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Using gender-disaggregated data for policy

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June 21, 2023

Gender-Climate-Agriculture Hotspots: Methodology and Preliminary Results

Jawoo Koo, Carlo Azzarri, Gianluigi Nico, Arun KC, Ranjitha Puskur, Avni Mishra, Nitya Chanana, Els Lecoutere

Outline

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2. Objective
3. Data
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   b. Vulnerability due to gender inequity
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4. Preliminary results
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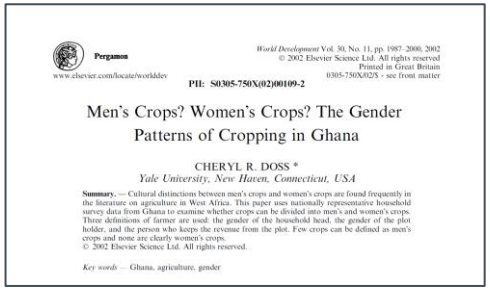

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Men's Crops? Women's Crops? The Gender Patterns of Cropping in Ghana

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Summary. — Cultural distinctions between men's crops and women's crops are found frequently in the literature on agriculture in West Africa. This paper uses nationally representative household survey data from Ghana to examine whether crops can be divided into men's and women's crops. Three definitions of farmer are used: the gender of the household head, the gender of the plot holder, and the person who keeps the revenue from the plot. Few crops can be defined as men's crops and none are clearly women's crops.
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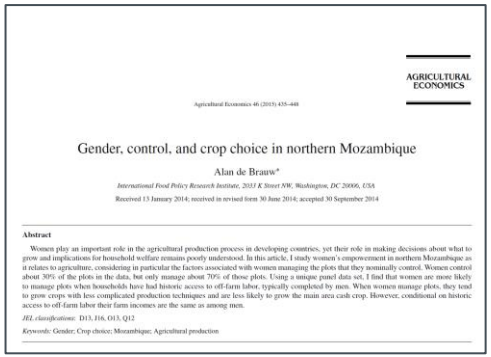
Key words — Ghana, agriculture, gender

Doss (2002)



AGRICULTURAL ECONOMICS

Agricultural Economics 46 (2015) 435–448

Gender, control, and crop choice in northern Mozambique

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Abstract

Women play an important role in the agricultural production process in developing countries, yet their role in making decisions about what to grow and implications for household welfare remains poorly understood. In this article, I study women's empowerment in northern Mozambique as it relates to agriculture, considering in particular the factors associated with women managing the plots that they nominally control. Women control about 30% of the plots in the data, but only manage about 70% of those plots. Using a unique panel data set, I find that women are more likely to manage plots when households have had historic access to off-farm labor, typically completed by men. When women manage plots, they tend to grow crops with less complicated production techniques and are less likely to grow the main area cash crop. However, conditional on historic access to off-farm labor their farm incomes are the same as among men.

JEL classifications: D13, J16, O13, Q12

Keywords: Gender; Crop choice; Mozambique; Agricultural production

De Braw (2015)

Climatic Change (2020) 158:13–27
https://doi.org/10.1007/s10584-018-2233-z

CrossMark

Woman in agriculture, and climate risks: hotspots for development

Nitya Chanana-Nag[1] · Pramod K. Aggarwal[1]

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Abstract There is rising interest among research and development practitioners to arrive at impact driven solutions in the field of gender and climate change adaptation. 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 methodology to identify hotspots where climate change adaptation and gender based interventions could be prioritized. The methodology is illustrated for India. The results suggest 36 hotspots across 10 states in India, where large number of women farmers are impacted by high levels of drought probability, excess rainfall and heat wave. 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 laborers 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 are emphasized. Additionally, a comparison of current research being done in the field with the results of the study highlights the potential to learn from current efforts for efficient scalability of gender and climate change adaptation interventions.

Keywords Climate-smart agriculture · Climate change adaptation · Female in agriculture · Hotspots

This article is part of a Special Issue on "Gender Responsive Climate Smart Agriculture: Framework, Approaches and Technologies" edited by Sophia Huyer and Samuel Tetteh Partey.

