security of female heads while such indicators seems to matter less for female as a spouse or principal males. Similarly, residing in communities with relative land abundance matters most for principal female. The result is consistent with similar findings from Ghana showing the vulnerability of female heads especially in areas with relative land scarcity given they are most likely to be residual claimants as their ownership and/or control over land is often targeted by in-laws in land constrained areas.

Gitundu, Reachel R.Gitundu@cgiar.org with Higenyi, S.; Njuguna-Mungai, E.; Sebatta, C.; and Opie, H.

The role of paid and unpaid labour on sorghum production in north and east Uganda. Labour is one of the important factors of production. How it enters the production process, its pattern of availability and intensity of use determines production outcomes. This study examined the role of paid and unpaid labour on sorghum and finger millet production in Northern and Eastern Uganda. The data were generated through a household survey of 375 sorghum growing households and 192 finger millet growing households and a series of 48 Focus group discussions. The survey data were cleaned and analysed using Microsoft Excel and STATA while the focus groups were analysed using Atlas ti. The results reveal that in the rural households of Uganda, farmers access/utilize labour in three broad ways; family labour, hired labour and communal shared labour. The divisions of labour are gendered with men and women engaging in labour differently and at different stages (ploughing, weeding, harvesting etc). The results obtained also show that labour is a tradeable good which is rewarded differently in different regions of the country either through the moral economy or through the cash economy. This is where, culturally, farmers in these parts of the country solicit unpaid labour from other farmer relatives and neighbors who are then rewarded with sorghum and millet bread (atapa) and local brew (ajon) at work's end while some farmers utilize paid casual labour in which cash is paid daily at approximately 1.39 dollars per day dependent on number of portions (katara) worked. Besides, we learnt that through the cultural organized labour provisioning strategies mainly communal labour, rural farmers have a platform for germplasm/seed exchange. The study provides insights onto how labour in Northern and Eastern Uganda is organized and recommends that a seed delivery program employs the communal groups as a possible pathway of distributing improved seed varieties as well as an information dissemination channels for farmers within such groups use them as information exchange platforms.

Gutsa, Ignatius gnatsio@gmail.com

Gender, agricultural productivity, rural transformation and livelihoods in the wake of Zimbabwe's Fast Track Land Reform Programme: Experiences of elderly female headed households in Goromonzi district. This paper focuses on gender and agricultural productivity in the context of rural transformation post Zimbabwe's year 2000 Fast Track Land Reform Programme which was supposedly meant to address colonial and post-colonial land ownership imbalances by redistributing land from minority white commercial farmers to historically disadvantaged landless majority indigenous black people. The paper achieves its objectives by adopting a citizen ethnographic approach aided by the use of life histories, participant observation and key informant

interviews to understand the experiences of elderly female headed households engaged in all year vegetable production in Gutsa village in Goromonzi district. Goromonzi like most districts in Zimbabwe went through the Fast Track Land Reform Programme experience. Aided by Long's Actor Oriented theoretical framework the paper argues that before the Fast Track Land Reform Programme villagers in Goromonzi mainly relied on agro-based livelihoods which included all year round vegetable farming using water from rivers, small dams and wells. All year round vegetable farming enabled communal farmers from Goromonzi to be the major suppliers of horticultural produce for nearby horticultural markets. Consequently livelihoods of elderly women household heads dependent on all year vegetable farming are now being affected by the post Fast Track Land Reform Programme transformation of commercial farms in Goromonzi from large grain suppliers to regular vegetable suppliers. This is a result of flooding of the market with vegetables by the newly resettled farmers all year round driving down prices of vegetables thereby affecting livelihoods of vegetable producers in the villages.

Heckert, Jessica J.Heckert@cgiar.org with Myers, Emily Camille; and Malapit, Heather

Developing measures of mobility for gendered studies of agricultural value chains. Freedom of movement is an important aspect of women's empowerment, especially in the context of rural transformation as women attempt to transition from subsistence agriculture into more remunerative roles in agricultural value chains (AVCs). Nevertheless, there remains no agreement on how to measure it in large-scale surveys. We review existing work from two perspectives. First, we review survey-based approaches for measuring women's empowerment. Second, we review existing literature, primarily qualitative studies, that aims to explain the factors that limit and facilitate women's freedom of movement for participation in AVCs and other activities. We found that approaches to measuring freedom of movement fall into location, activity, or permission-based questions. For example, the project-level Women's Empowerment in Agriculture Index asks about the frequency of visiting important locations. The Demographic and Health Surveys ask about women's ability to leave home alone for certain activities. Other surveys ask about seeking permission to leave the home. These approaches do not account for limitations stem from household relationships, social norms, structural factors, security concerns, or a combination thereof. This makes it difficult to design appropriate interventions and measure their impact on freedom of movement. From this synthesis, we develop a conceptual framework. Derived from ecological systems theory, we explain how factors at the household, community, regional, and national levels may limit freedom of movement, including potential interactions between levels. We elaborate this framework for different nodes of AVCs. The findings are discussed in terms of potential survey-based approaches for measuring freedom of movement.

Hoijtink, Leonie lhoijtink@snv.org with Bui Lien, Phuong; Muthoki, Charles; and Brandes, Raymond

When talk is not cheap. Boosting women's agribusinesses through dialogue: Results and lessons from Kenya and Vietnam. How to transform inhibiting social norms to provide women of rural households with opportunities to run viable and sustainable agribusinesses? This is one of the central questions in the Enhancing Opportunities for Women's Enterprises (EOWE) project, operating in Kenya and Vietnam. Implemented by SNV – The Netherlands Development Organisation and funded by the Ministry of Foreign Affairs of The Netherlands (DGIS), EOWE runs from 2016 to 2020. After 2.5 years of implementation, lessons and tangible changes are emerging. The project has three main pillars of work: 1) working with government to implement national equity laws, 2) working with women with a (micro)enterprise to enhance their business skills and 3) working with communities, husbands and wives through behavior change communication to create a “new normal” of gender equitable behavior in households. Results are tracked and triangulated via mix of qualitative and quantitative methodologies, such as change stories from husbands and wives and the a-WEAI methodology developed by IFPRI. Data show some progress towards changing social norms, divisions of labour and decision-making at household level, although not only in ways that were anticipated. At its halfway point, EOWE's activities show that a small-scale, time-intensive and focused approach can achieve some first steps towards more gender-equitable behaviour in households.

Ihalainen, Markus m.ihalainen@cgiar.org

Landscape restoration in Kenya - addressing gender equality. The Bonn Challenge, launched in 2011, aims to bring 350 million hectares of land under restoration by 2030. Towards this end, the Kenyan government has committed to restoring 5.1 million hectares of land by 2030. As the implementation of forest landscape restoration (FLR) initiatives often relies on contributions from local land users, outweighing costs with benefits is often critical in order to achieve the dual objective of enhancing ecological integrity and human well-being, encouraging local participation and ensuring long-term sustainability. However, the gendered distribution of costs and benefits has been poorly understood in restoration policy and practice. This study investigates women and men's participation in and socioeconomic outcomes from four FLR initiatives in Kenya. Through conducting key informant interviews and focus group discussions, the study finds that gender relations significantly influence the distribution of costs and benefits associated with different restoration approaches. In particular, while many restoration activities rely heavily on women's labor, women tend to lack secure access to many long-term benefits. Importantly, we find gendered cost-benefit dynamics to be influenced by the local sociocultural context, the promoted restoration option and the programmatic delivery mechanism. Our findings

hence point to the critical importance of considering context-specific gender relations when designing, implementing and monitoring restoration initiatives. Our findings also problematize conventional, gender-blind cost-benefit assessments, as such assessments risk 1) neglecting gender-biases in the distribution of costs and benefits; and 2) downplaying the importance of gender-responsive programmatic approaches and the delivery of immediate benefits to incentivize and compensate for labor.

Iloimo, Mesia ilomo5@yahoo.com with Bergman-Lodin, Johanna; Rutashobya, Lettice; Pettersson, Katarina; and Ishengoma, Esther

Gendered participation in the rice value chain. New insights from Kyela, Tanzania. This study examines how participation in the rice value chain is gendered. We draw on primary research in Kyela, southern Tanzania, where rice is becoming an important source of both food and income for smallholder farmers. The data stem from 44 interviews and four gender and occupation segregated focus group discussions with farmers and traders carried in 2017 and 2018. We descriptively and qualitatively analyse the data and show that none of the three major value chain nodes – farming, processing and trading – are exclusively occupied by either women or men. In farming, planting and harvesting are equally shared by women and men, while men dominate in land preparation and women in weeding and threshing. Women dominate in drying and processing rice for both consumption and sale. However, the proportion of men in commercial rice processing (45%) is higher than in processing for household consumption (21%). Women also dominate in trading both unprocessed and processed rice. Proportionally, more men trade unprocessed rice (49%) than trading processed rice (20%). The findings of this paper improve our understanding of how the rice value chain in Kyela, is gendered and demonstrate the value of studying gendered divisions of labour in agricultural value chains on task level. We refute the common narrative that women’s involvement in the rice value chain is more or less limited to the farming node, with few women engaging in higher value nodes like processing and trading. Our study can inform research, policy and the design of future agricultural interventions.

Juniwaty, Kartika Sari k.juniwaty@cgiar.org with Ihalainen, Markus; Monterroso, Iliana; and Elias, Marlene *Scrutinizing the 'feminization of agriculture' hypothesis: A study on the gendered evolution of labor force participation in agriculture and forestry in Indonesia.* The steady decline of labor force participation in agriculture over the last decade highlights the importance of effective policies in agricultural development to reach Indonesia’s food self-sufficiency target. Yet, despite employing 30 percent of Indonesia’s total labor force, little is known about the micro-level dynamics of family farming. By utilizing the Indonesian Family Life Survey (IFLS) data, a unique longitudinal data set that captures socio-economic condition of Indonesian households since 1993, this study examines how family farming participation has evolved within the country over the past 20 years. This study finds that households entry and exit farming frequently. Only half of the farming households followed have continued to engage in the agricultural sector throughout the two decades. While a small fraction of farmers in the baseline have exited agriculture entirely, 47% of farming households have exited and re-entered farming at least once during the past 20 years. Similarly, 40% of non-farming households in the baseline have entered farming during the survey period; half of them also exited at least once. Further analysis will aim to explain the entry and exit of small-scale farmers into/out of agriculture by scrutinizing demographic, socio-political and economic changes as well as teasing out intra-household -level gender dynamics in farming using logit and ordered logit panel data regression model.

Kawarazuka, Nozomi n.kawarazuka@cgiar.org and Roberts, E. Robin

The challenges with inter-disciplinary collaboration in gender research: A value-chain study. The importance of integrating gender in agricultural value-chain research is increasingly recognized in the value-chain research community. The actual practice of integrating gender requires inter-disciplinary collaboration among researchers, which is best achieved by gender researchers and other researchers working together to identify collaboration points in each research component. In reality, however, interdisciplinary collaboration is often very difficult due to various reasons such as differences in epistemological belief, lack of trust and communication, time and budget constraints, and varied levels of understanding of gender among researchers within the team. The literature on gender and agricultural value-chains is silent on this issue of collaboration although it is critical to the quality of gender-integrated research. The present study is drawn from the ACIAR-funded gender-integrated agricultural value-chain research in Vietnam in which 10 agricultural research projects were involved. The study begins with describing experiences of what did and did not work both in terms of human interactions, and developing and addressing gender-integrated scientific research questions for various food system contexts. It then explores one example case with a mango value-chain study. We present how gender is integrated in various research components across the mango value-chain study and discuss the opportunities for, and challenges in conducting meaningful gender-integrated studies beyond collecting sex-disaggregated quantitative data. We conclude with some key factors important for achieving inter-disciplinary collaboration from both research and management perspectives.

Kazmi, Munawar Raza Munawar.Kazmi@aciara.gov.au and McEvelly, Gerard

Working innovatively for agricultural productivity enhancement and rural transformation through gender inclusiveness – a case study of Pakistan. Advancement in gender equality and women empowerment are the key

priorities for the Australian Development Assistance as this is fundamental to economic growth and sustainable development. Pakistan is primarily an agro-based economy and women play a major role in the agriculture sector but occupy a subsidiary position in decision making (agency) and direct access to resources. ACIAR through its engagement in Pakistan has been helping local researchers to develop research strategies leading to economic development with prime focus on gender inclusion. Gender has always been a strategic area of intervention for all donors as well for development workers, but impact has been very limited. Therefore ACIAR has taken a different course, requiring a major change in attitudes and approaches by biophysical researchers – in the past, studies of the position of women would have been undertaken separately by “gender specialists. Now, the goal is to mainstream Gender Inclusiveness into (i) research planning; (ii) research teams; and (iii) partner institutions. Projects are working towards this ambitious goal individually and collectively, using an adaptive learning strategy facilitated by ACIAR Pakistan. The strategy is based on a review of past work to understand the socio-cultural factors of women involvement in income generating activities. This identified key topics and associated literature within the broad overlapping perspectives of Policy, the Implementation environment and Practice, with a separate focus on the Rural Perspective. This paper describes the process used to move from theory to practice, the progress to date, how this is measured and the scale of the future challenges ACIAR Pakistan strives to improve gender engagement opportunities through agriculture research and development projects.

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Gender integration in small-scale fisheries - the challenge of integration at scale. Globally, gender has begun to be recognized as a key dimension in understanding and governing small-scale fisheries. However, there is still a fundamental challenge of capacity for gender integration within small-scale fisheries research and governing institutions. More specific identification and categorization of barriers to gender integration and prioritized pathways for effective change are needed. Drawing on a global review I will highlight some of the key issues related to gender and small-scale fisheries, then focus on the process of developing indicators that can effectively measure changes in capacity repeatedly over time. The preliminary diagnosis already underway in the Pacific by Lawless and Mangubhai offers an opportunity to develop an assessment tool grounded in the local governance context. We will also draw on the gender and institutions literature along with the expertise of international small-scale fisheries academics and practitioners to make indicators that can be adapted for and applied to contexts outside of the Pacific. This paper adds to a larger body of work examining, evaluating, and addressing capacity gaps for gender integration in small-scale fisheries research and development in the Pacific region and beyond.

Kosec, Katrina k.kosec@cgiar.org with Mo, Cecilia; Schmidt, Emily; and Song, Jie

How do perceptions of relative poverty influence women's empowerment? Evidence from Papua New Guinea. How does a person's perception of how poor they are compared to others influence the extent to which they espouse egalitarian gender attitudes, and support women's economic advancement and empowerment with respect to intra-household decision-making and participation in civic life? We explore this question by leveraging an experiment conducted with female and male adults in 900 households in Papua New Guinea. We employ an established survey treatment to subtly alter a respondent's perception of their relative well-being. Specifically, respondents were asked one of two household income questions, such that half of respondents were primed to feel relatively poor and the other half were primed to feel neutrally or positively about their household's income. A growing literature shows that individuals' psychological states can be changed by subtle interventions (e.g., a social protection program). Those who feel relatively poor may have negative outlooks and invest less in the future. If individuals who feel relatively poor are also less likely to support women's advancement and/or empowerment, this an additional cost of poverty and inequality. We find that those who feel relatively poor are significantly more likely to support women attending school and engaging in paid employment, which suggests that relative economic insecurity can actually prompt support for women's economic advancement. However, this support is not accompanied by greater support for women's bargaining power within the household or their involvement in civic life. In other words, increased support for women's economic participation appears to stem mainly from a desire to raise household income.

Kramer, Berber b.kramer@cgiar.org with De Brauw, Alan and Murphy, Mike

Labor scarcity and women's role in agricultural production: Evidence from Bangladesh. Increasing rates of migration are reducing the availability of household labor in rural areas. Labor scarcity can pose a major challenge to smallholder farmers in developing countries but can also create opportunities for more equitable empowerment through increased participation in agricultural value chains. This paper hence analyzes the relationship between labor availability, women's role in agriculture and empowerment within the jute value chain in the Southern Delta region of Bangladesh. The analysis employs rich panel data for a sample of 1,500 households from 50 villages collected over three survey rounds between 2016 and 2018, including a Women's Empowerment in Agriculture Index. We find low rates of women's empowerment, driven by limited group membership, a lack of mobility and a high workload. Women tended to participate mainly in post-harvesting tasks, not in production or marketing. Labor shortages did not empower women in these other tasks: households

reporting a reduction in the availability of labor between survey rounds do not use more female household labor for production or marketing, and although hiring more female labor, increasing labor scarcity is associated with an increase in the gender wage gap. Also a jute value chains intervention, randomized at the village level, did not affect women's empowerment or participation in jute production. Evidence from qualitative interviews suggests that opportunities for women within jute production and marketing remains limited because of the strict gender differentiation of tasks, even in a context of increasing labor scarcity.

Kristjanson, Patricia patriciakristjanson@gmail.com with Bah, T.; Kuriakose, A.; Shakirova, M.; Segura, G.; Granat, M.; and Seigmann, K.

Transforming forest landscapes through gender-responsive investments. Investments in forest landscapes and agroforestry will be critical in efforts to address climate change and rural poverty challenges in many countries. While it is the people living in and around forests that will make the efforts needed to transform them into more sustainable systems from both environmental and livelihoods perspectives, women and men in local communities typically receive very little technical or financial support to do so. This is particularly the case for women. The challenges to integrating gender equality actions and investments should be seriously considered and specific steps taken to address the challenges and enable successful implementation. Two overarching arguments exist for why. First and foremost is a rights-based argument – these investments and efforts should not maintain gender inequalities but work toward advancing gender equality as all people have the right to fair and equal treatment. There is also a strong case to be made that by ignoring gender considerations, many opportunities are missed and investments simply are not as effective and efficient as they potentially could be by being gender-responsive rather than gender-blind or neutral. Thus, issues arising due to gender inequalities should be seen as potential opportunities to address systemic barriers to enhance both forest landscape initiatives and gender equality, resulting in transformation change on both fronts. This paper explores these opportunities and provides such guidance. This paper reviews key gender gaps identified in relation to forest landscape projects and programs in the literature. It examines what gender inequalities exist, and the gender considerations or actions being taken to address these gaps in many countries through a review of a wide range of projects and forest sector investments in different regions supported by the World Bank and partners. Lessons are drawn regarding future gender-transformative forest landscape investments that will contribute to and catalyze results on multiple sustainable development goals.

Larson, Silva Silva.larson@gmail.com with Stoeckl, Natalie; Fachri, Mardiana; Dalvi, Mustafa; Rimmer, Mike; Swanepoel, Libby; and Paul, Nicholas

Using Wellbeing concept to measure economic and social impacts: A case study of the seaweed women's groups in Indonesian villages. The Government of Indonesia provides financial and other support to rural women to operate seafood production and processing groups. Of 186 groups registered in South Sulawesi, 33 process seaweed exclusively, 69 both seaweed and fish, and the remaining 84 fish exclusively. We present use of novel Wellbeing-based method for Impact Evaluation (W-IE), a 'wellbeing game' and a questionnaire, which we used to collect face-to-face data from 74 women from 17 groups in 9 seaweed farming and processing villages. We used this approach to explore and measure perceived economic and social impacts of seaweed farming, processing and group membership, as well as women's satisfaction with the financial and non-financial benefits. Our findings highlight that the crucially important motivational factors, and the perceived positive impacts of seaweed farming, processing and group membership, are not only financial in nature but include those that affect wellbeing more broadly. Several important aspects of the new W-IE method will be discussed: its ability to capture the wider holistic bundle of wellbeing factors using the same metric; going beyond dollar denominated indicators of income to include human and social development; importance of capturing perceptions of beneficiaries themselves (thus allowing capture of negative impacts of interventions such as overburdening and capture of unexpected/unforeseen impacts); and importance of capturing final impacts (i.e. improved housing) rather than indicators of improved income (thus acknowledging that income can be used to both the benefit and detriment of families and in particular women in the households).

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What influences smallholder adoption of proven agricultural technologies? This is an important question for international agricultural research projects. Several research activities informed our understanding of the opportunities, barriers and constraints faced by smallholder farmers in southern Laos. Subsequently, Collective Behaviour Elicitation (CBE) interactive workshops were conducted with smallholder farmers. These gaming sessions aimed to elicit specific behaviours that prevent or facilitate adoption of introduced agricultural technologies. The game was developed from project data and from consultation with various experts. This was necessary to make scenarios presented to farmers as realistic as possible. As games were played through successive seasons the production 'pinch points' where farmers make 'go/no-go' decisions regarding uptake of technologies were identified. As such, CBE activities uncovered tacit and explicit beliefs, decisions and actions indicating the bottlenecks and barriers to technology diffusion. CBE gaming activities were conducted with 79 participants representing farmers, traders and extension workers and were played in men's and women's groups.

Findings indicated that the average productivity outcomes for women's teams were higher than for men's teams (i.e. women had more successful outcomes). Further findings from a gender perspective will be discussed during presentation, in the context of not only the implications of differing decision making behaviours on agricultural futures and productivity in Lao PDR; but rather as the wider implications for developing future market systems and the issue of labour availability in countries where rural regions are undergoing rapid transformational change from subsistence production toward engaging in the market economy.