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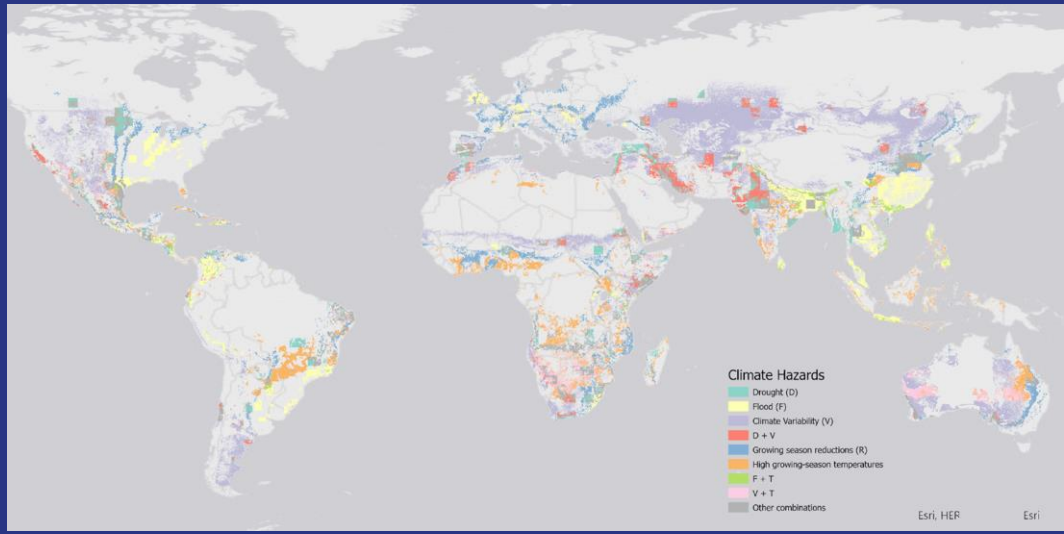
Chanana-Nag and Aggarwal (2017)

Background

- Climate change impacts on food systems are expected to be more acute in Africa and South Asia.
- Small-scale producers, especially women farmers, are vulnerable to climate shocks due to their limited adaptive capacities.
- Limited sex-disaggregated data available to quantify the level of risks faced by women producers.

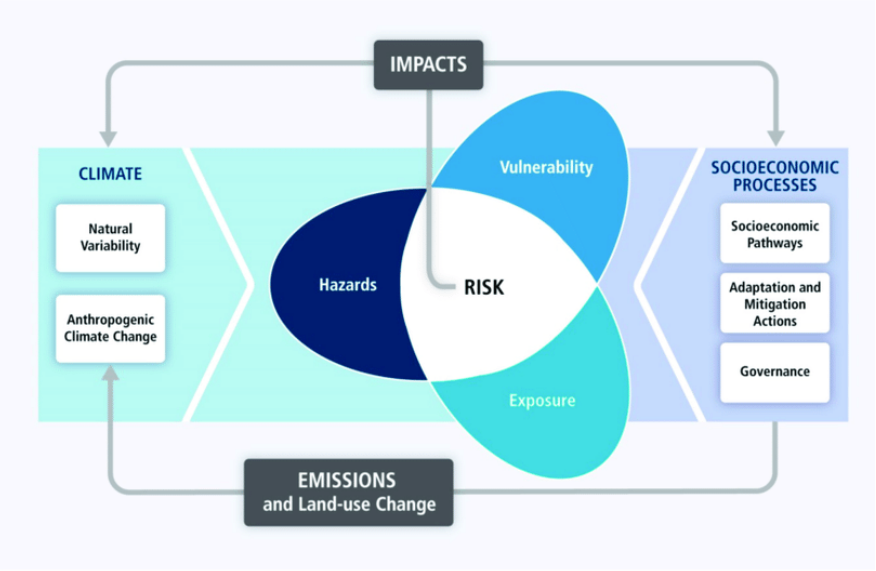


Jarvis et al. (2021)

Objective

Identify subnational gender inequity-climate-agriculture hotspots, where:

- Gender inequities are persistent and likely to be exacerbated under a changing climate.
- Women are more vulnerable to adverse effects of climate change.
- Policy interventions for gender equalities should be prioritized.