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Contesting gender: The translation of gender commitments into action in small-scale fisheries in the Pacific Islands. The prevalence of commitments to address gender inequality in small-scale fisheries governance are unprecedented. These commitment are reflected in the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries, where gender equality features as a fundamental guiding principle. Gender commitments are also increasingly prioritized in regional and national fisheries policies. Yet, in regions such as the Pacific, more progress is needed to translate these commitments into action. Using empirical data from three Pacific Island countries (Fiji, Solomon Islands, and Vanuatu), we explore the factors influencing how gender commitments are actioned in small-scale fisheries. Specifically, we examine how fisheries governance actors respond to gender equality as a governance principle. We analyse interviews with >70 governance actors from >30 international, regional and nation organisations and find in most cases gender as a principle is either resisted, rhetorically adopted, or contested. At the regional scale, gender is often pursued by small-scale fisheries governors as a means to increase their organisational legitimacy. In contrast, at the national scale, we find willingness to consider gender is high, but the capacity of national-scale fisheries actors to do so is limited. Gender as a construct is also widely debated and interpretations vary considerably. We conclude that contestation of this principle presents an opportunity for governance actors to negotiate context specific meanings around gender leading to more tangible actions and outcomes. This study intersects with research by Mangubhai who explores capacity gaps around gender integration, and work by Kleiber who is developing applicable indicators for measuring gender capacity in small-scale fisheries governance.

Lokossou, Jourdain j.lokossou@cgiar.org with Kapran, Issoufou; Yila, Jummai; and Affognon, Hippolyte *Gender, intrahousehold seed system management, and technical efficiency.* During the last decades, gender-sensitive projects were designed and implemented with the goal of reducing gender gap and improving smallholder farmers' livelihood. An extensive literature has provided gender-differentiated evidence of technology adoption, inputs use, and productivity in agriculture. However, little is known about the intra-household gender responsibility in variety choice and seed source and how they affect technical efficiency. This paper contributes to filling this by using 3436 plot-level data collected in 2018 and distributed as follow: sorghum plots (37%), millet plots (24%) and groundnut plots (39%). Stochastic production frontier model is used to estimate the technical efficiency based on plots indicated as male-managed, female-managed in male-headed households, female-managed in female-headed households and jointly managed. Except for female-managed plots in female-headed households, variety choice and seed source decisions are exclusively made by the head of household (male) for the production of sorghum and millet which are staple foods in the study zone. For groundnut production, variety choice and seed source decisions are made by the plot manager and is mainly based on the primary production objective (consumption or sale). Regardless of the crop, the variety used is mainly local (81%), farmers saved seed (77%), and variety choice and seed source are strongly correlated with the technical efficiency. In addition, groundnut female-managed production in female-headed households is more efficient than their counterpart in male-headed households. Findings suggest that gender responsibility in variety choice and seed source depend on the type of the crop. Moreover, variety choice and seed source affect differently technical efficiency of female plots.

Macharia, Kenneth k.macharia@cgiar.org with Mulei, Leonard; Taye, Hailemichael; Mbo'o-Tchouawou, Michèle; Nkwake, Apollo M; and Mentz, Melody

Expanding scope for gender integration and impact: Moving beyond individual empowerment to institutional engagement Although both men and women make substantial contributions to food production and utilization, there is still very limited capacity to address gender inequalities in many African organizational structures. Lack of effective strategy for building the capacity of institutions for enhancing gender integration is the critical challenge. Traditionally, capacity building interventions have mainly focused on individuals with the assumption that their capacity will be translated into institutional levels changes. Some of these interventions intend to increase the number of women scientists and/or by empowering individuals who integrate gender into agricultural R&D. Given the paradoxical position of women in African agricultural sector, gender integration cannot be treated as an "add-on" agenda. Hence capacity building need to strengthen institutions to systematically mainstream gender in agricultural research processes. This can be achieved by engaging institution's management and stakeholders with an adequate strategy to review internal policies, practices and management frameworks to be gender responsive. A mix of both individual and institutional capacity building approaches should be encouraged towards effective institutional transformation. This paper reflects on strategies employed by AWARD- a longstanding capacity development program to strengthen African agricultural R&D

institutions in gender integration. The program used both individual and institutional approaches. The study found out that individual level capacity building is necessary but not sufficient for individuals to contribute to institutional level changes. Rather, capacity building interventions should focus on institutions with clear strategy, careful planning and involvement of all key stakeholders and institutional champions.

Majeed, Sobia Majeed_sobia@yahoo.com with Hayat, K.; Iqbal, H.; Afzal, A.; Warriach, H. M.; McGill, D. M.; and Gomersall, K.

The role of caste in rural development when engaging women in dairy extension program The objective of study was to investigate the role of caste in villages when trying to engage women to participate in a dairy extension program. A gendered lens of human resources, agency and attitudes was used to assess women's access to information and the agency to participate in extension activities. The data was collected from registered, non-registered and traditional farmers through semi-structured interviews in one village in Punjab and one in Sindh (7 from each farmer group, total n=42). The study found that there was only one caste represented in Sindh village and women had good mobility within the community; whereas in the Punjab village there were different castes which restricted mobility and limited visits to the other castes in the same village. Registered women with good mobility found more opportunities to access the information about livestock production and hence were more involved in on-farm decisions regarding adoption of extension recommendations. The result indicated that the registered households tended to belong to the same cast and were more involved in livestock activities, hence the program was more pertinent to their farming practice. Reasons for women not participating in the program were domestic work load, a lack of interest in dairy farming and awareness in Sindh whilst in Punjab it was generally due to a lack of permission from the household head and limited mobility. The study concludes that caste structure and social norms impact the mobility of women and hence need to be considered when designing extension activities.

Martinez, Elena e.martinez@cgiar.org with Seymour, Greg; Malapit, Hazel; Meinzen-Dick, Ruth; Pereira, Audrey; Quisumbing, Agnes; and Rubin, Deborah

Who is empowered? An analysis of predictors of empowerment in five countries in Africa and Asia. Naila Kabeer conceptualizes empowerment as a process of change across three interrelated dimensions: resources, agency, and achievements. Resources are the human, social, and material resources that enhance one's ability to make choices; agency is the ability to make decisions in one's best interest; and achievements are improvements in one's life such as better health and nutrition. In this paper, we examine the relationship between resources and agency in the agricultural sector. What causes a woman or man to lack the agency to make life decisions? Is lack of agency due to intrahousehold gender inequality or inadequate access to resources? We use data from population-based Feed the Future surveys in Bangladesh, Cambodia, Ghana, Mozambique, and Nepal to assess associations between women's and men's agency and individual- and household-level characteristics. Agency is measured using individual-level indicators derived from the Women's Empowerment in Agriculture Index (WEAI), including overall empowerment status and 10 component indicators of agency (input in productive decisions, autonomy in production, ownership of assets, rights over assets, access to and decisions on credit, control over use of income, group membership, speaking in public, workload, and leisure). Individual characteristics include age, literacy, and marital status; household characteristics include ethnicity, wealth, hunger, size, composition, and location. We use fractional logistic regression to estimate associations between empowerment score and individual and household characteristics, and logistic regression to estimate likelihood of adequacy in each component indicator. To our knowledge, this is the first cross-country analysis of predictors of women's and men's agency.

Mayanja, Sarah s.mayanja@cgiar.org with Mudege, N. Netsayi; Kwikiriza, Norman; and Munda, Eliah *Commercialization of the OFSP value chain in Mozambique - a gendered perspective.* Traditionally, sweetpotato is a woman's crop grown for food in Mozambique. With the introduction of Vitamin A rich varieties, efforts were made to commercialize the crop. This study sought to assess the effects of commercialization on women actors in the chain. Single-sex Focus Group Discussion, individual interviews and structured questionnaires were used with 184 respondents comprising 143 producers (120F, 123M), one male processor and 41 traders (21F, 20M). Data from the midline survey were analysed specifically targeting gender indicators. Findings indicate that though women devoted more land to sweetpotato, men got higher yields, sold more and attained better prices. Nonetheless, women dominated the roots chain and made deeper foray in remunerable markets. The more lucrative sweetpotato vine chain was dominated by men (75% men), which is commendable for women given the resources and skills required to engage in vine businesses. Women perceived increased ability to make production decisions, though no change in resource ownership. Women and men noted a subtle change in norms. Men for example perceived that their ability to make decisions had reduced, while more women took leadership positions. This change could be attributed to the power brokerage role played by project implementors who encouraged men to allow their spouses engage in commercial activities. Whilst women faced challenges related to literacy, market entry and access to resources, they welcomed the experience obtained in their entrepreneurial tryst. Future commercialization initiatives should

consider business services, stronger farmer-processor linkages and protracted strategies to sensitize men about benefits of women in business.

Meinzen-Dick, Ruth r.meinzen-dick@cgiar.org with Doss, Cheryl; Flintan, Fiona; Larson, Anne; Monterosso, Iliana; and Knight, Rachael

Women's tenure security on collective lands: Implications for measurement and policy. Most of the growing attention to women's tenure security has focused on individual or household-level land rights, with relatively little attention to women's rights under collective tenure and common property systems, such as forests and rangelands. This paper presents a framework for assessing women's tenure security on collective lands. Key dimensions include the bundles of rights held, duration, robustness, and how rights are shared. Women's security of land rights under collective tenure depends on the extent to which the collective has secure tenure, and the extent to which women's rights are recognized and exercised within the collective. The paper recommends indicators for in-depth research and for monitoring and reporting women's tenure security, and identifies implications for policies and programs to protect or strengthen women's rights to collective resources.

Meinzen-Dick, Ruth r.meinzen-dick@cgiar.org with Rubin, R.; Elias, M.; Mulema, A.; and Myers, A.

Women's Empowerment in Agriculture: Lessons from Qualitative Research. There is growing recognition of the importance of women's empowerment in its own right and for a range of development outcomes, but less understanding of what empowerment means to rural women and men. The challenge of measuring empowerment, particularly across cultures and contexts, is also garnering attention. This presentation will report on qualitative research conducted conjointly with quantitative surveys, from 8 agricultural development projects in 8 countries, to develop a project-level Women's Empowerment in Agriculture Index (pro-WEAI). The qualitative research sought to identify emic meanings of "empowerment", validate the domains and indicators of the quantitative index, provide greater understanding of the context of each project, and test a methodology for integrating quantitative and qualitative methods in assessments of empowerment. Despite challenges in translating the concept of "empowerment" across different cultures, the interviews revealed similarities among perceptions of women's empowerment across contexts – nuances that informed the development of pro-WEAI. Economic status was an important component, meaning that empowered women can take care of themselves, their families, and their communities. Women's empowerment was seen more positively when it was not just an individual attribute, but used to "lift the burden" of others as well. Both men and women reacted negatively to the notion of women having power over others, especially men. Results also showed interconnections between different quantitative indicators of empowerment. Women's workloads and domestic responsibilities may limit their mobility and ability to earn income, two common measures of empowerment. Group membership can be empowering, but time and mobility mediate women's ability to participate in groups. Such findings offer three critical insights. First, they provide projects with guidance on strategies that can contribute to women's empowerment, and allow them to interpret quantitative results of the pro-WEAI. Then, they reveal where conceptions of empowerment among researchers may diverge from those of rural women and men, enabling future development programming and research to be more sensitive to the norms and beliefs shaping rural livelihoods. Finally, they shed light on the importance of qualitative research to provide rich contextual data for assessing empowerment, and a methodology that can be used in this pursuit.

Miruka, Maureen Maureen.Miruka@care.org with Hillenbrand, Emily; and Mohanraj, Pranati

Facilitating transformative processes for measuring and promoting gender-behaviour change in agriculture programming. CARE's approach to improving women's empowerment and gender equality in the agriculture sector aims to challenge underlying social norms in three spheres: building agency, transforming relations and changing structures to address the root causes of gender discrimination. However, understanding change processes at intra-household and community level remains an uphill task for research and development practitioners, in part due to indicator determination and monitoring processes for capturing social change. CARE sought to address this specific challenge by adapting IFPRI's Women Empowerment in Agriculture Index (WEAI) to develop the Women's Empowerment Index (WEI) to capture elements of the 3 spheres for Pathways Women in Agriculture program. The resultant tool was applied at baseline to identify country-specific thresholds providing a quantitative composite empowerment score to highlight constraints across countries and to measure impact at end-line. Additionally, we applied elements of the Outcome Mapping approach (Outcome Challenges and Progress Markers) to define –with communities- five categories of concrete & progressive behavior change indicators for men and women, community leaders as well as those of staff involved in the respective program countries-Malawi, Mali and Ghana. This paper shares the process developing this overall framework for monitoring, evaluation and learning around women in agriculture empowerment; the resultant framework, and makes suggestions on how it may be useful for communities and institutions working around social norm change in the sector and beyond.

Mkandawire, Elizabeth elizabeth.mkandawire@up.ac.za and Hendriks, Sheryl

The role of positive masculinities in improving food security: Examples from men's involvement in maternal and child health programmes in Rural Central Malawi. Many studies purport that in low-income countries, women are typically responsible for producing, preparing and purchasing food. Consequently, policies related to food

and nutrition overemphasise the role of women, underestimating the potential for cooperation and complementarity between men and women. This focus on women often does not account for socially constructed expectations of women that undermine their decision-making. Using desk reviews, in-depth interviews and focus group discussions, our case study of Malawi sought to understand the complementary role of men in maternal and child nutrition. International agreements and Malawi's policies were reviewed to understand how men's involvement emerged on the food and nutrition policy agenda. Men and women were interviewed, sharing their experiences of men's role in maternal and child health. The study found that men's involvement in maternal and child health has been on the development agenda since as early as 1996. The Ministry of Health and NGOs have implemented policy actions and programmes to involve men in these areas. Consequently, men's participation in preparing and procuring food has increased in this community. Participants emphasised cooperation between men and women on issues related to food. The positive change in men's roles offers opportunities for exploring how men and women can work together to improve food security and nutrition. Cross-cutting issues such as gender, food security and nutrition could potentially improve coordination across various sectors, particularly health and agriculture.

Mohanraj, Pranati Pranati.Mohanraj@care.org

Monitoring and evaluation for increased impact – a digital solution for enhancing women's access to agricultural information and extension services. Having access to timely, accurate and complete data is critical for development and humanitarian work in rural contexts and where great distances between stakeholders are an issue. However, generating timely and quality data is a complex endeavor and one that development practitioners continue to struggle with. Having access to geographic data and enabling feedback loops that reduce staff time spent on chasing data are also critical to program efficiency. CARE sought to address this challenge by working to improve monitoring, use and comparison of data, and enabling shorter and quicker feedback loops in its Pathways, Women in Agriculture Program. Using Android phones or tablets and an open-sourced software platform to improve performance tracking of producer groups, CARE developed and tested a mobile data platform for agriculture and food security programming in Tanzania, India, Bangladesh, Malawi and Ghana. This automated data collection system allowed CARE to 1) generate real-time data; 2) deepen and undertake action-oriented analytics; and 3) empower front-line staff and agricultural extension agents to more effectively diagnose specific challenges for tens of thousands women farmers and provide evidence-based advice and support. This paper details how technology for monitoring in agriculture programming contributes to women's empowerment by providing them with the information and knowledge they need to maximize their yields and sell their crops at the highest possible price, enabling them to escape food insecurity.

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Where will the next generation of farmers go? Exploring gendered and intergenerational experiences of agrarian transformations in Ghana Customary land tenure systems are rapidly changing in Ghana's Brong-Ahafo region due to processes of commodification, including domestic and foreign land grabs. The growing emergence of a land market within the customary system has resulted in increasing land values and scarcity, leading to new forms of social differentiation. Based on interviews and focus group discussions with young women and men farmers in the Atebubu-area, the paper finds that young farmers are challenged in securely accessing land and unsatisfied with their situation either due to complete lack of land or because of the size and/or location. This is often disproportionately experienced by young women that due to socially ascribed gender roles are in charge of domestic duties. This both limits their income opportunities and creates time restrictions, preventing them from accessing cheaper land further away. Further, common perceptions viewing men as primary farmers limit women's access to support and knowledge. The processes of commodification, however, are creating a new group of young, landless farmers or young farmers that struggle to move largely beyond subsistence farming. Yet, many of the interviewed farmers see their future to be within farming, some as a primary choice, others as a last resort. Despite these challenges, generational and gendered dynamics of agrarian changes are often overlooked in research, commonly assuming that the youth have lost interest in farming. This paper critically assesses this assumption, arguing that the youth rather than leaving farming behind, are pushed out with potentially large impacts on food security, wellbeing and equality.

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What does it take to translate research into practice? New international initiatives signal strong commitment to agriculture and food security in the face of growing demand and climate-change challenges. With donor budgets under intense pressure, better translations of research into practice makes agricultural development programming more effective – that is evidence informed agricultural practice and policy. The question we need to ask is what does it take to translate this investment in research to improve practice? Evidence informed practice and policy requires not just investing in generating high quality evidence, but also investing in communicating that evidence in accessible formats to end users; identifying pathways for implementation; and partnering with development organisations to develop the capacity of communities to put that evidence into practice. This requires researchers to understand whom their research is seeking to influence and recognise the messy political factors that determine whether research is applied. Too often researchers overlook issues of gender and power in

designing and conducting research. Agricultural practice always comes down to people, so researchers must grapple with all the questions that development practitioners do – who has power to influence whether the research is applied. Who is included/excluded from consideration? Who will likely be implementing the new practice (in a world where women do most of the agricultural labour – this is likely to be women). To influence practice researchers need to understand the complex world of gender norms and to promote gender equality in their work.

Mulema, Annet A.Mulema@cgiar.org with Wellington, J.; Damtew, E.; Mekonnen, K.; and Thorne, P. *Women farmers' participation in the agricultural research process: Implications for agricultural sustainability in Ethiopia*. Empowering women farmers to participate in agricultural research is a key strategy for sustainable agricultural development. Women empowerment has the potential to improve their roles in agricultural production while enhancing nutrition and food security. Although new agricultural development policies focus on improving women engagement in agriculture, there is limited literature on women empowerment in agricultural research. This study used mixed methods to analyse women farmers' participation in four stages of the agricultural research process - design, testing, dissemination, monitoring and evaluation. 230 individual interviews with women farmers and 16 focus group discussions with men and women farmers were conducted in four districts of Ethiopia. Quantitative data were analysed using binary and multivariate probit models. Qualitative data were analysed using line-by-line coding. The results showed that several empowerment indicator variables significantly ($P \leq 0.001$) influenced women's participation in different stages of agricultural research. Specifically, input in production decisions, autonomy in plot management, membership to farmer groups, and ability to speak in public enhanced women's participation in different stages, in addition to access to information and extension services, education and land size. Cultural norms hindered women's empowerment and engagement in research. To foster sustainable agriculture development, it's important to integrate holistic and proactive gender perspectives into research strategies to increase women's participation in farmer research groups, access information and knowledge, have voice and challenge constraining cultural norms and traditions.

Muriel, Juliana j.muriel@cgiar.org with Twyman, Jennifer; and Arora, Diksha *Intra-household decision-making processes: What the qualitative and quantitative data tell us*. Gender roles in household decision-making, particularly decisions related to agricultural activities, have become central aspects of gender inclusion in many agricultural research and development projects. Furthermore, it is important to collect data from women as well as men in order to ensure their voices and perspectives are heard and understood. For these reasons, gender researchers are promoting intra-household agricultural surveys to collect sex-disaggregated data. In this study, we use quantitative and qualitative methods to explore intra-household decision-making patterns in two sites in Latin America: Tuma La Dalia, Nicaragua, and Cauca, Colombia. Quantitative analyses suggest that in the majority of households, men alone make agricultural decisions, followed by joint-decision-making households and households with disagreements in decision-making roles. When there are disagreements men tend to report that they alone make agricultural decisions while women tend to report joint decision-making. Initial results from the qualitative research also suggest varying patterns of agricultural decision-making. In some cases, it concurs with the patterns identified in the quantitative data, other times we find a contrasting pattern: men used some agricultural decisions as examples of joint decisions while women used them as examples of individual male decisions. We examine the quantitative and qualitative data to explore household typologies based on men's and women's responses to decision-making questions and who owns assets. Then analyze how they relate to various development outcomes. In this paper, we present the construction of these typologies as well as their relationships with other gender indicators, poverty/well-being indicators and adoption of CSA practices.

Myers, Emily e.c.myers@cgiar.org with Heckert, J.; Galiè, A.; Njiru, N.; Kakota, T.; and Alonso, S. *Understanding empowerment among traders in the informal milk sector in peri-urban Nairobi: Informing an adaptation of the project-level women's empowerment in agriculture index*. Developing measures of empowerment is critical for monitoring progress toward gender equality and women's empowerment. We used formative qualitative research to understand empowerment among traders in the informal milk sector in peri-urban Nairobi and adapt the project-level Women's Empowerment in Agriculture Index (pro-WEAI). We conducted 6 single-sex focus group discussions, 48 in-depth individual interviews, 4 key informant interviews with current and former milk traders. Interviews were translated, transcribed, and thematically coded using deductive and inductive codes. Emic perceptions of empowerment among milk trader emphasized business success and supporting families and communities. Gender-specific markers of empowerment often aligned with traditional gender norms. Only low-value assets are needed to enter the sector, though a lack of large assets limits business growth, especially for women. Obtaining government licenses is sometimes challenging, and licenses help vendors maintain control over assets as authorities may seize them when vendors are found selling without a license. Small-scale credit is common, but access to large-scale credit is difficult to obtain for women, limiting the growth of women's milk businesses. Business and household incomes are maintained separately, which helps women maintain control of their income. Married women (compared to single women) face more difficulty maintaining control of their income. Participation in savings and credit groups is common and

facilitates acquisition of low-value assets. Membership in dairy trader groups, however, is uncommon especially among women, and low involvement in these groups may limit traders' potential for collective action. We discuss how we use these findings to adapt the pro-WEAI.

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How do gender norms influence adoption of and benefits from agricultural innovations in rural agricultural communities? Findings from research about barley and livestock in rural Rajasthan, India. We conducted a study in three agricultural communities in dry rural Rajasthan, India, with differing economic and gender norms dynamics to gain a more nuanced understanding of how the adoption of and benefits from atypical agricultural innovations, barley and livestock, are affected by gender, class and age. Findings reveal that female seclusion through Purdah and empowerment are not mutually exclusive. Women simultaneously navigated both quite well, as evidenced by the compromise many women found of selling milk from their homes. Despite women being able to make modest gains through changes in gender norms mainly due to external influence and an increase in women's education, property ownership remains a constraint for women and so does political participation. Even though a higher share of benefits from innovations accrue to wealthier and more powerful groups in rural communities, other less privileged groups (such as women and lower-income groups) also eventually benefitted from barley and livestock innovations. In fact, our research suggests that the relationship between higher and lower income groups in rural communities do not always have to be antagonistic and oppressive. Finally, we found that wheat subsidization policy is a key impediment to the adoption of barley. Barley would enjoy as much success as wheat did if it also received some subsidization and other broad-based support from government. To reduce poverty, governments may be well-advised to support barley farmers the way it has supported wheat farmers since barley appears to have wider uptake among poorer groups.

Najjingo Mangheni, Margaret mnmangheni@gmail.com with Musiimenta, Peace; Boonabaana, Brenda; Richard, Miiro; and Tufan, Hale

Beyond the good intentions: Why gender focal person structures are not working in Rwanda and Uganda's national agricultural research organizations. While gender focal person structures (GFPs) have been widely adopted by national and international agricultural research organizations to support integration of gender in research, many are struggling, and others have been phased out. An understanding of underlying factors explaining their limited success would inform strategies for institutionalizing gender. This paper traces the genesis and operationalization of the gender focal person structures in Rwanda and Uganda's national agricultural research organizations to unearth factors influencing their performance. We draw on gender and institutional theory to explain how the national and organizational institutional contexts shape and influence the performance of the gender structures. The paper uses document reviews and mixed methods data collected in 2016 from scientists, managers, and gender focal persons in the two organizations. We conclude that the ineffective performance of the GFPs in both organizations is explained by the approach used to establish; operationalise and nurture them within the organizations. GFPs hinged on personalities as opposed to institutional structures. They operated in an ad hoc manner without streamlined procedures. They were not embedded in the institutional framework of the organizations. Consequently, they had low visibility within the organizations, were largely informal, driven by voluntarism with unclear terms of reference and accountability frameworks. Sustainability would require that the individual passionate pioneering champions and donors successfully negotiate the embedding of the GFPs into mainstream organization structures with attendant financial and human resources supported from national organizational budgets. Credible evidence to demonstrate the value added is important in making a case for institutionalizing the GFPs.

Nchanji, Eileen Bogweh e.nchanji@cgiar.org and Mutua, Mercy

Deconstruction leisure time and workload: Case of women bean producers in Kenya The notion of leisure became pronounced more than 20 years ago when women who worked on or out of the farm came home to a "second shift" which entailed domestic work and childrearing. This gap continues today not only between men and women but also amongst women and men. Many of the challenges that women face in terms of their leisure arise out of, or are shaped by, life contexts. The Women's Empowerment in Agriculture Index (WEAI) complemented with in-depth interviews and focus group discussions were carried out in five counties in Kenya in 2017. We were interested in assessing the existing leisure gap which needs to be closed for women to reach the same empowerment level as men using a feminist approach from a relational, intersectional and discursive conceptual frame. Results show that 28% of disempowerment (5DE) in women farmers is as a result of lack of time for leisure activities and 18% from being overworked. This means that the time indicator accounts for 46% of disempowerment in Kenyan women bean farmers. Men spend more time than women in leisure activities; while women spend more time in domestic work and cooking. Therefore, work overload is a constraining factor to women empowerment in bean production and agricultural productivity. What is considered leisure for men and women are embedded in the social fabrics. This paper will highlight instances where leisure provides a way for women or men to embody and/or resist the discourses of gender roles in the bean value chain.

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Learning to work as a family farm team: Farmer responses to gender-inclusive approach to agriculture extension. This paper outlines major findings from the ‘family-based approaches’ research project conducted in East New Britain and the Highlands of PNG, as a combined partnership between the University of Canberra and CARE International in PNG. The University of Canberra’s Family Farms Teams and CARE’s Model Farming Families both work through the family unit to support couples to engage in more gender-equitable and inclusive planning and decision-making, and hence more effective sustainable farming practices. The research project applied a qualitative approach and used focus groups with men, women and youth, supplemented by one-to-one interviews, photo documentation through farm visits and piloted the ‘Ripple Effect Mapping’ tool in PNG. The research focused on understanding which approaches and methods within the two ‘family-based approaches’ enabled women to negotiate more equitable farm and family roles and looked for any ripple effect through farmer-to-farmer learning in the local community. The paper will focus on the findings of the research including how family-based approaches can support gender equality and the economic empowerment of women in rural farming communities in PNG. It will also discuss implications of this research for the design of future agricultural extension that seek to engage both men and women in improved and gender-equitable family farming practices.

Newton, Julie j.newton@kit.nl with Kruijssen, Froukje; and McDougall, Cynthia

Integrating gender in small scale aquaculture and fisheries systems research: Principles, pitfalls and ways forward. While gender has advanced as a field over the past decades, the effective and meaningful integration of gender in research for development remains opaque for many researchers, particularly for those who are not from social science disciplines. This is even more challenging as research moved from relatively ‘simple’ production systems to more complex agri-food systems. This paper will present collaborative advances to address this challenge in the context of aquaculture and small-scale fisheries.

Specifically, it will present experiences and lessons learnt for ways forward for gender integration throughout the research cycle, including critical questions, pitfalls to avoid and strategies at different junctures. Within this, it will use illustrative examples from WorldFish to surface challenges and opportunities to engage with intersectional analysis, as well as assessing risks. It examines how tools such as ‘Theory of Change’ and the ‘Research Project Cycle’ can be used to engage non gender technical scientists around the ‘rationale’ for gender integration (the why) and operationalization (the how) of gender integration. The presentation will draw on the collaborative work of KIT (Royal Tropical Institute) and WorldFish to develop gender integration guidelines for the CGIAR Research Program on Fish AgriFood Systems (FISH).

Njuki, Jemimah ijnjuki@idrc.ca with Wong, Franz; and Danielsen, Katrine

Lessons and outcomes from integrating gender across agriculture and food security programs in the Global South. This paper presents an overview of main findings of perspectives and lessons on integrating efficiently and effectively gender in research and development programs, key strategies used at program and project levels and key outcomes. These lessons and outcomes are from a review of the Canadian International Food Security Research Fund (CIFS RF) that funded 39 projects implemented in 24 countries by 20 Canadian organizations and over with 40 southern organizations. The program worked with over 700,000 women smallholder producers. The first section of the paper looks at key lessons and best practices for integrating gender in a program with multiple objectives (technology, markets, nutrition, policy change), different types of research (from upstream technology development to downstream value chains and extension delivery) and multiple country contexts and analyses the contextual and programmatic factors that enabled this integration. The program offers a rich case study of how gender integration can be promoted and supported in AR4D. The second section of the paper gender focuses on gender integration in specific individual projects, the different strategies that projects used to address and integrate gender and relating those strategies to gender outcomes of the projects. This synthesis shifts the focus of gender integration literature from “why” gender should be integrated or “how” to integrate to “what” works. This is in recognition of the organisational struggles with identifying not only entry points but also how to make gender integration efforts more systematic and impactful given the particular “sticky-ness” and “wicked problem nature” of gender inequality. The paper presents a typology of process and content strategies for integrating gender recognising the importance of feminist principles not just in the research content but the research process as well. Outcomes are measured using the Women Reached, Women Benefit and Women Empowered framework developed by the International Food Policy Review. Results showed that “Women’s Empowerment” outcomes were not stand-alone achievements but the cumulative effect of other outcomes. At the same time, the progression between “Women Accessing Resources and Benefits” and “Women’s Empowerment” outcomes was neither direct nor ‘linear’. Increased access to resources did not guarantee control over resources and benefits, and thus did not necessarily lead to “Women’s Empowered” outcomes. Projects which adopted the strategy to engage men correlated with projects achieving enhanced recognition and status of women, suggesting the critical need to engage men to improve women’s status. The last section of the paper shows how we have used the synthesis to conceptualize a gender

transformative food system and presents essential elements from moving from gender integration to transforming gender and food systems.

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Designing options to narrow gender gaps in agricultural value chains using a resilience lens: Evidence from the Tahoua region of Niger. This paper explores an emerging understanding of how to integrate attention to gender issues within a resilience framework to better design options to improve agriculture value chain actors' wellbeing in zones commonly impacted by shocks and prolonged periods of stress. This paper draws on evidence from a gender and value chain assessment, applying the Integrating Gender Issues in Agricultural Value Chains methodology, conducted for the USAID-funded 12/12 Alliance Project, implemented by Lutheran World Relief in the Tahoua and Maradi regions of Niger. In the targeted project value chains, onion, cowpea, wheat, and sheep, women experience greater constraints than men accessing and controlling high quality land, irrigation technologies, labour, extension and advisory services, and income to participate in and enhance performance through these value chains as well as access and control benefits through their participation. The findings illuminate the key factors, particularly social capital, that support women's entry into different nodes of value chains as well as their ability to make strategic choices to absorb, adapt, and transform when confronted by climatic and socio-political disturbances. The paper then highlights effective approaches for designing evidence-based gender-responsive and gender-transformative project interventions to close agricultural gender gaps and strengthen women's and men's absorptive, adaptive, and transformative capacities in agricultural communities.

O'Keefe, Geoffrey geoffrey.okeefe@aci.gov.au with Alver, Jane; and Bett, Bosibori

The hidden mirror: Sexual orientation and gender identities in agriculture. This paper and conference discussion will question the representation of Sexual and Gender Minorities (SGM) within agricultural research. Through a review of the literature, the authors posit that the majority of gender in agricultural research focuses on binary gender identities, with little space for gender diverse expressions or sexuality outside heteronormative frameworks of the 'family'. Through these (binary) narratives, researchers work to identify power imbalances between women and, with a view to 'empowerment', and, more recently developing understandings of 'masculinity'. Looking outside agriculture research, gender researchers are beginning to investigate diverse sexual orientations and gender identities. This includes interdisciplinary approaches in the health sector, humanitarian response, and education. Contemporary research is finding through investigation of power and access within societies that SGM groups often have less access to resources, and voice, with development and research interventions almost always overlooking their diverse roles in society and specific needs. Given the pivotal role of gender research in agriculture uncovering inequalities in power and access between men and women, and the resultant impacts on food security, nutrition and production, this framework should be extended to include vulnerable groups such as minority sexuality and gender groups. This paper presents an opportunity to discuss the integration of SGM in agricultural research, to broaden our theoretical and methodological approaches. This can provide greater insight into power dynamics in agriculture that are as yet not studied in the literature. We hope to expand researcher's understanding of sexual and gender diversity, and collaboratively develop common approaches to integrating greater diversity in agricultural research for development.

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Impact of short-duration male migration on women's workload and autonomy: Evidence from rural India. The study analyses the complex impacts of gender-selective outmigration on women's roles in agriculture: both on workload and autonomy. The analysis is based on primary data from 800 rural households collected through extensive field surveys during 2015–16 in the two Indian states of Gujarat and West Bengal. Males dominate short-duration migration in both states, but the rate is further higher in West Bengal. While short-duration migration is dominant in both states, but the pattern varies. In Gujarat, it has a seasonal pattern whereas in West Bengal, it is irregular (short trips during any time of the year). In Gujarat, short-duration seasonal male-migration has a positive impact on women's participation in decision making with lesser increase in workload. However, in West Bengal, male short-trips (which are irregular in nature) outside the farm add more work burden on women. The length of absence being smaller leads to no or little change in autonomy in decision-making related to farming. The type of migration in West Bengal seems to be more distress-driven desperate moves in their nature and as it takes place in the larger context of changing agrarian relation rather than demographic characteristics of the household. Thus the impacts of migration on women vary according to the nature of short-duration migration, which in turn depend upon the health of the specific agrarian context. The future of Indian farming being feminised short-duration male-migration (mainly youth) raises a serious question on the overall development of the sector, as it provides limited autonomy to the left behind.

Pereira, Audrey audrey.pereira@cgiar.org with Ahmed, Akhter; Malapit, Hazel; Martinez, Elena; Meinzen-Dick, Ruth; Rubin, Dee; Quisumbing, Agnes; Seymour, Greg; and Tauseef, Salauddin

Comparing empowerment transitions of men and women in rural Bangladesh. Kabeer (1999) defines empowerment as the process of gaining the ability to make strategic life choices, when these choices were previously denied. Drydyk (2008) proposes that empowerment should be durable: one should gain the ability to

make strategic life choices and continue to exert that power and remain empowered over time. We apply our understanding of poverty dynamics to empowerment, and apply the methodology used in the analysis of poverty dynamics (Baulch and Hoddinott 2000) and chronic poverty (see Baulch, ed. 2011) to analyze the drivers of empowerment transitions for men and women in rural Bangladesh. Using data from the Bangladesh Integrated Household Survey (BIHS) from 2012 and 2015, we examine determinants of empowerment transitions separately for men and women. We use the Women's Empowerment in Agriculture Index (WEAI) to measure empowerment transitions and disaggregate this index into its individual components. We control for individual- and household-level covariates, and idiosyncratic and covariate shocks, for the four categories of empowerment change: empowered in both periods; empowered in period 1 and disempowered in period 2; disempowered in period 1 and empowered in period 2; disempowered in both periods. By examining changes in overall empowerment as well as its component indicators, we will be able to discern which factors contribute most to changes in empowerment for men and women. To our knowledge, this will be the first study that uses a panel dataset to compare empowerment transitions and the domains that drive empowerment, between women and men within the same household over time.

Pereira, Audrey audrey.pereira@cgiar.org with Doss, Cheryl; Meinzen-Dick, Ruth; Pradhan, Rajendra; and Theis, Sophie

The Monster-in-Law effect: Linking qualitative observations to quantitative analysis on household structure, migration, and empowerment in Nepal. Women's empowerment is dynamic across the life course. The intersectionality theory moves beyond measuring gender as a binary indicator, and instead regards gender as one social category that overlaps and interacts with others to define identities and influence outcomes. Drawing on this theory, we use qualitative and quantitative data from Nepal to explore the relationship between women's social location in the household, caste, husband's migration status, and women's empowerment. We use data from the "Evaluating the Welfare Impacts of a Livestock Transfer Program in Nepal" project from 2017. We measure empowerment with the 5 Domains of Empowerment sub-index and disaggregate the index into individual components to determine how each drives disempowerment for the different social categories. Findings suggest that women's empowerment is strongly associated with husband's migration status. Daughters-in-law are more likely to be empowered when their husbands are residents in the household and disempowered when their husbands are migrants. Wives of the household head (in nuclear households) are more likely to be empowered when their husbands are migrants. Control over use of income, asset ownership and group membership are the largest contributors to empowerment for wives, while asset ownership and group membership are the main drivers of disempowerment for daughters-in-law. Our findings are aligned with previous qualitative work and confirm that migration and social location are important factors that influence empowerment. The contributions of different domains to empowerment at various stages has important implications for the design of interventions and programs that seek to improve women's empowerment.

Ragasa, Catherine. c.ragasa@cgiar.org

Knowledge is power: Modelling the effect of interactive radio programming on women's empowerment and agricultural transformation in Malawi. This study assesses the effect of interactive radio programming on women's empowerment and agricultural development, utilizing a unique nationally-representative household panel dataset on Malawi (2016, 2018), linked to gender-disaggregated focus group discussions and interviews of service providers. Our results show that radio is the top source of agricultural and nutrition advice: younger women and men used radio more than other sources for their agricultural information needs; while younger and older men used radio more than other sources for nutrition education. Radio seems to be a critical delivery platform for nutrition education for men, circumventing strong gender norms on women's role on domestic work and nutrition while men are usually teased or laughed at when attending nutrition-related trainings. Our results also show significant effect of interactive radio programming on both women's and men's empowerment scores (greater on women and younger men, the latter being the most disempowered in the sample). Mechanisms for this gendered outcome come from lower time burden (compared to time demands in attending training/meetings, women could listen to radio and learn while simultaneously doing their other work), and from the awareness campaigns and messages on gender equality, which were influential to both men and women listeners, therefore leading to changes in attitude and behavior. The listening clubs linked to the radio program were useful platforms that strengthened social capital and cooperation among listeners. The call centers and mobile apps, in which anyone can call for free, also helped in greater responsiveness of service provision to farmer's demands.

Ragasa, Catherine c.ragasa@cgiar.org with Malapit, H; Martinez, E; Quisumbing, A; Seymour, G; Rubin, D
How empowering are agricultural value chains? Evidence from mixed-methods research from the Philippines. Women's participation and empowerment in value chains are key issues and goals that concern many development organizations, but there has been limited systematic, rigorous research to track these goals between and within value chains (VCs). We use the survey-based Women's Empowerment in Agriculture Index (WEAI), complemented by qualitative interviews, to measure and track women's and men's empowerment in four

agricultural VCs in the Philippines. WEAI results show that intrinsic agency (respect within the household, attitudes about gender-based violence, and autonomy in income) is the largest source of disempowerment for both men and women in all VCs. Work balance, control over use of income, and group membership – all measures of instrumental agency – were also important contributors to disempowerment but varied by VC, suggesting that interventions intended to empower women should be tailored by VC. Control over use of income by women and men is weakest in coconut and swine VCs; work balance is most disempowering among women processors and traders in abaca, coconut and seaweed VCs; and group membership is lowest among men in coconut VC. Across all four VCs, access to community programs is strongly associated with higher women’s empowerment, and access to extension services and education are associated with higher men’s empowerment. Our results show that, despite the egalitarian culture in the Philippines, persistent gender stereotypes influence men’s and women’s participation, empowerment and time use in VCs.

Raghunathan, Kalyani k.raghunathan@cgiar.org with Cunningham, Kenda; Doss, Cheryl; Quisumbing, Agnes *Rural transformation, empowerment, and agricultural linkages in Nepal*. Nepal is experiencing rapid transformations, including dramatic rates of male emigration. Although many implications of male outmigration have been well-studied, we know little about how these changes in household composition affect household power dynamics among the women left behind and what this means for household-level investment behavior. This is particularly important in a low-income, subsistence farming structure in which labour, food security, and household well-being are intertwined, and responsibilities traditionally shared among all adult household members. We use a cross-sectional annual monitoring survey from Suaahara II, a USAID-funded at scale integrated agriculture-nutrition intervention, collected between June and September 2017 among a representative sample of households with a child under five years. The primary respondents were mothers of children <5y; secondary respondents included grandmothers of child <5y residing in the household. The final survey sample included 3643 households. Several empowerment-related modules (for example, self-efficacy, attitudes regarding gender-based violence, freedom of movement, time use, decisionmaking in household production) were administered to both the respondent woman and the grandmother, allowing us to construct measures of the relative bargaining power of these women. We use these relative empowerment measures to study the balance of power between the adult women and to examine how it varies by household structure. We then investigate how the ‘balance of power’ among household members affects food security and decisionmaking around home garden cultivation. Results from our work have implications for NGOs and governments in countries where male out-migration is prevalent, and where programming primarily targets those left behind.