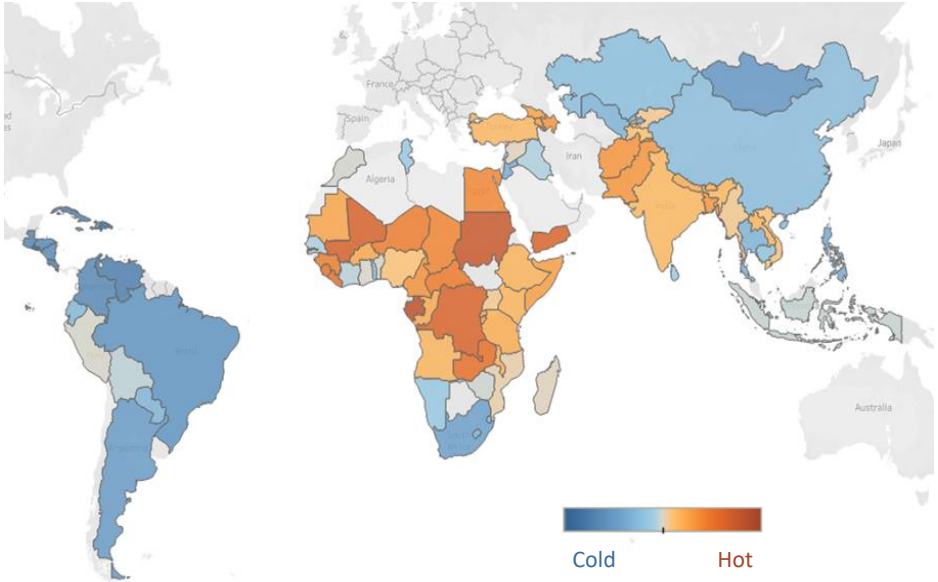


The IPCC AR5 Risk Framework

Study Countries
Mali, Zambia, Pakistan, and Bangladesh

Selected based on the **Principal Component Analysis** of three country-level indicators:

1. Share of adult female agricultural labor (LFS circa 2019)
2. Share of rural population under climate hazard (CGIAR 2021)
3. Gender discrimination in social institutions (OECD 2014)



Country	***Risk***
Gabon	2.56
Sudan	2.33
Gambia	2.10
Mali	2.03
DR Congo	1.95
Yemen	1.94
Zambia	1.64
Liberia	1.57
Sierra Leone	1.55
Central African Republic	1.44
Niger	1.39
Guinea	1.36
Chad	1.28
Egypt	1.23
Cameroon	1.05
Pakistan	1.03
Bangladesh	1.03