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Determinants of gender based wage discrimination of agriculture wage labourer in Bangladesh. Present paper portrays the light and heavy works, and document the discriminate wage rates for female and male in rural Bangladesh. Focus Group Discussions (FGDs) were carried out in different locations to see the regional variations. Rangpur, Dinajpur, Rajshahi and Hilly regions were selected on the basis of higher women’s participation as wage labourer. FGDs were performed with large-scale farmers, who usually hire wage labourer. Flip chart was used to list down the light and heavy works. Findings show that heavy and hazardous tasks (loading and carrying farm inputs and outputs, using spade for land preparation, and spraying pesticide and herbicide) were predominantly performed by male and get higher wages. Light works including pulling seedling & transplanting, weeding, pot watering, harvesting crops and drying were performed by female and get lower wages. Wage difference was estimated at Tk 150-200 (US\$1.82-2.44) per-day for male and female labourer. Female were usually get less wages than that of male even when they performed the similar tasks. It reveals that availability of wage labourer plays a crucial role in determining the wages. In peak season, the wage rate settled at higher rate and evidence shows that wage labourer works like as syndicate to increase the wages. In contrast, large-scale farmers take the advantages by offering low wages during lean period. This paper identifies the key features of light and heavy works, and unfold the determinants of discriminate wages that might help in implementing seventh five-year plan in reducing existing agriculture wage discrimination in Bangladesh.

Ravula, Padmaja r.padmaja@cgiar.org with Kasala, Kavitha; and Pramanik, Soumitra

Gender based perceptions of food, dietary behavior and practices in tribal regions of Telangana: a qualitative assessment of vulnerable population. Tribal population is generally at risk for malnutrition owing to their dependence on primitive agricultural practices, poverty, illiteracy, poor personal and environmental hygienic practices, lack of access to healthcare, poor communication, traditional beliefs and customs. This paper assesses dietary preferences, choices and nutrition behaviors and practices of vulnerable tribal groups. The study population includes pregnant women, lactating mothers and adolescent girls in Tiryani mandal, Komaram Bheem-Asifabad district, India. Data was collected from 55 respondents using semi-structured interviews and social analysis tools. The conversations with communities on food cultures and perceptions revealed the prevalence of myths, food fads and taboos during pregnancy, lactation and adolescence. Fasting is commonly observed by women and girls. Preference for food cooked at home against packaged or food prepared outside

the home and customary practices on serving food. Diets are majorly cereal and legume based cultivated by the community. Vegetables are consumed during rainy season; pulses during winter and traditional porridges during summer. Dominant gender based socio-cultural beliefs and related social norms including dietary taboos and, in some communities, early marriage and childbearing for girls, impact adversely on the health, well-being and nutritional status of communities. Long-term social and behavioral change programs are needed to raise awareness and catalyze change on some dominant socio-cultural beliefs and practices leading to better nutritional outcomes. The qualitative surveys served as a lens to understand the views and experiences of the tribal community regarding common dietary patterns and gender based perceptions of food.

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Learning from cross-country differences of female work participation in agriculture in the eastern Gangetic Plain: The micro and macro connections. This paper provides time series evidence from large-scale government data-sets on female work and gendered unemployment in the Eastern Gangetic Plain (EGP) which encompasses three South Asian countries viz. India, Nepal and Bangladesh. A review of existing literature highlights a withdrawal of women from agriculture and labour-force and hence a consistent de-feminization in India. In contrast, Nepal and Bangladesh have experienced consistent feminization primarily as a response to male-selective outmigration. The Indian part of Indo-Gangetic plains displays even lower work participation rates which has shown indications of increase in only the last few years. The paper critically revisits the role of women in agriculture in EGP, a region with fertile land, having high dependence on agriculture, limited crop diversification and high incidence of rural poverty. It analyses the secondary large scale data, backing it up with exploratory field-level information to understand processes of both feminization and defeminisation in agriculture in the three countries. Apart from inconsistencies that exist between the available literature based on secondary and primary data with respect to women's participation in agriculture, there is very little existing knowledge on this issue about the regional context of EGP, and this paper aims to fill this gap. In particular, the central research question that the paper seeks to answer is what explains the plural trends and levels of female work participation rates within the EGP, in Nepal, India and Bangladesh?

Shijagurumayum, Meghajit Sharma meghajit59@gmail.com and Loukham, Devarani

A descriptive analysis on the gendered distribution of labour and participation in household economic activities in Manipur, India. The present paper tries to capture the differences in gender distribution and participation in household labour and economic activities. With this notion gender analysis was conducted in the Imphal West district of Manipur, India. 80 farm households were randomly selected from 4 randomly selected villages of the district. For the purpose of intra-household comparison, the primary male and primary female member from each of the selected household were taken as respondents. Thus, a total of 149 respondents constituted the sample of the study as 11 households were female headed with no male figurehead. Data were collected using pre-tested interview schedule. The study revealed that primary female from male headed households had the highest extent of participation in agricultural activities even though there was a discriminatory ownership and autonomy in terms of agricultural productive assets. Female head respondents had the lowest saving average with 21.44 % of their income left for savings while for primary female respondents the savings were 24.64 %, for primary male respondents it was 31.01 %. Female head respondents were found to have the lowest amount of average month saving with just 21.44%, they also had the heaviest workload with 13.14 hours of time engaged in work related activities. Gender sensitization over the equal share of household care work, financial literacy, initiation of local based economic infrastructures and selective intervention with the views to reduce the workload of female head respondents were suggested and recommended.

Simelton, Elisabeth e.simelton@cgiar.org with Kawarazuka, Nozomi; and Duong, Tuan M

When the 'strong arms' leave the farms. Southeast Asia is experiencing rapid economic growth, driving rural job migration to non-agricultural sectors. This affects farming households in different ways, such as lost labour daytime, weekdays or for years. Often (married) women remain on the farm, taking over tasks that traditionally were performed by men as they had 'strong arms'. What are the implications of job migration on different households and farming system set-ups, or on crop yields? While the term 'feminization of agriculture' is often used in feminist economics for male job-migration that increases women's participation in agriculture, it does not fully capture negative consequences of labour migration. Based on literature review, we highlight myths related to feminization of agriculture and identify knowledge gaps. We contrast two poor provinces in Vietnam: mountainous Dien Bien with a high percentage of poor households and local (daily and seasonal) off-farm job migration; and coastal Ha Tinh with high unemployment rates and distant job migration (urban or abroad). We follow up a household survey from 2012, including indebtedness, use of non-farm incomes, labour distribution and gender roles in households with off-farm labour. As the share of part-time farmers is expected to increase, the wider implications of this research is to inform the design of improved farming systems and technical advice for decimated labour. Furthermore, we look at qualitative gender research from the two regions that capture real stories of migration, changing gender relations and women's agency. We conclude with implications for gender and agricultural research and highlight specific areas for further research.

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Agrarian change, shifting gender relations and labour arrangements: An ethnographic exploration of the implications on women in agriculture in Punjab, India. The paper is based on an ethnographic study conducted to understand agrarian change and gender relations in the study village through lived experiences of men and women engaged in agriculture. In this paper, I have attempted to bring forth complex interaction of gender relations, agrarian change and other structural inequalities in shifting labour arrangements in a village of Punjab. Various classes and categories of research participants in the selected village were identified using the household census survey. The women in the study village primarily belonging to Scheduled Castes (SC) increasingly started taking up wage labour in agriculture as SC men nearly stopped working as agricultural labourers and mostly sought employment in the non-agriculture sector. The data was collected primarily using in-depth interviews with farmers (all men) and women agricultural labourers. Quasi-participant observation and key informant interviews also helped in understanding the context. Narratives of farmers and women who worked as agricultural labourers in the study village reflect the shifting labour arrangements as well as shifts in workloads of women in agriculture. Women performed nearly all agricultural tasks including the ones that were earlier performed by men. Not only did women draw attention to the physicality inherent in agricultural work but also referred to the stress associated with managing both agricultural work and housework. They also shared their inability to negotiate for better wages and work conditions given their overall vulnerability in the agrarian structure. It thus follows that agrarian change and shifting labour arrangements affect women in agriculture disproportionately.

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The impacts of male outmigration on intra-household decision-making and agricultural production: the case of Nepal. In many developing countries, outmigration from rural areas is significant and is rapidly transforming the sending communities. It is often dominated by able-bodied males and youth, with young women, children, and elder members staying behind to carry on the farm work, although they might not have the capacities to maintain agricultural productivity and production. Several studies have examined the impacts of male outmigration on women's labor supply decisions, but few have explicitly considered how male outmigration affects intra-household decision-making, and the consequences for productivity, production and food security. Using a unique survey from Nepal and accounting for the endogeneity of migration, this study analyzes the impacts of male outmigration on intra-household decision-making, agricultural practices, productivity and food security. It provides recommendations for policies and programs to support vulnerable farmers in migration-prone rural areas.

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Proof of concept for the use of wearable sensors to monitor women and men's workload and mobility in Indonesian agricultural communities. DFAT's Australia-Indonesia Partnership for Rural Development (AIP-R) programme (2013-2018) worked to achieve large-scale sustainable poverty reduction through applying the market systems development (MSD) approach. This works through private and public sector actors in the 'system' to benefit smallholder women and men rather than working directly. Furthermore, it aimed to enhance gender outcomes, e.g. by improving women's agency over income, and improving labour productivity. AIP-R therefore sought to understand the roles of women and men so that the positive impacts from MSD interventions could be enhanced, and potential negative impacts mitigated. However gathering accurate, objective and impartial data on the division of labour between women and men in farming households poses significant challenges because prevailing methods rely on recall and self-reporting: e.g. household surveys, focus-group discussions and time-use diaries, which are often inaccurate and subject to biases. Low-cost smartphones and wearable sensors (e.g. Fitbit™) provide an opportunity to make empirical observations of individuals. A unique proof of concept of this technology was conducted in Eastern Indonesia through collaboration between AIP-R, University of Canberra and ONMI Design. This yielded valuable and interesting data that challenged assumptions of how women and men's time is spent on agricultural and non-agricultural activities, including the intensity and duration of labour, mobility (how far people travel), waking hours, and other indicators. It also developed protocols, ethical guidelines, analytical tools and guidance on the application and limitations of the technology for AIP-R and other programs seeking to improve their understanding of women and men's livelihoods.

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Empowering women in seaweed utilisation for food: A cross-country peer-led approach. Small Island Developing States (SIDS) are experiencing a triple burden of disease, with a high prevalence of micronutrient deficiencies, childhood stunting, and an increase in adult obesity and non-communicable diseases. An unhealthy diet, underpinned by poor access to and availability of fruit and vegetables, is endemic to SIDS. Edible seaweeds are traditional food in several SIDS, such as Samoa. They are highly nutritious, low cost and easy to harvest and therefore provide an alternative to fruit and vegetables. However, other countries such as Kiribati do not have a strong traditional culture for using seaweed in their diets. This project took a peer-led approach to engage women in Kiribati in participating in seaweed activities. A group of women from Samoa travelled to

Kiribati to share their knowledge and skills in a 2-day practical sea grape (*Caulerpa*) workshop, aimed at introducing the women of Kiribati to potential benefits of seaweed consumption. In-person structured interviews were conducted with all Kiribati participants (n=24) to evaluate their interest, barriers and enablers, and expected costs and benefits from potential future engagement in seaweed activities. All participants felt I-Kiribati people would be interested in eating seaweed. There was high interest in being involved in seaweed related activities, including collecting, processing, selling and sharing their knowledge and skills. Age and health status were not deterrents to collecting seaweed from the reef. Leading or running a seaweed business appealed to one third of participants. Thematic analysis of qualitative responses revealed two potential benefits to seaweed activities; to promote health by sourcing nutritious food for themselves and their families, and to use seaweed to generate a cash income to support children's education, daily provisions and church donations. The cross-country peer-led model used in this project successfully provided culturally appropriate, low cost education that promotes long-term results through the empowerment of women in Kiribati.

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Understanding the adoption of multiple practices of system of rice intensification in India and its gender implications. This paper explores adoption decisions of multiple System of Rice Intensification (SRI) practices by rice farmers of India using household-level data and its gender implications. The SRI is a systemic approach that involves several management practices to increase yields without harming environment. Since partial adoption is very common, we develop a multivariate probit model (MVP) and ordered probit model to jointly analyse the adoption of multiple practices and the number of SRI practices adopted while recognising the interrelationship among them. Our approach extends the existing empirical studies by allowing for correlations across different practices. The empirical results show that both the probability and the extent of adoption are influenced by various economic, institutional and infrastructure related factors such as farm assets, membership in farmer organisations, extension services, irrigation facility etc. Government's objective of increased rice production by promoting SRI under the national food security mission did not show positive impact. The adoption of some of the practices of SRI, for example use of mechanical weeder for weeding, seemed to replace female labourers with male labourers. This shows the gender bias in the technology adoption.

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Gender inclusion and women's empowerment strategies to accelerate the uptake of innovations in smallholder-based supply chains. Recent evidence suggests that investing in women in smallholder-based supply chains helps deliver improved product quality and enhancement of a product brand's ethical credentials; increased productivity; reduced management and coordination costs; a more secure supply base; a stronger brand and improved access to premium markets; and improved delivery of broader corporate social responsibility goals. However, international experience has shown that there are several challenges in integrating women into market systems programs that must be addressed, especially in understanding the uptake of production and market-based innovations. The purpose of the paper is to present a framework of gender inclusion and women's empowerment strategies to accelerate the uptake of innovations in smallholder-based supply chains. Two case studies of research for development projects funded by the Australian Centre for International Agricultural Research (ACIAR) are used for demonstration purposes. First, we use the case of the IndoBeef Program which examines the role of gender aspects in the uptake of production-based and market-based innovations. Second, we present the case of the "High Value Beef Partnerships" (HVBP) project which is aimed to improve the profitability of emerging and smallholder cattle farmers by developing cost-effective and environmentally sustainable beef value chains that supply cattle to meet the specifications of high-value, free-range beef markets. Gender aspects are being addressed in key activities of these projects with a view to identify factors impacting on smallholder farm business performance and to then design customised intervention strategies to overcome the barriers to practice change.

Warriach, Hassan and McGill, David

Role of innovation networks to support the livestock extension systems of Pakistan. The objective of the study is to demonstrate the role of learning and innovation networks, with a focus on the importance of gender, in integrating improved technology-transfer within the livestock extension system of Pakistan. A model of technology transfer was developed in Pakistan called the 'whole family extension approach'. This model includes comprehensive training on the whole dairy farming system delivered in regular (every 4 to 6 weeks) farmer discussion groups offered to both the men and women of the farming household. The extension model is primarily a knowledge transfer-based system, but also relies on farmer engagement and feedback to help drive research and topics for discussion. No financial incentives were provided to the farmers for their participation. Previous research shows that technical transfer of farm-level recommendations leads to successful adoption, ranging from 40% up to 95% depending on the resource input and complexity of the technology. These results show that engaging the whole family lead to impact on farmers both directly and indirectly engaged with the extension program. The research program's future goal is to expand the success of this model and integrate components of the whole-family extension approach within other organisations engaged in the Pakistan livestock extension system. A common challenge field teams face is Pakistan is effectively reaching women in

communities and this is fundamental to the whole family extension model. Our research team is working with two innovation networks; (1) the community of extension officers and (2) the network of organisation management to try to understand their challenges better and devise strategies to support sustained technology transfer to farming families, including women. Initial results indicate that those organisations who have both male and female extension officers working together in the field are observing greater impact and on-farm benefits to smallholder dairy farmers and their families.

Wendt, Amanda amanda.wendt@uni-heidelberg.de with Sinharoy, Sheela; Waid, Jillian; and Gabrysch, Sabine
“Those who have jobs can travel alone”: Norm emergence and opportunities for women’s empowerment in agricultural interventions. Women’s empowerment is considered an important factor influencing women’s and children’s nutrition, though its conceptualization and operationalization can vary greatly between contexts. The Food and Agricultural Approaches to Reducing Malnutrition (FAARM) trial is part of the Gender, Agriculture, and Assets Project 2 (GAAP2), which aims to adapt and validate a women’s empowerment measure. Objective: Our objectives were to examine local definitions and perceptions of women’s empowerment in the FAARM population and explore opportunities to increase women’s decision-making and freedom of movement. Method: We conducted 4 focus group discussions (2 with women; 2 with men) and 9 life history interviews (5 women; 4 men) in two villages in Sylhet Division, Bangladesh. Focus group discussions and interviews were conducted in Bengali, transcribed, translated, and coded using thematic analysis. Results: Women and men expressed adherence to traditional gender norms regarding women’s agricultural production, decision-making, and freedom of movement. Most perceived women’s changing position negatively, preferring practices to remain the same. One exception was employment, which brought more financial security to the family, increasing household food security and/or children’s educational opportunities. These results suggest the emergence of new norms around women’s freedom of movement. Conclusion: Many respondents expressed preferences for traditional gender norms but prioritize their children’s education and opportunities to increase financial security. These were acceptable reasons for women to increase mobility and decision-making. Engaging communities from the perspective of increased financial and educational gain may hold promise as a strategy to improve women’s freedom of movement and decision-making through agricultural interventions.

Zanello, Giacomo g.zanello@reading.ac.uk with Picchioni, Fiorella; Srinivasan, Chittur; Wyatt, Amanda; and Webb, Patrick

Giving visibility to invisible work: Embedding gendered patterns of work intensity in agriculture-nutrition research. Gendered time poverty has been identified as one of the crucial factors to explain the agriculture-nutrition disconnect. However, time spent on different activities does not accurately capture work intensity, leaving a number of questions unanswered. Does the arduous nature of work in rural contexts play a role in hindering the achievement of optimal nutritional outcomes? What are the different characteristics of work intensity between men and women and what are their implications? What are the policy considerations that can be derived? This paper attempts to answer these questions by investigating work intensity -- as a combination of length of individual work time, energy cost, and simultaneity in performing multiple and competing tasks -- and its gendered patterns. We apply an innovative approach that integrates energy expenditure data obtained from accelerometry devices with time-use data. Accelerometry data were collected across four non-consecutive weeks over a complete agricultural cycle from 40 wife-husband dyads in India and Nepal and complemented with daily time use surveys. The complementarity and differences between men’s and women’s tasks and the nature of the work they perform are at the core of shaping nutritional outcomes generated by agricultural and livelihood practices. The paper offers a methodological approach to substantiate with empirical evidence the gendered dynamics of work intensity in rural context which had hitherto not been available. For example, it can provide quantitative measurement of the impacts of policies or technology adoption on work intensity along lines of gender, age and income in agricultural settings in LMICs.

Panel 1: Empowerment impacts of agricultural development projects in south Asia

The panel focuses on impact evaluations of four nutrition- and gender-sensitive projects in South Asia.

Quisumbing, Agnes a.quisumbing@cgiar.org *Measuring impacts on nutrition and empowerment.*

Kirkwood, Elizabeth K elizabeth.kirkwood@sydney.edu.au with Alam, Ashraful; and Dibley, Michael J. *How does a combined nutrition counselling and cash transfer intervention impact women and their level of empowerment? A study protocol from rural Bangladesh.* Whilst progress has been made in many areas of gender equality and the empowerment of women, the potential for women to fully participate as “agents of change” is still limited due to persistent social, economic and political inequalities. It is well documented that women’s empowerment is an underlying determinant of nutrition outcomes. Household food security and agricultural productivity are also directly impacted by the level of empowerment experienced by women. **Methods / Design:** This study uses a mixed-methods approach, combining statistical analysis of quantitative data from 3540 participants in a NHMRC funded trial entitled “Cash transfers and behaviour change communications to reduce child undernutrition in rural Bangladesh: a cluster randomised controlled trial to determine the most effective combination of interventions”. Women will be given a smart phone with a customised app, delivering nutrition BCC messages, access to counselling via a call centre and an unconditional cash transfer. Women’s empowerment will be measured using the Project-Women’s Empowerment in Agriculture Index, with data collection at baseline, midline and endline. Thematic analysis of qualitative data collected through longitudinal qualitative interviews with women, husbands and mothers-in-law will elicit local understanding of women’s empowerment and the linkages between the intervention and women’s empowerment outcomes. **Discussion:** This paper describes the study protocol evaluating women’s empowerment in a nutrition-specific and -sensitive intervention and will help fill the evidence gap on pathways of impact and highlight areas to target for future programming.

Akhter U. Ahmed with Hoddinott, John; Menon, Purnima; Quisumbing, Agnes; Roy, Shalini and Younus, Masuma

Designing for empowerment impact: The Agriculture, Nutrition, and Gender Linkages project in Bangladesh.

The relationships between agricultural diversity, dietary diversity, and gender norms are complex and multi-dimensional. The Agriculture, Nutrition, and Gender Linkages (ANGeL) pilot project, implemented by the Ministry of Agriculture, Government of the People’s Republic of Bangladesh assessed the impact of three alternative intervention modalities for promoting nutrition and gender sensitive agriculture. The modalities were: (1) Agriculture Production trainings to promote production of high-value commodities rich in essential nutrients; (2) Nutrition Knowledge, through high-quality behavior change communication training, to improve nutrition knowledge of women and men; and (3) Gender Sensitization trainings to improve the status /empowerment of women and gender parity between women and men. All trainings were targeted to men and women. Preliminary results show that both men and women benefited from agricultural trainings, yet women learned more from the same trainings. Crop diversity increased substantially in homestead gardens, mainly due to ANGeL’s emphasis on homestead food production from nutritious crops. Farmers also adopted improved production practices. Women were more likely to apply knowledge gained from agricultural production trainings to adopt improved agriculture production practices, such as pest disease and control, seed production and care, and use of quality fertilizer. Similarly, improvements in nutrition knowledge were far greater for women and men when trainings were combined. The strongest improvements in empowerment resulted from combining agriculture, nutrition, and gender sensitization trainings. ANGeL’s household approach empowered women and men in different ways: while women became more empowered in asset ownership and income decisions, men became more empowered in production and income decisions in select interventions.

Kumar, Neha n.kumar@cgiar.org with Raghunathan, Kalyani; Arrieta, Alejandra; Jilani, Amir; Pandey, Shinjini; and Quisumbing, Agnes

The power of the collective empowers women: Evidence from self-help groups in India. Women’s groups have rapidly gained prominence as important rural social and financial institutions in South Asia. In India, a large majority of women’s groups programs are implemented through self-help groups (SHGs). This paper uses panel data from India to study the impact of SHG membership on women’s empowerment in agriculture, using the abbreviated Women’s Empowerment in Agriculture Index. Because access to SHG membership was not random and women who self-select to be SHG members may be systematically different from women who chose not to be members, we employ nearest neighbor matching to attribute the impact of being a member of an SHG on women’s empowerment in agriculture. Our findings suggest that SHG membership has a significant positive impact on aggregate measures of women’s empowerment and reduces the gap between the empowerment scores of women and men within the same household. This improvement in aggregate empowerment is driven by improvements in women’s scores, not by deterioration in men’s. Greater control over income, greater decisionmaking over credit, and more active involvement in groups within the community lead

to improvements in women's scores. However, impacts on production decisions and asset ownership are limited, and the weakly significant impacts on workloads indicate that group membership may involve tradeoffs in terms of time use. The insignificant impacts on measures of empowerment related to attitudes towards domestic violence, and respect suggest that, despite impacts on some measures of empowerment, being an SHG member may not be enough to change deep-seated gender norms that disempower women.

Thompson, William will.thompson@idinsight.org with Janzen, Sarah; Magnan, Nicholas; and Sharma, Sudhindra

Paying it forward: Short-term impacts of a livelihoods program with built-in spillovers. The rural poor are often assumed to lack access to the productive assets, human capital or social capital required to be successful entrepreneurs. Productive asset transfer programs, which often include a training component, are one way that organizations and governments try to relax constraints to facilitate permanent transitions out of persistent poverty. We evaluate the short-term welfare impacts of Heifer International's flagship program in Nepal using an RCT. The program targets women in poor rural communities, providing a package of benefits that includes a livestock transfer (two doe goats and a shared breeding buck), technical training on improved animal management and entrepreneurship, self-help group formation, and values-based training. The values-based training encourages beneficiaries to "pay it forward" (PIF) by sharing newly acquired technical skills and giving offspring of their received goats to another individual in their community. We find evidence that 1.5 years after implementation, direct beneficiaries in the most intense treatment demonstrate increased empowerment (+0.28 SD), financial inclusion (+0.28 SD), and aspirations (+0.18 SD). Empowerment is measured using the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI). The impact of the program on empowerment and financial inclusion persists even when values-based training or livestock are withheld, and the impact on aspirations persists in the treatment without goats. We also present evidence suggesting the PIF mechanism helps to quickly scale program impacts. Those who live in the same community as direct beneficiaries receiving values-based trainings, but not targeted as direct beneficiaries themselves, exhibit similar increases in financial inclusion and empowerment.

Panel 2: Gender transformative approaches: Strategies and emerging evidence

This panel will unpack the concept of a gender transformative approach and bring together empirical insights from 3 cases, carried out by 2 organizations that have been pioneering this approach. The cases span Bangladesh, Cambodia and Zambia and the spheres of nutrition, technical aquaculture extension, and postharvest loss technologies.

Choudhury, Afrina a.choudhury@cgiar.org

Merging the social with the technical: Utilising a Gender Transformative Approach in smallholder aquaculture development in Bangladesh. A number of studies conducted in WorldFish-Bangladesh on small holder aquaculture technologies targeting women have shown limited adoption and benefits to women beyond the project lifecycle. This discrepancy between expected and actual outcomes arises because women, and men, exist in a multidimensional system of gender relations and norms which influence women's ability to: gain and apply knowledge and skills to adopt or adapt technologies, achieve anticipated outcomes and share equitably in their benefits. This happens even though these technologies were introduced in an accommodating matter within the homestead sphere, where women are able to conform to their mobility constraints. To address any social and gender issues that may arise as a result of applying new knowledge or taking on new roles. WorldFish Bangladesh introduced various gender transformative strategies and tools at the household and community level, merging them with technical aquaculture outreach. This paper will discuss some of the strategies and tools WorldFish Bangladesh adapted, including partnering with HKI in Bangladesh to adapt their NC manual with aquaculture and utilising Promundo-AAS approach to engaging men. In fact, to engage communities in critical reflections around gender and social issues, aquaculture technologies served as an incentive. WorldFish Bangladesh used longitudinal quasi-experimental mixed methods research designs to understand the impacts of these gender transformative strategies. Early evidence shows that gender transformative approaches has softened the backlash from men against women's technology uptake, more collaboration amongst family members around technology usage, enhanced nutritional consumption by target groups and attitudinal changes around women's roles.

McDougall, Cynthia c.mcdougall@cgiar.org

Gender transformative approaches: Strategies and emerging evidence. Decades of investment in closing gender gaps through accommodative and empowerment approaches in rural, developing country contexts and in relation to agricultural development have yielded progress – yet they have also fallen short of expectations. In particular, they have underperformed in terms of lack of sustained change, limits to empowerment or equality outcomes, or even negative outcomes such as backlash related to women-targeting. Critical analysis of these outcomes, the underlying mechanisms, and insights from other sectors led to the development of a complementary approach referred to as a gender transformative approach. This approach focuses on engaging

with the barriers that underlie visible gender gaps, in particular the gender norms that perpetuate gender inequalities.

Ridolfi, Ramona ridolfi@hki.org

Nurturing Connections©: *Advancing gender equality for improved nutrition and livelihoods*. Nurturing Connections© (NC) is HKI's gender-transformative approach that challenges gender norms contributing to malnutrition and food insecurity. Given the negative impact on nutrition and livelihoods by gender and social inequalities, NC promotes gender and social transformation through a participatory approach based on community dialogue. Developed in Bangladesh in 2013, NC has been delivered through agriculture, health, and nutrition platforms, across multiple contexts, in Asia and Africa. The presentation will share HKI's experience and process in adapting and implementing the approach through food security programs focused on poultry and aquaculture in Bangladesh and Cambodia. The presentation will also include ongoing monitoring and revision strategies to make NC context appropriate. A recent IFPRI assessment in Bangladesh demonstrated that combining agriculture, nutrition, and gender transformative sessions resulted in the most significant improvements in empowerment, including on women's asset ownership and income decisions, as well as overall more equitable gender attitudes among both men and women. In Cambodia, important results included more equitable workload sharing processes and a 10% increase in women's autonomy over food and cash crop farming. In Bangladesh, implementation of activities around a sensitive topic like gender poses the risk of backlash, particularly within conservative communities. Accordingly, HKI engaged the wider community, as an effective means of promoting understanding and reducing the risk of resistance. In Cambodia, some interactive group exercises required subsequent refinement and testing. The successful adaptation of NC across countries shows the flexibility of the approach for tackling gender inequalities in diverse contexts.

Cole, Steven s.cole@cgiar.org

Gender transformative change along the capture fishery value chain: Panel evidence from the Barotse Floodplain, Zambia. Technical and social constraints limit value chain actors from equitably engaging in and benefiting from capture fisheries in low-income settings. Development projects that aim to help address these barriers tend to focus on the technical over the social ones when designing and implementing interventions. This study presents insights from a research project that was implemented in six fishing camps in the Barotse Floodplain, Zambia from 2015 to 2017. The project developed and tested improved post-harvest fish processing technologies with value chain actors. The project also adopted both gender accommodative and gender transformative approaches, with the latter going beyond accommodative by addressing the unequal gender relations that constrain value chain actors. A gender transformative tool was developed comprising a manual with drama skits and questions that sparked critical reflection. The skits were acted out on three of the six fishing camps, while the gender accommodative approach was employed on all six camps. A women's empowerment in fisheries survey was administered at baseline and endline with value chain actors who participated in the project testing the post-harvest processing technologies. The results indicate that the use of a transformative approach led to significant changes in gender attitudes and women's empowerment outcomes compared to only using an accommodative approach. Development organizations can use the learning generated by the study to integrate gender transformative approaches that surface and address the unequal gender relations that constrain fishery-dependent people from making important life choices to improve their livelihoods.

Panel 3: Assessing Impact on Gender Equality and Women's Empowerment

Vemireddy, Vidya vsv7@cornell.edu with Gupta, Soumya; Singh, Dhiraj; and Pingali, Prabhu L.

Adapting the Women's Empowerment in Agriculture Index to specific country context: Insights and critiques from field work in India. The Women's Empowerment in Agriculture Index (WEAI) has gained traction as a multidimensional indicator used for assessing empowerment levels in varied agricultural settings. In this paper we discuss how the Abbreviated- WEAI (AWEAI) was adapted to an Indian agricultural context in 2017. We analyze primary data for 3600 households across four districts in Bihar, Odisha and Uttar Pradesh to construct a modified WEAI based on sharper, context- specific and operational indicators of access, ownership and resources. This is accompanied by sensitivity analyses and robustness checks that contribute to the technical base for the WEAI. We find that at least 80% women across districts are disempowered in the five domains of agriculture, with the main contributors being a lack of membership of agriculture- specific self-help groups and a lack of ownership of agricultural land. When disempowerment thresholds are relaxed we find that there is a significant decline in the proportion of disempowered women, and it is this, relative to the increase in women's average inadequacy scores that contributes to the higher 5DE scores as the thresholds are varied. Taken together our work highlights the field- level challenges in adapting a complex multi-dimensional index such as the AWEAI in India and recommends key modifications that other implementers in India may want to consider in their work.

Nunez-Solis, Maria del Milagro Mili08ns@hotmail.com with Ratna, Nazmun; and Rosin, Christopher *Can micro coffee enterprises create opportunities for women? Evidence from Tarrazu coffee, Costa Rica.* In this paper we explore how coffee micro-mills in Costa Rica have enabled women to gain agency in the national and global value chain for Tarrazu coffee. Micro-mills are family owned enterprises, where producer process their coffee and sell it directly to specialty markets. The coffee commodity chain is characterised as one that perpetuates low incomes for family producers and significant profits for commercial roasters around the world. As a commodity, coffee is associated with intensive production systems and the relegation of women to traditional household roles. Responding to consistently low prices under this model, Tarrazu coffee households have embraced the innovation of family owned micro-mills and are learning to integrate into the incipient Relationship Coffee Model market. Model that promotes long and fair relationships between buyers and producers based in coffee quality. Our results – informed by the Women’s Empowerment in Agriculture Index and ‘power to’, ‘power with’ and ‘power within’ framework – showed that women involved in micro-mills are more empowered in decision making at processing coffee stages and have greater opportunities to own significant assets. Moreover, they have been pioneers in attending coffee public spaces dominated by men and taking roles which require skilled capabilities such as coffee quality control, coffee sells and barismo. Coffee micro-mills represent an innovative example of how women empowerment in agriculture should not only focus in access to primary production, but, value-adding activities can also enhance empowerment and contribute to various Sustainable Development Goals targets related to gender equality and inclusive economic growth.

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Pearl-based livelihood empowering women in Fiji. Gender impact evaluations fundamentally consider issues of gender equality and changes to relationships of power that are inherent in different societies, cultures or social structures. There are many emerging approaches on how best to assess or measure gender related impacts. This presentation discusses an impact assessment study of mabé pearl aquaculture-based livelihood projects in Fiji. The assessment drew upon both gender impact and women’s socio-economic empowerment frameworks to identify domains and indicators against which to assess impact. The fundamental task of this assessment was to consider if involvement in selected pearl related projects provided livelihood and other socio-economic benefits to women. Overlaid across this task was the recognition that in different societies and cultures, there is considerable variability in gendered relationships and that any assessment of impact must consider the social and cultural context within which the assessment occurs. The evaluation utilized a case study analysis with individual and group interviews to generate stories for vignettes to communicate both context and benefits derived. The assessment of impacts found that the women participating in these development projects were on a pathway to empowerment with varying levels of achievements in relation to income, increased capacity in pearl related activities, access and control of productive assets, decision-making and leadership opportunities.

Panel 4 : Theory to Practice: A Social Norms Approach

Mephram, Inga ingamepham@gmail.com and Fonseca, Cecilia

Helping women’s groups and networks to better understand and influence market systems and agriculture sector governance. The agriculture sector in Timor-Leste is dominated by male decision makers, with few pathways for women to raise their issues. With that in mind, the TOMAK program, set out to find what gender transformative approaches and opportunities combined, might accelerate women’s visibility, representation, and leadership in the sector. This presentation, highlights the experiences, success and learnings coming out of the last 2 years in addressing this issue. Starting with an initial gender equality and social inclusion assessment (GESIA), that guided approaches to influencing decision making at different levels. A core approach was to ensure that women’s groups and machinery understood the market systems and the agriculture sector more broadly. This provided them with the technical knowledge and confidence to engage with these sectors, in ways they had not in the past. By fostering a mature and constructive approach to partnership with the Ministry of Agriculture and Fisheries (MAF) and other development partners, the national women’s machinery has found new and unexpected entry points for advocating for women’s priorities, while pursuing the gender gaps in the sector. As the collaboration has matured, the realm of their influence has expanded to other Ministries, Municipal Authorities and the parliament. Quick wins have come through linking the results of MAF gender gaps assessments to the MAF annual plan and budget and then following it through into the parliamentary budget hearings. The presentation will highlight examples addressing: agriculture governance, extension services, access to productive land use and improvements in local marketplace management and safety.

Nuia, Neil neiln@oxfam.org.au

Importance of cutting-edge gender social norms analysis in the design phase of programs. This presentation will discuss the importance of gender norms analysis in the design or inception phase of an economic development program and specifically describe the experience of Oxfam and Strongim Bisnis in Solomon Islands. Strongim Bisnis is a Market System Development program with WEE as a main crosscutting area. During the first year of implementation, the program partnered with Oxfam to conduct a gender norms analysis, in addition to the standard gendered value chain analysis, in order to identify the main informal norms that are

barriers or enablers for women in economic and business activities. While identifying pathways available to shift restrictive social norms. In-depth community analysis finds that most men do not engage in unpaid care labour, although there are a minority that undertake some care and domestic tasks. According to the report, economic opportunities are also either enabled or hindered by a range of cultural practices including patriarchy, black magic, bride price, the “kastom” value of respect, the “wantok” system, reef conservation, weaving and the barter system. Household financial decision-making is complex and situational, with both positive and harmful practices taking place within the one household depending on the decision and income source. Men have significant control over productive resources including land, equipment, tools and cash crops, with women seeing this as blocking their opportunity to utilise these assets for business purposes. The main findings and recommendations from this study influenced the design of Strongim Bisnis’ and Oxfam’s activities and specific elements will be discussed in the panel.

Cunneen, Hannah Hannah.Cunneen@adamsmithinternational.com

Hidden Roles but Visible Value: Women in Liberia’s Rubber Sector. As part of a group of presentations looking at the underlying theory and the practice of social norms and approaches to exposing, defining and addressing agricultural gender gaps, GROW Liberia has zeroed-in on the rubber industry in Liberia from a gendered social norms perspective to uncover women’s hidden roles in the rubber value chain. Undertaking a gender-related review in the middle of implementation, the program required quick and operational insights to ensure its interventions in the rubber industry delivered impact for women. A fit for purpose research design was applied and found men in highly visible roles as farm owners and tappers Men also dominating the financial decision-making roles, including; supervisory positions and assigned vendor roles. This does not mean, however, that women are absent from the sector. GROW’s research looked under the surface and uncovered the numerous and essential roles women play across the value chain, and successfully challenged the long-held assumption that Liberia’s rubber sector is male dominated. The social norms analysis was essential in understanding drivers of the gendered division of labour within the rubber value chain, both in terms of obstacles for female participation, as well as enabling the program to better understand entry points for women to take on higher-value roles and increase their incomes.

Panel 5: Nutting out the problem: Lens on gender in agro-forestry research for development in Indonesia

Grover, Samantha Samantha.grover@rmit.edu.au with Sakuntaladewi, N; Lestari, S; Winarno, B; Robins, L; Darbas, T; and Mendham, D

Applying a gender lens to community fire management and peatland restoration in Indonesia. Gender is ever-present yet often ignored in discipline-focused research for development. This paper explicitly applies a gender lens to research themes centred around fire, livelihoods, soils, policy and knowledge management. The emphasis on gender in previous research in each disciplinary area is compared and contrasted. The overarching project to which these five themes contribute aspires to integrate gender into each aspect of the research. Discussion of the benefits and challenges of this gender mainstreaming approach are discussed. This paper will distil lessons from our experience of beginning a large multidisciplinary project with an explicit gender lens, to take forward as the research progresses. Wider recommendations for agro-forestry research-for-development practitioners on how best to integrate gender into disciplinary research will be distilled.

Sakuntaladewi, Niken Niken_sakuntaladewi@yahoo.co.uk with Rumboko, L; Rochmayanto, Y; Siscawati, M *Gender dimensions in the complexity of managing forest resource: learning from Berau District, Indonesia.* The transformation of policies related to natural resources, rapid economic development, and the inclusion of various population groups (ethnicities) have important implications for access and control of forest, land and other natural resources. Berau Regency cannot avoid the impact of increasing migration and massive intervention by government policies at the central, regional and corporate sector activities, for development purposes. This paper will discuss the acceptance and rejection of capital intervention and its impact on the Punan Dayak community in Long Okeng village and Dayak Kenyah community in Tepian Buah Village, Berau Regency. Aspects to be discussed include: ownership of land and forest resources; forms of land management, groups that obtain benefits and disadvantages, and the impact of the mechanism of access and control of these resources for women, men and children from various social groups.

Winarno, Bondan bondanw2308@gmail.com with Rahmat, Mamat; and Nurlia, Ari

Gender Issue in Rural Lowland Management and Development in Southern Sumatra. The issue of gender in the rural lowland management of southern Sumatra is frequently not involves in the rural development agenda. This writing highlights the existing and potential role of gender in rural lowland (mineral and peat land) management and development. Data were collected from interview with key informants and in depth interview to the households with qualitative analysis. The role of men in mineral land management is traditionally dominant and recently there is a change with more role of women in deciding the crops commodities and land management activities from planting until marketing the products. However, the involvement of women in land-based rural development program was still limited. In marginal peat land, there was more gender balance situation where men and women in the household shared the idea and responsibility in finding the prospective commodities

from crops, fruits, timber and non-timber forest products. In famine situation, men became migrant worker outside the rural area to get better income and the women are taking over the land management for certain times. This compromise was one of the strategies for securing their livelihood and increasing their welfare. Compromising the responsibility between men and women doesn't realize fully by local decision maker as a potential role of women involving in development program. Mainstreaming gender in rural development agenda is important to improve the capabilities of women and men in sustainable land management and livelihoods.

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Gender Role in Agroforestry of Areca Nut and Coffee in Peatland Area: Case of Jambi Province, Indonesia.

The role of women in agriculture is influenced by economic, socio-cultural conditions and the norms in their environment. Women are responsible in domestic activities, while men are more dominant in various works in the field. We examined women's participation and benefits from agroforestry system of areca nut and coffee in the peatland area of Jambi Province, Indonesia. Methods included survey and in depth interview to the key stakeholders and farmers as respondents. Data were analyzed both qualitatively and quantitatively. Result revealed that women and men have important role and both actively involved in peatland agroforestry system. Higher percentage of men participated in determining the types of plants planted, planting activities, and harvesting activities. Women tend to do lighter types of agricultural work and some activities that require greater patience and precision. Women played specific role in maintaining plants and handling the crop yields, namely processing and packaging the products. These were important to increase added value of the areca nut and coffee for their household income. Women in peatland area of Jambi Province will participate in agricultural work in the field after their domestic activities were done. Monopoly in farming decision making occurred because men's access to the natural resources, information and knowledge was higher than women. Improving women participation in decision making and community organization would increase women's role in increasing agricultural productivity.