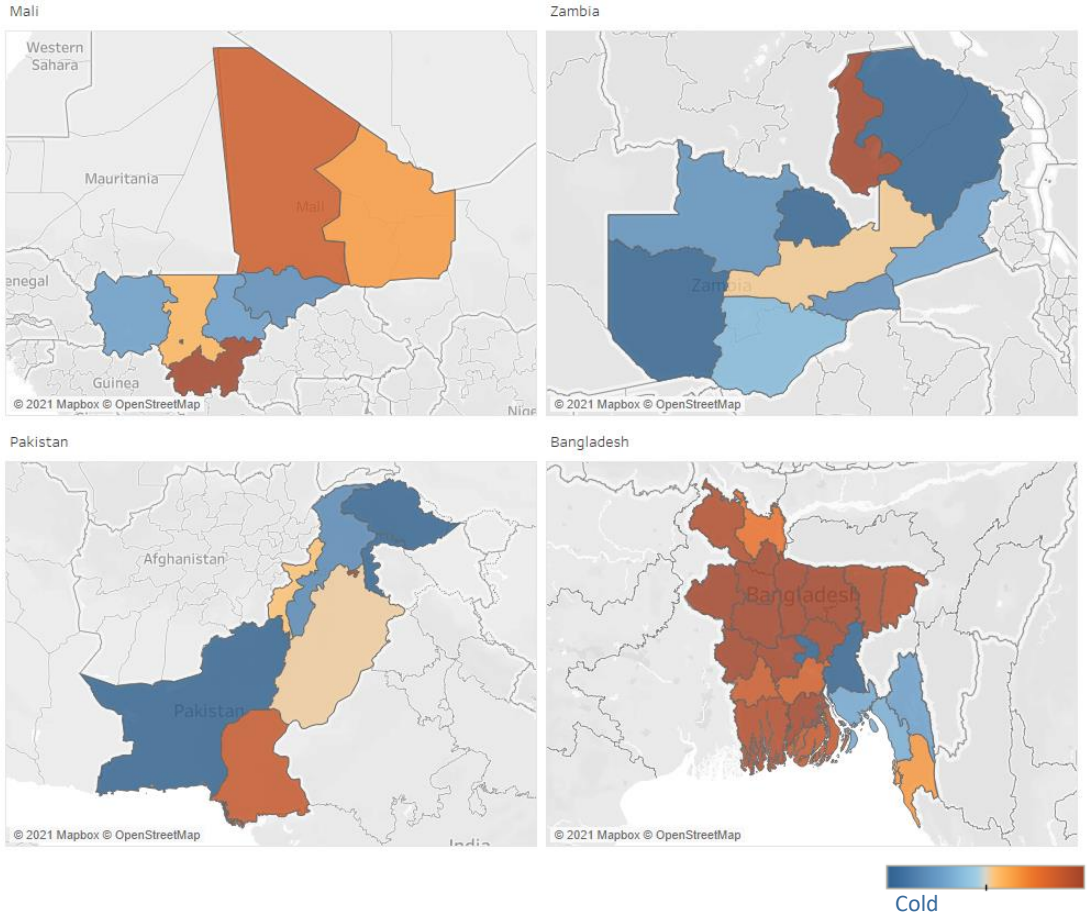
Data
Climate Hazards

Global Human Settlement Layer Urban Centres Database 2015

WorldPop Open Population Data Repository

Share of rural population under projected climate hazards (2050, RCP 8.5)

Climate Hazards to Agriculture, Present and Futures

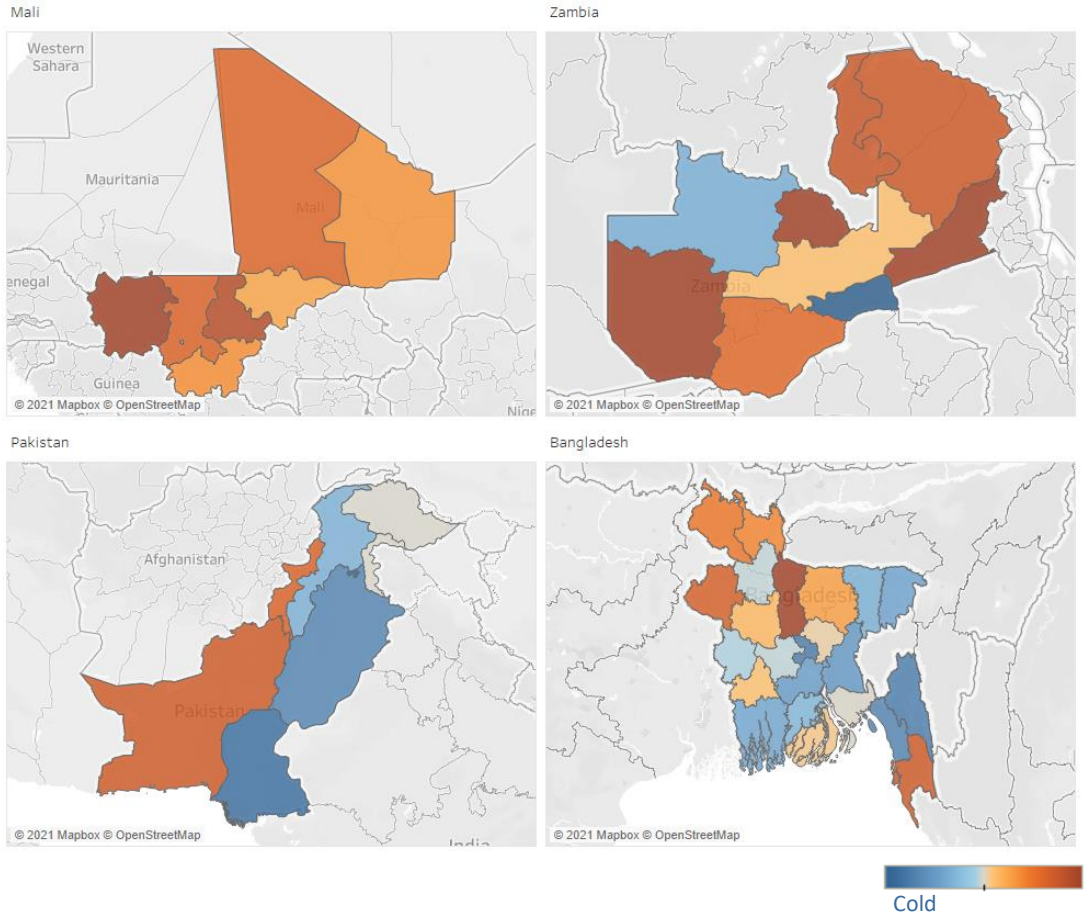


Data

Vulnerability due to Gender Inequity

Composite index of:

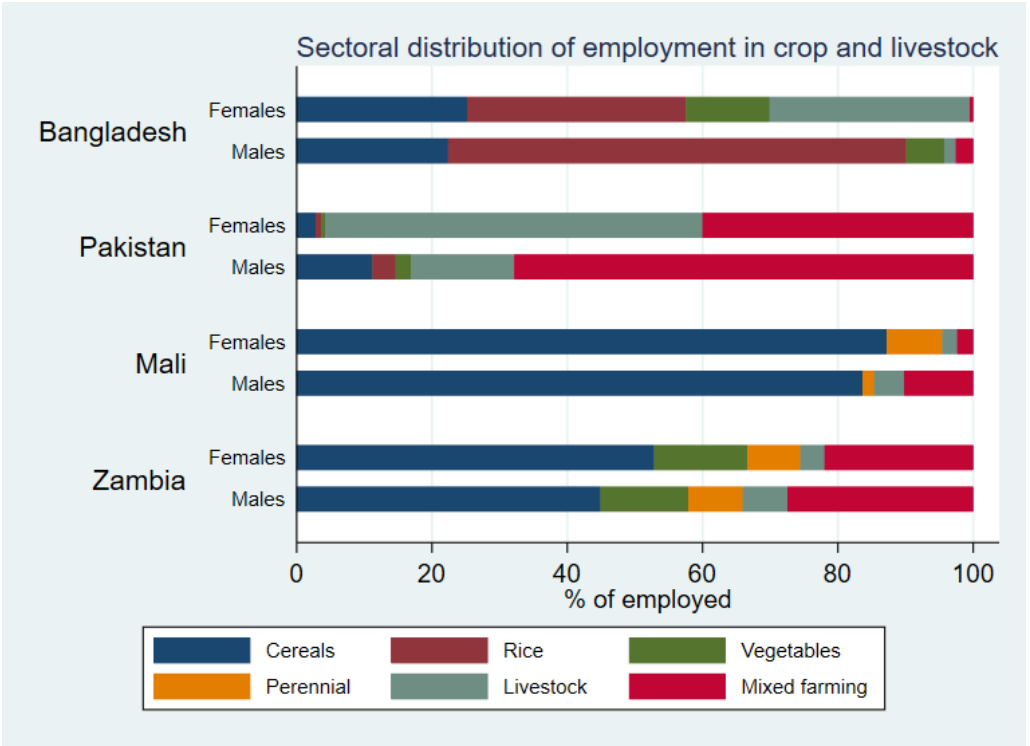
1. Subnational Gender Development Index (SDGI)
2. Ratio of male/female between 0 and 4 years old (“missing women”)
3. Prevalence of lifetime physical and/or sexual violence for ever-married women
4. Prevalence of child marriage (among girls aged 15-19)



Data
Exposure

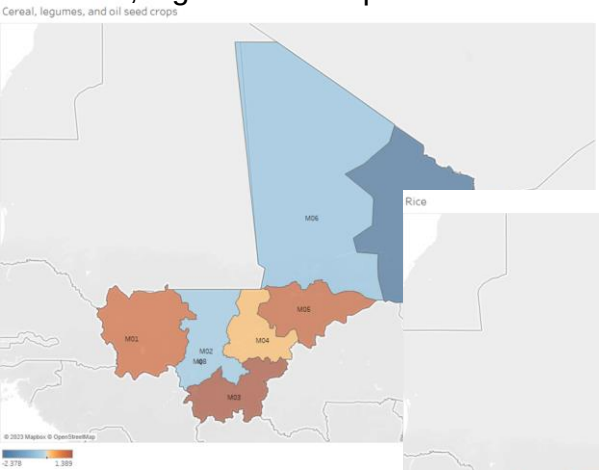
Distribution of agriculture participation by crops and livestock