Panel 6: Improving the agricultural value chain

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Brand Development in Women Farmers Group Empowerment to Support the Tropical Fruit Tree Community Based Biodiversity Management Activity: A Study from Garcinia sp Conservation in Sijunjung, West Sumatera, Indonesia. Community-based Biodiversity Management concept to conserve the local native tropical fruit tree from extinction by getting the benefits from it through some of local community activities has been conducted in Sijunjung, West Sumatera Indonesia in conserving relatives of Garcinia sp. Some of Garcinia species and variety which previously only a wild tree in the forest and has not been utilized, now has become a commercially traded product. One of the products is the tea from Garcinia sp leaves with the brand "Garci-tea" which become the featured product from the woman farmers group in Sijunjung. This brand was generated to help woman farmers group in marketing their product. With this easy-to-recognize brand, becomes a trigger for women farmers group to expand their marketing and access to capital and assistance network, that also supporting the main purpose to conserve local native fruit tree. The objectives of this paper are to explain about the history of Garci-tea and to give an idea how a brand can empower women farmers group in improving livelihoods and also to conserve the local native tropical fruits.

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Rural transformation opportunities: Challenges and Solutions to women participation in agricultural production in Tanzania. About 80% of Tanzania's population lives in rural area, out of which approximately a half are women. The rural community largely depends on rain-fed traditional agriculture, dominated by subsistence farming. Due to low agricultural productivity and missed opportunities, the rural community is still living in poverty. The first part of this presentation explores rural transformation opportunities in relation to Tanzanian context as a developing country in which most of the means of production are culturally owned by men. The under-utilised or totally missed rural opportunities such as horticulture, aquaculture, apiculture, poultry, etc. have been discussed. Secondly, the presentation has pointed out the challenges (such as not being involved in decision making, lack of property right ownership, lack of access to financial services, lack of access to knowledge and technology) that hinder women to effectively engage in agricultural production. Finally, recommended solutions have been given on how those challenges could be overcome so as to enhance women participation in agricultural activities, and thus accelerate rural economic transformation. The presentation further explains the roles and responsibilities of different development stakeholders - the government, financial institutions, non-governmental organisations, and the community in enhancing women participation in agricultural production. "Together we can achieve gender equity, improve agricultural productivity and enhance rural transformation"

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Gender-transformative farmer field schools. Western Honduras is characterized by high rates of poverty, food insecurity and women's disempowerment. Funded by USAID's Feed the Future Initiative as part of the UC Davis Horticulture Innovation Lab, researchers from Penn State and Zamorano Panamerican Agricultural

School (Honduras), surveyed 953 individuals in 562 households to identify association between aspects of women's empowerment and food security and dietary diversity. While 42% of households have gardens, only 30.4% of women and 21.0% of men achieved adequate dietary diversity as measured by the MDD-W. Furthermore, while severe food insecurity is not common, 6.8% of women (and 11.1% of women in single headed households), experienced severe food insecurity, compared to 4.6% of men. We found those who live in households where women have access to credit or control over income have a somewhat more diverse diet, and those with women's access to credit are also less likely to experience moderate to severe food insecurity. Based on these findings, we developed and delivered a gender-transformative Farmer Field School (FFS) in western Honduras in 2018 pairing technical training with gender focused content. We partnered with a local non-government organization to conduct a 16-week program for Lenca women and their families. We used the FFS model to address gender inequities, intrahousehold dynamics, and women's empowerment in western Honduras. Through qualitative pre- and post-evaluations, we investigated the gendered participation in the FFS, its impact on household decision making and agriculture production, as well as the potential to empower both men and women.

PANEL 7 Gender dynamics in seed systems: Insights and analysis

The papers presented are the outputs of research funded by CGIAR Collaborative Platform for Gender Research (2017-2019) as part of the cross-CGIAR gender research agenda. The papers address themes emerging across the five projects. **Pyburn, Rhiannon** R.Pyburn@kit.nl

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What is quality seed? Male and female farmer concepts, perceptions and parameters. This paper explores male and female farmers' perceptions and parameters of seed quality, whether it differs from expert's perceptions and parameters and how it influences farmers seed selection and adoption decisions. These insights are key for seed sector development interventions and breeding programs, not only in terms of ensuring gender equity but also in increasing uptake of improved varieties and the use of quality seed among poor farmers. The paper synthesizes findings of four case studies, from Ethiopia, India, Uganda and Tanzania. The study demonstrates that farmers predominantly define seed quality based on varietal traits and sources of seed, while experts define seed quality based on genetic characteristics, physical purity, physiological quality and phytosanitary parameters. In some cases, men and women farmer express different varietal trait preferences based on their personal experiences about the varieties. Gender norms dictate men and women farmers' perceptions of, parameters and access to quality seed. Findings from the four case studies consistently indicate that yield and productivity are the main parameters used by farmers in determining seed quality. These are also the main parameters that influence adoption decision among both male and female farmers. For farmers seed quality encompasses both varietal traits and physiological and phytosanitary quality bundled together. It is the combination of the genetically determined production potential and the physical quality of the seed that is considered as a quality seed among farmers. In most cases farmers do not dissociate varietal trait from seed quality like the experts. Therefore, an integrated approach, addressing varietal turn-over and ensuring sources of reliable high quality seed for seed stock renewal is a good strategy for improving adoption, increasing production and ensuring food security.

Puskur, Ranjitha

Quality seed provision: Business models that work for women. Significant gender gaps prevail in access to information and good quality seed due to prevailing social norms in several socio-cultural contexts in Africa and Asia, despite the key role women play in farming. Seed systems for non-hybrid crops, which are often only partly profit driven and hence receive less private and public investment, but are important for livelihoods and resilience of smallholder farmers, pose particular challenges of timely access to good quality affordable seed. This paper explores the dynamics of different institutional models of seed production and distribution and their effectiveness in providing inclusive access to good quality seed, with a particular focus on women. Using qualitative and quantitative evidence across several crops and geographies, it provides an account of the factors including risk management, food and nutrition security, access to varietal diversity and quality seed that influence women and men farmers to engage with these models, particularly when the returns are low or non-monetary. The analysis explores whether women-producer led models provide better seed access to women seed users. It investigates women's economic empowerment through their engagement in seed value chains as producers and entrepreneurs. This paper initiates the discussion on factors that influence the sustainability of quality seed production and distribution and opportunities for scaling out effective models to provide continued inclusive access to quality seed of non-hybrid crops for smallholder farmers, with specific attention for women. The paper investigates which seed business models provide inclusive, and in particular female, access to quality seed and economic empowerment. It tries to answer questions such as what motivates women and men farmers to engage with seed production and distribution and how can low or no-profit seed production be made sustainable? Do women-led seed businesses provide better access to women? What are the consequences of transition to more formal seed systems for inclusive and female access to quality seed? Finally the paper debates what are the implications for development strategies to promote and scale out various models?

McEwan, Margaret

Changing gender roles in new seed production models and implications for inclusion/equity. Interest is booming in terms of the development of new seed production and marketing models. New business models for seed production and marketing are being piloted, to ensure higher efficiency, lower costs and wider reach. However, without an understanding of the gender-based constraints and intersectional dynamics (age, socio-economic status) at play in seed production, we risk assuming that men and women will benefit equally from participation in these models. Seed sector innovation is needed to address imperfections in service provision to the diversity of seed users. The consequences of such seed sector innovation for the roles of women and men in the production and marketing of seed need to be understood and anticipated by seed sector interventions. This article reviews how gender roles in seed production have changed, drawing from four separate studies, which provide insights into different crop and country contexts. Findings illustrate shifts in the gender division of labor with new production models and that in some cases, these shifts have been transformative. The paper explores the gender division of labor for seed production tasks. It assesses what are the resource needs for seed production and marketing, and what are the associated consequences for inclusion. In addition the question is addressed who decides on the use of income from seed sales. With the introduction of new seed business models, what has changed in the gender division of labor, access to resources and income use. Finally, the paper will debate whether access to, and decisions about, and the use of resources for seed multiplication have influenced intra-household and community gender norms.

Njuguna-Mungai, Esther

Provisioning and sourcing of information on non-hybrid seed in Africa and Asia. This paper focuses on information that contributes to decision making and behaviour change in the acquisition and use of high quality non-hybrid seeds, and if and how this differs for men and women farmers. We investigate the information provision by non-hybrid seed producers towards their clients, as well the information seeking behaviour of women and men farmers in different crops in 4 countries: sweet-potato in Tanzania, sorghum in Uganda, rice in India and forage in Kenya and Ethiopia. Information flow plays a critical role in adoption of new varieties and the purchase of high quality seed. Adoption of a new variety and the purchase of quality seed is a choice made based on information obtained, and a mental process of thinking and judging the merits and demerits of multiple options. For the non-hybrid seed producers, providing information about their 'offer of superior traits and quality' at a certain price, is therefore imperative for marketing their produce. Farmers require information to generate the knowledge that allows them to make an informed choice, maximizing benefit and reducing risks. This paper explores the asymmetry in the information the non-hybrid seed producers communicate and what the male and female farmers access. Non-hybrid seed business is, as a consequence of the option to recycle seed a number of generations without dramatic yield loss, characterised by modest profitability, making it less attractive than hybrid seed for seed companies. Consequently, advertising/communication budget for the non-hybrid seed is low or non-existent. Still, both men and women farmers need to 'know' about these non-hybrid varieties and sources of seed to make informed choices about variety replacement and seed stock renewal. In this paper therefore, we investigate how non-hybrid seed producers package information and the channels they use. At the same time it is assessed how seed clients access information on non-hybrid seed. The paper presents an analysis of the existing gap between information provision and access and concludes by suggesting innovative communication options to bridge the gap between the non-hybrid seed producers and users in the rural communities.

Puskur, Ranjitha and McEwan, Margaret

Dynamics of moral economy in access to quality seed and sustainability. This paper explores the role 'moral economy' plays in providing access to crop diversity and quality seed to women and men farmers in different geographic and social contexts. The various manifestations of moral economy in the seed systems of various crops are highlighted, as also the motivations for women and men seed producers to engage in the moral economy. The **co-existence of moral and market economies** and the highly dynamic nature of these in response to changing contexts and external drivers is discussed. The role of social norms, social networks, culture and gender dynamics within the moral economy and, for whom this might be important and why are discussed. The conditions under which moral economy can be inclusive or result in reinforcing inequities in access is explored. Women's collectives as a pathway for sustaining moral economy to provide preferential access to women is also examined. This paper analyses characteristics and dynamics of moral economy that hinder or drive sustainable production and the distribution of quality seed. The paper initiates discussion as to whether **volume or scale** create natural barriers to moral economy. Further, it looks at the conditions under, and extent to which moral economy can enhance women's access to improved varieties and quality seed. The associated policy and institutional implications are discussed. The overarching question the research tries to answer is whether the moral economy is a driver or barrier for inclusive access to seed by men and women farmers, and to the sustainability of business models for seed production and marketing. Under which circumstances can moral economy contribute to access to quality seed for vulnerable groups, and how can the mechanisms of moral economy be actively used to improve access to varieties and quality seed? The paper will investigate what the incentives to engage in and

the social norms governing the moral economy, and is it socially and geographically defined? Finally the paper will address the gender dynamics of moral economy, for whom is the moral economy more important?

Mudege, Netsavi

Gender dimensions of seed policy. Seed sector related policies are in many countries under review or development with the objective to govern the sector such that farmers are assured access to high quality seed, and protected from procuring poor quality seed. The consequences of seed policy changes on inclusivity of access, and women access, to high quality seed remain poorly understood. This paper is presenting evidence on the gender dynamics of seed policy change, and explores how guidelines can be more inclusive particularly in relation to integration of gender considerations and the needs of young people into seed system rules and guidelines. The paper is based on in-depth research in Kenya, and draws additional experience from other countries for comparison. In 2016, Kenya introduced far-reaching legislation designed to modernize seed systems and markets for an entire range of crops cultivated in the country. Currently, rules, guidelines, and organizational roles and responsibilities are being revised to remain consistent with the legislation. Based on policy research conducted in Kenya in 2018, this paper seeks to offer insights on how seed policies can affect men and women farmers, by bringing out the intended and unintended effects. Seed policies do not use an end-user perspective, but focus pre-dominantly on the technical aspects of seed production, by prescribing standards and norms. These standards and norms are derived upon based on technical and phytosanitary considerations, rather than socio-economic considerations. They are not client oriented, and do not consider the different quality demands of the diversity of seed users, including different demands of male and female farmers. In the sweet potato and potato sector in Kenya farmers largely rely on informal seed, for sound economic reasons. The seed law in Kenya however, is based on the assumption that 100% of the seed can come from the formal sector. In this manner it leaves no provision for the promotion of alternative options to improve the quality of seed in the informal sector where most potato and sweet potato planting material is found. The paper discusses seed policy trade-offs between seed sector efficiency and inclusiveness, both at the level of seed production and marketing, as well as at the level of providing inclusive access to quality seed for diverse seed users.

PANEL 8: Effective gender training for agricultural researchers: Lessons learned for best practice

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Redefining gender training for agricultural research teams through interdisciplinarity, phased learning and research mentorship. Gender Responsive Researchers Equipped for Agricultural Transformation (GREAT) is a Cornell University-Makerere University applied training program for skills development in gender-responsive design, implementation, evaluation, and communication of agricultural research. Courses are currently focused on gender-responsive crop breeding. GREAT tests a new training model around three tenets: 1) training interdisciplinary teams of bio-physical and social scientists to work together; 2) a phased delivery approach of theoretical grounding, followed by practical field application, and ending with reflection and analysis; 3) dedicated technical backstopping to teams for data collection, analysis and write up. This paper draws on data from three cohorts of trainees to examine the effectiveness of the GREAT training model. Participants had a positive experience attending in interdisciplinary teams: it helped bridge understanding between disciplines, enabled sharing differential learning from the course, and teams supported one another to share the research workload. The phased structure of the course cemented practical application: teams tested application of concepts they learned in the course, gained field experience and were able to identify gender gaps, and collect gender data in projects where this was not planned. Research mentors helped to bridge theory and practice as teams finalized research tools, and facilitated dialogue over divergent perspectives on research and data collection approaches between team members. Early results indicate that with a firm focus on positionality and self-reflection, the GREAT training model is an effective, applied and impactful means to train agricultural research teams on gender responsive research methods towards gender equitable crop improvement project outcomes.

Mbo'otchouawou, Michèle; mmbboo-tchouawou@cgjar.org and Bomett, Pauline

Effective gender training for agricultural researchers: Lessons learned for best practice. Increased investments are required in building human and technical capacity for the agricultural sector to provide opportunities for improving livelihoods in the continent. Academic programs play an important part in this process but are not sufficient to drive the agricultural transformation. It is also critical to promote soft skills that should be transferred in a way that researchers (both men and women) can equally benefit. In Africa, this is evidently not often the case with the percentage of female students enrolled in science degree programs much higher than the percentage of women actually employed by research institutions and women in research leadership in these institutions. For a decade, AWARD has been investing in African women scientists building on different studies that have analyzed the leaky pipeline from different perspectives (societal attitudes, institutional biases, age differences, resource gaps and lack of role models, mentors, networks, etc.) and using a training approach rooted in its long standing experience in fostering mentoring relationships, enhancing leadership skills and bringing together “hard” “soft” skills to build scientific careers with real impact on the ground. AWARD courses were

initially designed with gender-related issues woven into the topics and progressively with the vision that an effective transformative approach in agricultural research and development requires both individual and institutional capacity building efforts. This paper dwells on the specificities of AWARD model, its unprecedented success and impact, the lessons learnt over time and opportunities for more engagement with like-minded institutions to design and deliver effective training with a critical gender lens.

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“Oh, I didn’t know you were a gender specialist, I thought you were just a trainer”: A comparative study of the conceptual basis of gender capacity strengthening in AR4D. This paper explores gender capacity strengthening as being subversive of dominant frames in AR4D that are not always conducive for women’s rights and gender equality. This requires understanding gender training, for example, as being constituted of both form (how it is designed and approached) and content (the curriculum). Ontological and epistemological assumptions underlie how these are related, where content drives form. We articulate what is particular about gender capacity strengthening for AR4D using our recent experience of working with CIMMYT, Livestock and Fish CRP and FISH CRP. One particularity is the different understandings of gender and how these are situated within wider epistemes of AR4D in which these examples are embedded. The paper illustrates gender training challenging these as well as almost fetishized “tools” of development, such as theories of change or indicator-driven M&E. Another “particularity” is in part the bounded nature of gender capacity strengthening and its performative value. Ultimately, commissioners of such initiatives are often critical gate keepers and participants are key customers. Working within their frames, while also critically engaging with them, is the fine line gender capacity strengthening needs to tread. One line is often the level of comfort of commissioners and participants alike with examining their own epistemes, which are signifiers of expertise in AR4D. Another is the degree to which AR4D organisations themselves are comfortable with critically engaging with their own gendered structures.

Meinzen-Dick, Ruth with Go, Ara; Malapit, Hazel; Quisumbing, Agnes; and Rubin, Deborah

Building capacity to understand and implement the project-level Women’s Empowerment in Agriculture Index (pro-WEAI). With the development and adoption of Women’s Empowerment in Agriculture Index (WEAI) and project-level Women’s Empowerment in Agriculture Index (pro-WEAI) by a growing number of researchers and impact assessment specialists, there is increased demand for building the capacity of a cadre of people to implement the index. A program of in-person capacity strengthening sessions planned for South Asia and Africa South of the Sahara has proved insufficient to meet the demand for training. The addition of distance learning can extend access to participants anywhere in the world, reduce the cost (and carbon footprint) of training, and offer flexible timing that accommodates the competing schedules of adult learners. However, there are challenges to creating practical training in a virtual mode, and building a community of practice among those who are trained in how to implement pro-WEAI. Different skills are required for different actors within the pro-WEAI ecosystem. While principal researchers or project impact assessment leads would need to know all of the details, household survey field supervisors, quantitative analysts, qualitative data collectors and analysts would need to know the fundamentals and a more limited set of specialized skills. End users of the information in donor, government, or project implementing organizations would need to know how to interpret the results, but not how to collect and compile the information. We therefore propose to develop six modules: 1) Foundations; 2) Survey Fieldwork; 3) Index Construction; 4) Qualitative Fieldwork and Analysis; 5) Analyze & Integrate; and 6) Interpreting the Results. This presentation will provide an overview of plans for capacity building, including options for distance learning and blended learning with in-person interactions

Abstracts: roundtables

ROUNDTABLE 1: Don't diss my discipline – Synergising techos and “people” people

Gerard McEvilly and Aik Saath

This participatory session will draw on attendees' experiences to build on three preceding reflections about gender integration in R4D. The topic is universal - the challenges inherent in designing and managing projects that straddle biophysical and social research. A sound understanding of social norms and values can be a foundation for biophysical R4D - as well as a framework, “under construction”, to guide adoption, scale out outcomes and sustain impact. However, questions remain as to how to blend the “technical” and “people” perspectives in a way that is collaborative rather than competitive. For example:-How far can we go along the road from Participatory and community-driven R4D towards Community Development before we cross the line from Research into Development? -How do we balance: “Situation Analysis for generating new knowledge critical for prioritising the research”, with “Situation Analysis as a necessary tool for engaging farmers in the research and its findings”? -How can we capitalise on the strengths of biophysical and social scientists to create integrated, balanced and high-performing projects? The roundtable will enable attendees to reflect on “How” as well as “How not”, or to come up with better questions! The aim is to share these reflections, as far as possible, but also to capture them as a session output. We aim to inspire some principles of good practice in planting rigorous R4D in the fertile ground between the biophysical and social disciplines.

ROUNDTABLE 2: Nutrition AND Gender-Sensitive Agricultural Projects: Challenges and Opportunities

Neha Kumur, Akhter Ahmed , Masuma Younus , Saiqa Siraj and Avijit Choudhury

The roundtable will convene implementors of nutrition-sensitive agricultural projects in Bangladesh and India with their impact evaluation partners to discuss the challenges and opportunities in making these programs more gender-sensitive. Two projects in Bangladesh are: ANGeL (Agriculture, Nutrition, and Gender Linkages), implemented by the Ministry of Agriculture, and TRAIN (Targeting and Realigning Agriculture for Improved Nutrition), implemented by BRAC. WINGS (Women Improving Nutrition through Group-Based Strategies) is implemented by PRADAN, one of India's largest NGOs. These projects were designed in response to four main challenges in the literature: (1) the underlying issue of the high prevalence of women and children's undernutrition in South Asia; (2) the need to fill knowledge gaps in how best to design and implement interventions that can accelerate nutrition improvements; (3) the failure of many agricultural development programs to recognize the close interlinkages between agriculture, nutrition, and gender, which, as a result of being isolated from programs in other sectors that address key underlying determinants of undernutrition only address part of the problem of undernutrition; and (4) generating evidence on how to design effective gender-sensitive programs that have positive long-term impacts on women's and children's nutritional status and women's empowerment. The projects attempt to address all four problems by evaluating different packages of agriculture-nutrition interventions that are designed to improve the nutritional status of women and children in a gender-sensitive way to provide more evidence on how these interventions can be better designed and “bundled” for delivery at scale.

ROUNDTABLE 3: True GRIT: Impacts of the Gender Research Integrated Training Program

Ann, Tickamyer, Carolyn Sachs, Paige Castellanos, Nozomi Kawarazuka, and Carolina Camacho Villa

The Gender Research Integrated Training Program (GRIT) conducted by Penn State gender faculty in collaboration with CG system gender post docs and scholars over a 3-year period (2015- 2018) provides an example of a successful program to enhance both gender research capacity and professional development and support throughout the system. The specific objectives of the program were to “strengthen research capacity on gender, enhance the quality of gender research in CGIAR, provide strategies for interdisciplinary collaboration, and increase publication in high quality journals with the ultimate goals of providing benefits to poor rural women and men and empowering women and girls.” Over the course of this 3-year period there were annual in depth workshops conducted at Penn State by the GRIT faculty and guest presenters lasting 2-3 weeks and featuring immersion in topics and tools for integrating gender into agricultural, climate change, and development primary research as well as developing mentoring relationships between faculty and CG postdocs. Other activities included on- site visits between mentors and mentees, webinars organized by the CG gender platform, and condensed workshops offered in conjunction with the CG Gender Platform annual conferences in Cali, Amsterdam, and Addis Ababa. A number of ongoing collaborations have developed out of this work. An edited volume showcasing the collaborations between postdocs and faculty is wrapping up and will be published by Routledge, and a special issue proposed by the most recent cohort is in the planning stages. This panel will outline the process by which the program came into existence, how it evolved over different cohorts, the development of a curriculum, best practices, emerging scholarship, and conclusions about what works, what doesn't, and how to go forward in the future. The panel will include both members of the GRIT faculty from Penn State and former post docs who participated in the program. Panel members will discuss their specific contributions and experiences and how such efforts can be extended.

Abstracts: posters

Afzal, Anam anamafzal46@gmail.com with Iqbal, H; Majeed, S; Warriach, H McGill, D; Gomersall, K *Impact of gender inclusion within a Pakistan based dairy extension program on household nutrition.* The objective of the study was to assess the impacts of women's participation in a dairy extension program on (1) farm management practices and (2) the nutrition of household family members. Data was collected through semi-structured interviews from registered and non-registered farmers in two villages, one in Punjab and one in Sindh (7 from each farmer group, total n=28). The results of study indicated that most of the registered and non-registered female farmers adopted at least one extension recommendation. There were no major differences between both provinces but registered farmers were more likely to implement on farm practice change and subsequently observe an increase in the farm milk and beef production. Most female farmers found that animal milking was their favorite activity because they are getting milk which is a source of income and nutrition for the household and their children. Women stated that they had access to farm income from the milking and these were generally used on children, particularly for purchasing household food. The study concluded that women participation in the extension program not only increased farm production but enabled women opportunities to more efficiently utilize farm resources and products for feeding and providing for their household. Future extension programs targeting dairy farming systems will benefit from including both males and females. Furthermore, programs could have an increased focus on the importance of nutrition and how additional produce can be used for improved household nutrition outcomes.

Arora, Diksha d.arora@cgiar.org with Howland, Fanny; Andrieu, Nadine; and Bonilla-Findji, Osana *Understanding gender and social inclusive aspects influencing adoption and effects of Climate-Smart Agricultural practices - a methodological development.* Climate-Smart Agricultural (CSA) practices and technologies developed by the CCAFS target smallholders to help improve their livelihoods and build resilience to climate related shocks. We present an integrated methodological framework to better understand adoption of CSA practices. Specifically, we examine the socio-economic factors that influence CSA adoption in a case study of a Climate Smart Village (CSV) in Guatemala. Using a mixed-methods approach, the paper investigates the following questions: Which CSA options have been adopted by farmers?; What is the diversity in the types of farmers according to their CSA adoption profile?; What are the motivations and enabling/constraining factors for each of these farmers types to adopt a CSA option? The methodology employed in this research is in two steps – first, we create individual typology of adoption across different CSA practices. We use CSA Monitoring survey data from the CSV in Guatemala, which includes both men and women farmers. The types identified are: “adopting farmers”, “not adopting and passive farmers” and “women adopting farmers.” In the second step, within each type we examine their motivations and the enabling /constraining factors of CSA adoption. In addition to understand the socio-economic constraints of the household, we focus on intra-household dynamics that may constrain or facilitate adoption. We conducted semi-structured interviews with a sub-sample of the monitoring survey participant, accompanied by village-level focus group discussions (FGDs) to examine gendered motivations and constraints to CSA adoption.

Bikketi, Edward e.bikketi@cgiar.org and Njuguna-Mungai, Esther *Analysing the gender yield gap in sorghum productivity: Evidence from smallholder farmers in drylands of Uganda.* Empirical studies in sub-Saharan Africa have shown a persistent gender productivity gap in agriculture. However, there has been very limited gendered empirical analyses on dryland cereals such as sorghum despite its versatility, diversity and as dietary staple. This study analyses the sorghum gender yield gap in Uganda using mixed methods on plot-level sex-disaggregated data, collected from smallholder sorghum farmers in four sub-counties. Using qualitative analyses from focus group discussions, semi-structured interviews, case-histories and ethnographies complemented by descriptive statistics and Oaxaca-Blinder decomposition framework, we estimate the gender yield gap and identify its drivers. First the results reflect, that men continue to hold authority and control over productive resources, with women being confined to subordinate positions, based on patriarchal structures that determines women's land rights and their agency, Secondly, contract farming of sorghums is gaining prominence and women continue to be disadvantaged in contract arrangements. Thirdly, we find a significant gender yield gap of 39% (487.5 hg/ha) in favour of male managed plots compared to female managed plots. We also find the endowment effect is significant and contributing 97% of the gap, indicating an endowment advantage of the male managers over female managers. The drivers contributing to the endowment effect are literacy levels, efficiency of female labour and use of improved seeds. We recommend revisiting of women's rights, tailoring of training and extension programmes to women's literacy needs and improving their access to improved seeds, will reduce the gender yield gaps, level the field and enhance sorghum production in Uganda.

Camacho-Villa, Tania Carolina C.Camacho@cgiar.org with Juan G.; McLean-Rodríguez, D.; Costich, D *Gendered perspectives and changing roles in the break of the intergenerational heritage and transmission of agricultural-based livelihoods, knowledge and genetic resources in rural Mexico.* A retraction from primarily agricultural but also rural-based livelihoods is evident by the population in active, labor-productive age in Mexico. Migration to 'greener pastures' has continued to become a key element of livelihood strategies

deployed by rural households, having repercussions in their dynamics, structure and individual members. This has entailed for many, a potential break in the intergenerational heritage and transmission of agricultural-based livelihoods, knowledge and genetic resources in rural areas. Consequences of this intergenerational break have been perceived on agrobiodiversity and traditional knowledge loss. They have also become visible with the transformation of the rural landscapes due to changes on land use and farming systems. By conducting longitudinal studies tracing back what happens with particular maize landraces at family level, the paper initially documents changes that have occurred on farm households in relation to their genetic resources and livelihoods. Secondly, the paper presents preliminary results of semi-structured interviews and focus groups that shed light on the factors that affect rural families to transmit their agricultural-based livelihoods, knowledge and genetic resources. Finally, the paper consolidates and analyses differentiated perspectives and expectations by women and men from different ages for deepening on the challenges and opportunities for the intergenerational transmission. As a conclusion, the paper provides evidence of how the intergenerational break is context-dependent as it is defined by the validity and applicability that genetic resources, knowledge and agriculture have for farm households to confront challenges or take opportunities that appear in their family trajectories.

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Where does the field end? Defining and mapping the agricultural lives of women for the Invisible Farmer Project (Australia). The Invisible Farmer is a multidisciplinary project that aims to understand, document and support the work of women in Australian agriculture. The project recognises that gendered power dynamics, exclusions, erasures and narrow definitions of farming have historically rendered women's contributions to agriculture invisible relative to men. As a part of this project, a qualitative sociological case-study of Goulburn Valley is being carried out to explore the quality of women's current engagement with agriculture and the barriers and opportunities encountered in the midst of that engagement. Key to the validity of this research is choosing methods that mitigate against assumptions about what constitutes farming and what constitutes relevant data and context around women's engagement with it. Agriculture also has a diversity problem that extends beyond gender: women who also occupy other marginalised social identities are exponentially underrepresented in leadership and more vulnerable to abuse. It is vital, then, to capture the diversity of experiences and identities both of and among women who work in food and fibre production, lest invisibility be perpetuated. For these reasons, the project is using loose definitions of terms, semi-structured oral life history interviews and focus groups for the primary data and is sampling purposively for demographic diversity. By allowing space for and centring various women's detailed accounts of how their lives intersect with agriculture, the research aims to broaden and fill in the collective view of the 'field'.

Drucza, Kristie kristie@drucza.net

The gendering of Ethiopia's agriculture policies. This paper provides a critical feminist analysis of 7 policies relating to gender equality in the agriculture sector of Ethiopia. A review of 22 major documents that outline legislation and policy frame the feminist analysis. Despite the strong commitment of Ethiopia toward gender equality and gender mainstreaming, many of the policies analyzed do not integrate gender equality as a priority for the growth and development of the country and do not adequately mainstream gender. At best, there is an emphasis on increasing women's participation and integration, but few solid gender targets are set. Moreover, gender-specific policies have regressed since the 2006 National Action Plan on Gender Equality (NAP-GE) that proposed important gender-sensitive measures. This represents the paradox of gender relationships in Ethiopia, whereby gains are made and then reverted as governments try to hold onto power by suppressing human rights. Nevertheless, agriculture-related policies have significantly improved in gender-sensitivity over the same time, culminating with the approval of the Gender Equality Strategy for Ethiopia's Agricultural Sector (GESEA) in 2017. This paper explores some of the reasons for why this change may have occurred.

Eissler, Sarah Sarah.eissler@gmail.com Ader, D; Huot, S; Bates, R; Jensen, L; Sachs, C; Tickamyer, A; Gill, T
Gender and sustainable intensification: The case of wild gardens in northwest Cambodia. Sustainable Intensification (SI) refers to a cluster of technologies and practices to increase agricultural production without increasing land under cultivation (i.e., extensification), and with little or no detrimental impact on the environment. The promotion of agricultural strategies for SI holds promise for improving rural livelihoods, productivity, and environmental conditions. However, frameworks assessing the impact of SI interventions overlook how gender crosscuts the multiple dimensions within which SI effects might operate. We argue that studying these gender dimensions is crucial for a complete understanding of the true potential of SI for men and women. An SI strategy of interest here is the development, cultivation, maintenance and use of wild food plants in wild gardens that are frequently located at the interstices of smallholder farm plots. Drawing from a mixed-methods case study in northwest Cambodia, this research examines the role of gender in using wild gardens as an SI strategy. We structure our analysis around the Sustainable Intensification Assessment Framework developed by the Sustainable Intensification Innovation Lab at Kansas State University. This framework posits five domains of SI impact – productivity, environment, economic, human condition, and social – only one of which (social) explicitly mentions gender but all of which have gender implications. Using the promotion of wild gardens as an empirical example, we use our field observations to show that gender factors into all five

measurable domains of SI impact. We conclude by discussing how targeted intensification of wild gardens holds promise as a beneficial strategy for rural women in Cambodia.

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Role of fish in diets and nutrition of women and under 5's in coastal communities of eastern Indonesia. Coastal fisheries contribute directly and indirectly to the food and nutrition security of marine-dependent households. Fishers often apportion part of their catch for household consumption, while the income earned can be allocated to staple and other desired foods. Fish are a valuable addition to rice-based diets because they are rich in micronutrients essential for the cognitive development of children and for adult health. However, little is known about how fish are shared within fisher households. This poster explores the contribution of fish to the diets and nutrition of reproductive-age women and infants and young children in three island communities near Flores Island, eastern Indonesia. The poster draws from a mixed-methods case study, with data on five food and nutrition security indicators collected from 66 households and complemented by focus group discussions and semi-structured and key informant interviews. The study found that more than half of mother-child pairs failed to meet the minimum dietary diversity recommended for a nutritionally adequate diet. Fish was the main animal-source protein consumed by women. However fish consumption increased with the age of the child, with less than one fifth of infants consuming fish. Socio-cultural beliefs and poor nutrition knowledge affected the introduction of fish to infant diets. While a small case study, these results highlight the need for analysis of the intra-household sharing of fish. Developing culturally-appropriate strategies to increase consumption of fish by infants and young children may complement other initiatives to improve food and nutrition security in coastal communities.

Hasiba, Zinat z.hasiba@cgiar.org

Not recognizing women actors in aquaculture: Does the private sector lose business? Although aquaculture value chains in Bangladesh tend to be dominated by men, research by WorldFish has shown that women play important roles in day-to-day management of family fish ponds and how the fish is consumed. The USAID Feed the Future Bangladesh and Nutrition Activity (BANA) is encouraging co-investment by private companies in providing aquaculture goods and services to market actors through a market systems approach. This research aims to identify the barriers that might prevent these goods and services being offered on an equitable basis to men and women. The idea is to support them to look into their businesses with a gender inclusive lens and develop gender inclusive business innovations with potential to grow. This is based on a hypothesis that the private sector are currently not recognizing women as market actors and as their clients. The research focuses on answering the questions i) are private companies in aquaculture losing out on business opportunities by not recognizing women actors? ii) what behavioural changes at enterprise level and what incentives at industry level can lead to more inclusive private sector businesses? The respondents are private sector actors from four subsectors of aquaculture - feed, seed, digitised and online fish markets, and financial institutions. The results of the research will be applied in the Activity in its interactions with private sector companies and local NGOs, by influencing the gender inclusiveness of their business strategies. This poster will portray background and methodology of the study as the results are not available yet.

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Which household play gender equity: A case from peatland-based community in Riau province, Indonesia.

Gender roles in peatland-based communities' livelihoods are an important factor in livelihood vulnerability due to challenging characteristics for conducting agriculture in this area. This article reports on a study of gender roles in Riau Province in 7 villages in 3 districts, aiming to identify significant attributes that determining gender equity at the household level. The data was collected through structured interviews in 221 households, in-depth interviews and Focus Group Discussions in every village. The research indicated that gender roles in agricultural activities are significantly dominated by men, while women play a more significant role in domestic activities. Both men and women contribute equally in the social life of the community; women's participation and group membership is equal to men's. Poor families tend to have higher gender equity in agricultural activities than rich households. The role of women in wealthier households is not in their physical contribution on the land but is mostly transformed into a decision-making role. This indicates that women have a significant role in family livelihoods for both poor and rich families, but in different forms.

Iqbal, Humera Humera.drdfa@gmail.com and McGill, D. M

The role of women for sustainable future through leadership and communication skills development across the world. The objective of the homeward bound program is to create women leaders for a sustainable future across the world. Through this program woman with science background are getting knowledge about what is happening to our planet which later follow the deep dive into the voyage to Antarctica and enhancing their skills to design and execute strategy for creating sustainable future. The target is to reach 1000 women in a 10-year time in different batches from all over the world till 2026. There are four streams of learnings like leadership development, science collaborations, personal visibility and strategic capabilities. The process through which I am connected globally with associated women community in science through lectures via zoom calls, personal and leadership development tools, coaching sessions and visibility trainings. Overall methodology defines that

women become stronger together, gaining emotional and strategic capabilities, making themselves visible for collaborating in science. Hence, I am transferring learnings from this program to my coworkers, my family members and sharing with public and private organizations. Such type of leadership programs are helpful to provide global platform for collaboration in science and breaking the sphere of fear of change and making oneself authentic in actions and intentions.

Iradukunda, Francois f.iradukunda@cgiar.org with Bullock, Renee; Rietveld, Anne; and van Schagen, Boudy *Understanding gender roles and practices in innovation processes: A case study of Banana Xanthomonas Wilt (BXW) disease management in Burundi.* Banana and plantain are one of the most important staple food crops and a significant source of income to smallholder farmers in the East African Great Lakes Region. Banana Xanthomonas Wilt (BXW) is a devastating bacterial disease that threatens smallholder production and livelihoods. We use a systems approach to describe how gender shapes roles and practices in the household, on the farm and in innovation processes. We draw on a case study in Burundi, where single disease stem removal (SDSR) has been introduced as a labour-saving package to reduce BXW incidence. Banana is grown by an estimated 90% of farmers, and BXW poses a critical threat to food security. We use qualitative data that include focus group discussions, interviews and transcripts from farmer learning group (FLG) discussions to describe gender norms, roles and practices and implications for awareness and uptake of SDSR in households. We identify gender patterns in innovation process, namely that men gain higher levels of access to information in FLGs than women and men are also primarily responsible for implementing SDSR. These patterns reflect gender-differentiated norms, roles and practices that are common in the household and in banana-based farming systems, thus demonstrating the ways that innovation processes perpetuate and reinforce common gender roles and practices. Women's participation in FLGs, albeit lower than men, increases the potential of women to implement specific practices of the SDSR package. Systems approaches may be similarly used in different contexts where awareness and uptake of banana disease management packages, and other technical innovations, are not well understood. We found that gender norms, roles and practices significantly influence uptake of SDSR practices and warrant further investigation across the region, where smallholder uptake remains a pressing challenge to establish household food security.

Jaramillo Mejia, Juan Gonzalo J.Jaramillo@cgiar.org

The leading role of indigenous rural women putting food on the table in subsistence agricultural farms in rural Mexico: The decisive role of social protection and the changing role of men? Rural women's roles are changing at an interesting pace in Mexico. Women are increasing their participation in the labour market and more evidently, influencing decision-making processes within their households and communities. However, the pace at which rural women have gained more space in the labour market has not been in sync with men's uptake of caregiving and domestic work. Particularly, in rural areas, where women continue to disproportionately bear the responsibility for reproductive tasks while their share of productive work increases. The latter, which maintaining women's double burden, responds for many, to a need for complementing a shrinking and an even more unpredictable income flow in subsistence agricultural farms. In view of the changing role of rural women and the challenges faced in subsistence agricultural households in Mexico, the study aims at helping understand the decision-making dynamics within family units. Particularly, focusing on men's reactions, roles, and views around women's agency and the perceived changes in traditional responsibilities. Moreover, it intends to help understand the impact of social protection interventions on gender relations and women in specific, who are targeted as the main recipients of benefits. In this regard, the study looks at how social protection programs are effectively supporting agriculture-based livelihoods and the crucial roles women play to sustain them and provide food to their households. It questions the ability of these programs to ensure gender equitable results and embrace an intersectional lens able to both understand and respond to the specific obstacles faced by feminized and indigenous households.

Kavi, Jeromy jeromy.kavi@nari.org.pg or jeromy.kavi@gmail.com

Transforming Papua New Guinea's rural households through the family farm team approach. The socio-cultural issues confronted by women and girls in Papua New Guinea (PNG) impedes women taking up leadership roles or contributing to family decision-making in matters regarding money and other social responsibilities. Therefore, the ACIAR Women Business Acumen project was developed and implemented with the main goal to support women's economic development in order to improve gender equality, family livelihoods and food security. The Project embraces the concept of a 'family farm team' as the approach to train rural households in PNG to empower women however, embracing participation of both men and women. The Project focuses on delivering family farm teams and life skills trainings (agricultural trainings etc) to selected semi-subsistence farmers who then act as peer educators known as Village Community Educators in their local villages. Results showed positive changes in food production for income, household diet composition; family communication improved family decision-making and women's leadership. While embracing the participation of both men and women has created an empowering environment for women for equitable and effective agricultural productivity. This paper use both quantitative and qualitative data to illustrate the range of changes in the five regions of PNG where this project has been implemented. It will illustrate the changes and challenges

for women, men and youth in both the family and their agricultural production. This paper will argue that the family farm team training approach has the potential to improve livelihoods, improve food security issues and help to enable greater gender equality within rural households of Papua New Guinea.

Koczberski, Gina g.koczberski@curtin.edu.au with Koia, Merolyn; Rawa, Elizabeth; and Kalama, Jacqueline *Twenty years of economic empowerment for smallholder women in Papua New Guinea. A case study from West New Britain*. Twenty years have passed since a more gender equitable payment system was first introduced into the oil palm growing areas of West New Britain Province, Papua New Guinea. The payment system, known as the Mama Lus Frut Scheme, was introduced to pay women separately from their husbands for their work on family-owned oil palm plots. The scheme has improved women's access to oil palm income and provided a basis upon which household domestic and productive relations were restructured to benefit women and their families. This poster presents recent findings from an evaluation of the Mama Lus Frut Scheme to highlight the long-term socio-economic changes resulting from the scheme in terms of: women's economic empowerment; household and social relations: women's agency and the integration of women into extension delivery. Finally the poster outlines current challenges and concludes with lessons learnt from this long-established scheme for designing policies aimed at promoting more equitable extension initiatives for women.

Mdimi, Meab m.mdimi@uqconnect.edu.au

Improving women's livelihoods and health: How value chain analysis can enhance both women's equality and vegetables' contribution to nutrition. The poster looks at the methodology for gender- and nutrition-sensitive Value chain analysis that I am developing through my master of agribusiness thesis project. Value chain analysis has widely been used to assess the performance and competitiveness of different food chains and drawing recommendations for creating and distributing both consumer and financial value across the chain. As part of my 2016 Australia Awards short course in Value Chain Thinking, I applied a gender lens to vegetable value chains in Tanzania. Understanding relationships, information flows and consumers' preferences leads to systemic, multi-disciplinary recommendations to improve chain actors' effectiveness in both creating and, critically, distributing financial value across the chain, to the betterment of women in those chains. Following this work, my masters research is applying the new lens of nutrition-sensitivity to traditional African vegetable value chains, to identify strategies which will enhance the health as well as the livelihoods of Tanzanian women. In addition to my previous VCA approach, the research will analyze the entry and exit points of vegetables' nutritional value along chains from farm-to-fork, and so how capacity, activities and relationships among the chain members enhances or depletes those vegetables' nutritional value at the point of consumption. The findings will include specific actions for the chains, as well as new research priorities to fill knowledge gaps about optimizing vegetables' contribution to alleviating malnutrition.

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Improving understanding of gender roles in goat and sheep production in Myanmar. Goat and sheep are important for socioeconomic livelihood of smallholder farmers in central dry zone (CDZ) of Myanmar. Since they are very productive within a short rearing period, understanding the management system of small farms related to gender roles would enhance the further strengthening of production of goat and sheep production in CDZ. Farmer interviews, blood sampling in 120 animals and syndromic observation of over 2000 animals were done from sixty households in three townships. Gender of farmer, flock structure, economic status, head of household and, role of age and gender in responsibilities and farm management were surveyed. Women were responsible for various aspects of decision-making and management of small ruminants in 16-44% of households, irrespective of whether those activities were home-based or external to the household. Interestingly, women made the decision to buy or sell small ruminants in only 16% of households, but performed the purchase/sale in 32% of households and decided how money from sales would be used in 47% of households surveyed. These preliminary results show that it is essential to engage with women, as well as men, in all aspects of small ruminant management, including value chain participants. More research is needed to understand how inter-related decisions are made within households around deciding to buy/sell livestock, performing the actual transactions and deciding how to use money from sales. It could be concluded that women were involved in all aspects of small ruminant management in a significant number of surveyed households.

Nasirumbi Sanya, Losira osirasfm@gmail.com with Ssali, R; Namuddu, M; Mayanja, S; Kyotalimye, M *Elucidating why gender matters in breeding: The case of cooking banana varieties in Uganda*. This study examined gender-differentiated trait preferences of cooking bananas (matooke) for farmers in central Uganda. Men and women banana farmers have differing production objectives, norms and values which drive decisions on which varieties to adopt and grow. Yet breeders rarely consider this in their variety development programs leading to lost opportunities for gender equitable breeding outcomes. Using a mixed methods approach; a total of 288 respondents participated in sex-disaggregated group interviews (49) and focus group discussions (58), key informant interviews (7) and household interviews (174) to obtain a richer understanding of trait preferences of men and women that explain acceptability of cooking bananas. Sensory evaluation of candidate and released hybrids banana varieties were also conducted. Results show that the universal attributes for variety

selection were bunch size, taste, resistance to pests and diseases, drought tolerance, food texture/softness, maturity period and finger size. Men appreciated agronomic and market related traits like tolerance to drought and poor soils, bunch size and compactness, maturity period and shelf life while women valued more processing and cooking traits like flavour, food color, ease to peel, plant height and finger size. These are plausible attributes for gender-responsive breeding in bananas. We recommend redesigning of the banana breeding pipeline to deliver varieties with attributes desired by women and men. A participatory process involving stepwise selection criteria that commences with quality traits followed by production traits while integrating gender-specific preferences should be employed to ensure acceptability of cooking banana hybrids by men and women end-users.

Nchanji, Eileen Bogweh e.nchanji@cgiar.org and Birachi, Eliud

Commodity Corridor approach: Facilitating gender integration in development research at different scales in Africa. Bean farmers in Sub-Saharan Africa especially women are grappling with low yields amidst growing demand for bean. The Pan African Bean Alliance (PABRA) introduced the Commodity Corridor approach, to eliminate constraints along the bean value chain. Bean corridors are areas of bean intensification characterised by flows and linkages to markets, made up of production, distribution, and consumption hubs. This approach provides us with a platform to easily identify gender constraints and entry points at different hubs along the value chain, thereby making the value chain more efficient. While seeking to link all actors in the value chain, it also aims to provide women directly with the proceeds of their sale and give them more decision making power over these proceeds and income for household nutrition and health. This is through digital payments -employing technologies such as mobile phones – so farmers of which most are women can make better-informed decisions on what to produce, where to access markets and how to competitively compete in the pricing of products. At the same time catalysing opportunities that help improve access to market information and integrate gender in the corridor, we have established and enhanced business-based bean platforms and partnerships that link farmers, especially women to markets within the corridors, around existing and new lead firms who are aggregators, off-takers and processors. This has increased women's bargaining power with traders. Platform members are mandated to have a 40% women leadership, and in the last two years, we have seen this percentage grow in different countries. We have enhanced women's infrastructural and knowledge-based capacity to produce nutrient-rich bean products (bean flours, precooked beans, frozen beans). We are also bringing in men as change agents to increase bean purchase and consumption.

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Seeds of change and rays of hope in the Philippines and Vietnam: Towards gender mainstreaming in agricultural diversification in a cross southeast Asian perspective. This presentation is informed by ethnographic data collected during various periods of fieldwork conducted in Northwest Vietnam and in the Central Region of the Philippines. My material on the Philippines indicates local development initiatives aiming to promote women empowerment through organic and sustainable farming in the Typhoon Haiyan affected areas in Eastern Samar. In the fore of my discussion is the case of the local non-governmental organization Sarilaya Kalayaan. Sarilaya Kalayaan has not only provided women survivors with skills that help augment their family income and broaden their abilities but also helped to create a critical platform from where women can voice their experiences and develop strategies to challenge men's violence individually or collectively. As for Vietnam, the issues are examined under the lens of the intersections between household dynamics, social capital and ethnicity in the agricultural production process and livelihood options of minority ethnic communities. Research findings show that the approach of intersectionality can serve as an effective frame for analysis not only in academic studies but also in development practice concerning the agricultural sector, helping shed light on a complex array of interconnected factors across individual, relationship, community, and macro-social level.

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Factors influencing dietary diversity of smallholder farming families in rural Fiji. Background: Fiji is experiencing low dietary diversity that impacts child physical/cognitive growth and adult weight/health status. Despite involvement in food production, low dietary diversity is common in agriculture-dependent communities. The aim of this study was to examine factors influencing dietary diversity at the household level in rural Fiji to inform nutrition education and agricultural development programs. Methods: Surveys were conducted with 161 households across 8 rural villages utilising the UN FAO's Household Dietary Diversity Score. Data were analysed using adjusted multinomial logistic regression. Results: All participants were indigenous-Fijian. Majority were female (73%), no secondary education (71%), unemployed (68%), aged 30-54-years (57%), low annual incomes (FJ\$1,000-15,000, 57%). Most households ran semi-commercial farms (73%), grew 6.3±4.9 food crops, and had ≥1 resident with a chronic-disease (75%). Most households exhibited low (19%) or medium (67%) dietary diversity. Commonly consumed foods were sweets (98%), grains (97%), white-roots (94%), oils/fats (82%), dark-green-leafy-vegetables (77%). Least consumed foods were orange/-yellow fruits (23%) and vegetables (35%), eggs (25%), legumes/nuts (32%), milk/milk-products (32%). Households were at higher risk of low dietary diversity if participant were unemployed (OR=9.8, 95%CI=2.03-47.69, p=.004), had low education (OR=4.0, 95%CI=1.01-15.87, p=.048), or ≥6 household occupants

(OR=0.1,95%CI=0.02-0.38,p=.001). Conclusions: High-calorie, nutrient-poor diets were prevalent in smallholder, farming families in rural Fiji. Low dietary diversity were associated with unpaid employment, low education and large households. Nutrition education programs must focus on strategies to reduce sugar intake and increase consumption of fruits, vegetables, legumes, eggs and milk products. In the absence of secondary education, programs should consider different reading abilities and levels of comprehension.

Ogunnaike, Maria oluwagbemisolami@gmail.com with Shittu A.M.; Obayelu A.E.; and Sodiya C.I. *Influence of gender empowerment on nutritional outcomes of pre-school children of rural farm households in southern Nigeria.* Women empowerment has been identified as a solution to nutrition security problem in Sub Saharan Africa and Nigeria. In this study, we examined influence of women empowerment on nutritional outcomes of pre-school children in Southern Nigeria. The study was based on a cross-sectional survey of 521 cereal farmers drawn in a multi-stage sampling process interviewed across five states in Southern Nigeria. Data were collected on gender related questions and children characteristics. Anthropometry techniques was used to assess the children nutritional indicators while women empowerment was assessed within the framework of abbreviated Women Empowerment in Agriculture Index (A-WEAI). A-WEAI results showed that only 28% of the households' women may be adjudged as economically empowered this is significantly ($p<0.01$) lower than the empowerment rate among the men (44%). Furthermore, we found out that the mean height for age (HAZ), weight for age (WAZ) and weight for height (WHZ) Z-scores were -0.18, 0.09 and 0.25 respectively. However, econometric analysis revealed that, achievement of the primary female in the use of credit ($p<0.05$) had a positive significant relationship on HAZ. While achievement of the primary female in asset ownership ($p<0.10$) and workload ($p<0.10$) had a negative significant effect on WHZ of preschool children these implies that WHZ will reduce for every inadequacy in these indicators. We concluded that women empowerment significantly affects the nutritional outcomes of children in Southern Nigeria and recommended empowerment of women in the rural household in order to improve nutritional outcomes of pre-school children in Southern Nigeria.

Okonya, Joshua j.okonya@cgiar.org with Nyaga, John; and Mudege, Netsayi *Intra-household gender differences in decision-making and responsibilities for pest and disease management in potato.* Pests and diseases cause significant crop losses in most countries and hence contribute to food insecurity. It's also increasingly becoming known that adoption of any agricultural technology hinges on proper understanding of intra-household gender dynamics of a community. Although several pest and disease control measures are available, little is known about women's autonomy in decision-making within a household and we find no past studies that investigated this relationship. In this paper we examined the socio-demographic factors influencing intra-household decision-making power of women in relation to various integrated pest management (IPM) components. Information gained in this study will guide future project interventions. Data for the study came from a household survey carried out in Rubanda district, Uganda among 130 married monogamous couples in 12 villages. To get a more accurate proxy for decision-making power, a weighted index and linear regression models were used to examine the relationship between decision-making power and socio-demographic characteristics. We found that farming experience, use of hired labour and membership to a farmers group, were positively associated with woman's autonomy in decision-making. Our data also show that higher levels of education, farm income and age consistently improve women authority. Our findings reveal the factors that influence women autonomy in the management of crop pests and diseases not only in Uganda but in many African countries. Our study also contributes to the knowledge that emphasize the importance of increased household income, food security and girl-child education in achieving sustainable development goal (SDG) number 1, 2 and 5.

Opie, Hellen hellenop@gmail.com with Anguria, Paul; Sebatta, Christopher; and Njuguna-Mungai, Esther *Gender differentiation of farmers' knowledge, trait preferences and its impacts on sorghum and millets seed systems of Uganda.* This study examines the differences in knowledge, traits and impacts on adoption of sorghum and finger millet among women and men farmers in Northern and Eastern Uganda. We also investigate the correlation between farmers' knowledge on varieties, adoption decisions and its intersection with different gender identities. A mixed methods approach involving 48 focus group discussions using a vignette and a survey of 376 households using a semi structured questionnaire were used to guide in-depth discussions on knowledge, adoption decisions, seed choice and behavior, seed varieties, important traits farmers look for in making variety choices and levels of farmer knowledge. Our findings indicate that most of the farmers (79%) do not have correct information about the improved sorghum and finger millet varieties they are growing especially those released within the last ten years. More women (62 %) than men (38%) are more informed about the new improved varieties. Compared to men, women farmers take a shorter time to adopt a variety as long as they receive the right variety information and knowledge. Earliness, high yield, drought tolerance, resistance to storage pests and culinary traits such as sweet taste are of great importance to both men and women farmers. Ease of threshing, softness of seed for easy grinding and flour swelling ability are important traits for women while men are more concerned about market related traits such as high yields, colour and size of grains. We conclude that breeding and seed systems programs need to understand the gendered preferences of farmers so as

to guide varietal development and design effective communication models for effective dissemination of variety information to enhance adoption.

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The role of male and female social networks on cocoa production in Vanuatu. Cocoa is one of the most important agricultural exports for Vanuatu, it is the 3rd most important source of cash income, with 25% of Vanuatu households involved in cocoa production. With 75% of rural population, and 62.4% of these population classified as poor, interventions to boost the competitiveness of the country's cocoa farmers are likely to improve living conditions for this population. The promotion and diffusion of knowledge of cocoa recommended practices via farmers social networks is a way to achieve this goal. Most studies have focus on the role of male heads of household networks, and few exploring the role of male and female heads of household networks in knowledge acquisition and adoption. Contrary to old believes, women play a key role in cocoa production and postharvest, yet they have limited access to extension services and rely on family members and friends in their community for information about cocoa production and postharvest practices. In this paper I examine the effects of social learning on knowledge and adoption of cocoa production and postharvest practices among male and female heads of households in Epi, Vanuatu. I use "random matching within sample" to collect data on male and female heads networks. I analyse the effects of male and female links, their links characteristics and beliefs of links farms performance on knowledge and adoption of recommended practices. Preliminary results show evidence of social learning and differences between men and women network effects.

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Gender inclusiveness in urban agriculture: Potentialities and challenges of mushroom cultivation The scope of urban agriculture is increasing day by day specially in the developing countries households expecting better livelihoods and living standards migrate to urban areas. Women who were previously contributing in rural traditional agriculture don't have that scope anymore. So mushroom cultivation in that case needs less space and resources can help them to earn economic empowerment to some extent. Yet, it's not unambiguous how and in which direction mushroom cultivation can lead gender inclusiveness in urban agriculture and the institutional challenges or bottlenecks can be overcome. The present study inspects mushroom cultivation as a way for gender inclusiveness in urban agriculture in Bangladesh. Through the key informant interview, focus group discussion and other qualitative and quantitative data collection, the study aims to find out present mushroom cultivation status, identify factors influencing women participation and major institutional and other challenges for gender inclusiveness. It is observed that a wide number of women are involved in mushroom cultivation in urban and semi-urban areas besides men. Results show that of some factors like proximity of training centre, personal motivation influence their participation noteworthy and lack of proper institutional setup challenge their inclusiveness in urban agriculture.

Scott, Jessica Jessica.scott@cgiar.org with Akester, Michael; and McDougall, Cynthia

Productivity and the promise of integrated rice-fish systems: How gender will shape success or failure of this rural transformation in Myanmar. On the heels of its historic political-economic opening in 2015, agricultural production in Myanmar is on the brink of substantive transformation. Poverty in Myanmar's rural areas is substantially higher than urban areas: 38.8 % and 14.5 % respectively. Out-migration from rural areas due to unprofitable farming systems highlights the need for "a more productive agricultural sector and improved food systems" (FAO). Shifting from monoculture rice to integrated rice-fish systems has the potential to contribute to increased rural incomes, livelihood diversification and provide a source of nutritious fish. Through a literature review and preliminary qualitative gender analysis in three demonstration farm villages we examined the perceived impact pathways by which productivity and rural development are intended to be achieved. We found that although gender is notably absent from the rice-fish discourse the emerging findings suggest that gender equality and women's empowerment is likely a critical determinant in the promise of productivity to the anticipated livelihood and wellbeing outcomes. We observed gendered differences in the division of labour and normative barriers such as those that position fisheries and rice production as men's domains. For livelihoods and income, women are largely recognised as sellers and processors in the fish value chain and tend to control income from fish. The literature suggests that women's control over income is significant for family wellbeing and nutrition. Though the pattern of resource control from a rice fish system is yet to be observed. Mixed methods research exploring these gender dimensions, implications and ways forward in rice-fish systems is currently ongoing.

Sumner, Daniel dmsumner@vt.edu with Hanh, T.; Truc, N.; Thanh, N.; Christie, M.; and Hoa, N.

Gender-responsive Integrated Pest Management approaches in Vietnam: Lessons learned and insights to promote and strengthen gender integration. Integrated Pest Management (IPM) is a holistic and sustainable approach to abate crop losses from pests and reduce dependence on chemical pesticides. The design, development, and dissemination of IPM practices and packages requires an understanding of the broader socio-economic and agro-ecological landscape, questioning where, when, why, and for whom such pest management approaches are most appropriate. Documenting and understanding the gendered dimensions of pest

management, women's and men's knowledge, problems, priorities, and preferences are crucial to ensure that all farmers realize the benefits of applying IPM practices – reduced crop losses, increased agricultural productivity, higher incomes, and increased food safety. This poster describes the approach used by the Feed the Future Innovation lab for Integrated Pest Management (IPM IL) to address the gendered dimensions of pest management in the context of its research activities in Vietnam. Our findings offer important guidance for the design of gender-responsive IPM practices. First, they indicate there are gendered differences in the ways that men and women experience the advantages and disadvantages of innovative agricultural technologies. In addition, we conclude for the IPM IL to truly implement a gender-responsive approach, it must more explicitly engage the underlying gender norms that influence men's and women's pest management priorities and critically assess how men and women value proposed pest management solutions.

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Analysing gender social networks and collaboration in rural Punjab, Pakistan. Social actors and link between them constitute social network. These links exert imperative effects on every individual experience in daily life. Social networks are useful tool for getting access to important aspects of rural life activities. Equitable gender access and participation to social organization and networks is key to sustainable rural and agricultural development. However, rural women in Pakistan have limited access to social and institutional linkages and are in a more disadvantaged position than men. Research shows that women in rural areas face inequalities in accessing social networks that enable an individual to seek better linkages and collaborate to earn a livelihood. The discrimination they face exposes them to material deprivation as well as making it more difficult for them to fulfil their vital roles in agricultural development. This gender gap leads to the marginalization of women regarding their access to essential services and control over resources. Work focusing on sociological contribution of social structure and networks on the rural economy is scanty. Keeping in view these facts, this poster is designed to explore the type of social networks/organization to which women have access and how these social networks affect their capability to collaborate with other households in villages. A mix of quantitative and qualitative methodology is used to analyse the gender social networks in rural Punjab. The empirical evidence reflects that access and participation to key social networks play vital role in improving women's knowledge, skills and confidence that are necessary for gender collaboration and earning a sustainable livelihood in rural areas.

Tom, Chheat tom@karunabattambang.org

Karuna Battambang target group: Small landholder farmers. Karuna Battambang Organization is currently implementing its community development project in 4 provinces in the diocese of Battambang, Cambodia. Currently, we have direct and indirect 200/410 of farmers (135 women) — about 20 farmers in each area of intervention, and 75 of which are youths (25 women). Our main goal is to promote and support small landholder farmers to gain knowledge and skills to improve their lives in a sustainable way. With this specific goal, we can achieve and expect to have positive outcomes from these seeds of change project under the community development project of Karuna Battambang—1. Groups of farmers are working together and helping each other 2. A numbers of farmers have a savings fund for critical needs 3. Farmers have access to sharing and learning practical experiences on alternative ways of farming 4. Groups of farmers are able to farm using new techniques in agriculture to get better results 5. Groups of farmers are able to produce safe and organic rice, vegetables, and animals 6. Farmers have access to marketing opportunities to directly showcase and sell their products to national and international consumers 7. Farmers acknowledge the value of farming in order to reduce migration 8. Families learn and implement solid waste management techniques.

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Gender equity considerations in food systems for healthier diets. Gender is a key issue to consider in the context of food systems that can easily be overlooked but that may play a key role in understanding how food systems can deliver healthy diets and reduce malnutrition. Nutrition studies often focus on women and their roles, both biological and social, in nutrition outcomes for their households, and specifically for their children; however, there is a lack of gender research that reviews and synthesizes the evidence of how gender equity issues influence food system pathways to nutrition and health. While much work has been done on the pathways of agriculture production to consumption, including the role of women's empowerment, relatively little food systems research has been done outside the arena of smallholder agriculture production in rural areas. Thus, there is a need to expand the agriculture to nutrition pathways to include other topics and areas outside the traditional realm of smallholder agricultural production. As part of this expansion into a broader food systems approach, it is important to keep a focus on gender and women's empowerment issues and the role they play in the food systems pathways to nutrition. This study identifies key gender inequities in the food systems of low and middle income countries and how they relate to achieving healthier diets. Furthermore, we consider how gender equity fits into the theory of change (ToC), the gender equity assumptions implied in each link of the ToC, what evidence exists about these assumptions, and what key evidence gaps still remain.

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Front cover image caption: Julius and Felicitas Wilom from East New Britain in Papua New Guinea demonstrate the traditional way to crack the canarium (galip) nut.

Photographer: Conor Ashleigh