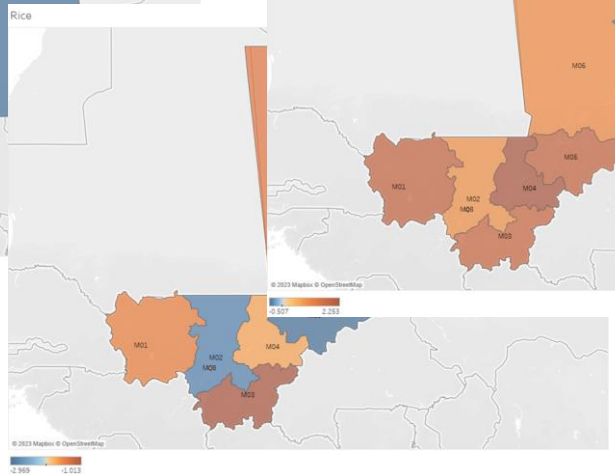
- Engagement in six main groups/categories
- Participation in rice highest in Bangladesh
- Mixed farming and livestock dominant in Pakistan
- In SSA, males and females mainly engage in cereals, vegetables (Zambia), and perennial crops



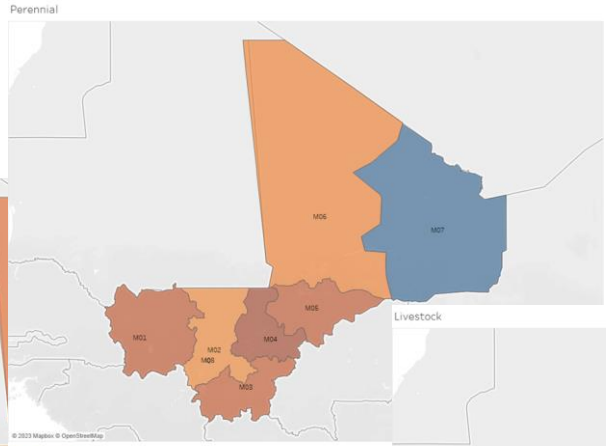
Preliminary results *(example for Mali)*

Cereals, leguminous crops and oilseeds

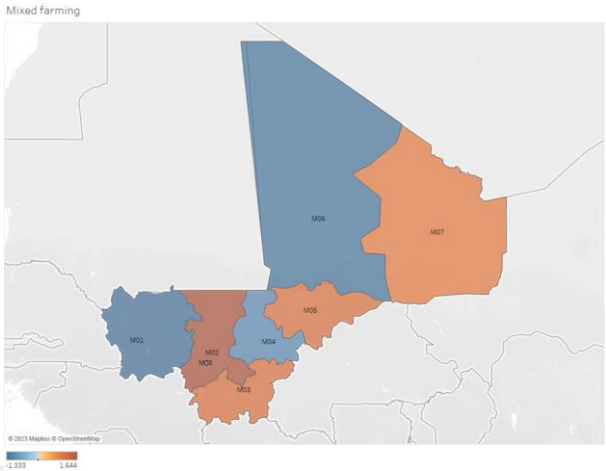


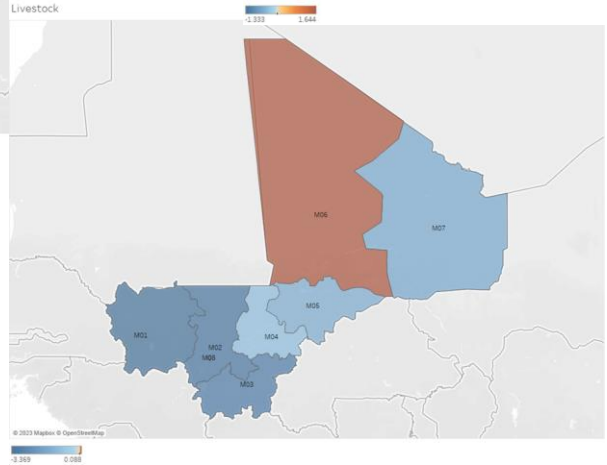


Perennial crops



Mixed farming





Summary of hotspot analysis

- Climate hazard should not be examined in isolation, but jointly with women's vulnerability and exposure.
- Promising approach for improved targeting, taking both socio-agro-economics and climate risks into account.
- Analysis helps prioritize gender- and climate-responsive agricultural policy to locations where commodity-specific risk to climate hazards is high.

Methodological advances on collecting data on Women's Empowerment

Carlo Azzarri[1], Beliyou Haile[1], Sedi-Anne Boukaka[1], Greg Seymour[1], Jessica Heckert[1], Ruth Meinzen-Dick[1], Agnes Quisumbing[1], Alessandra Garbero[2], Athur Mabiso[2], Aslihan Arslan[2], Romina Cavatassi[2], Tisorn Songsermsawas[2], Sara Savastano[2], Adriana Paolantonio[3], Rawane Yasser[4], Chloe van Biljon[5], Neha Paliwal[6], Irene Toma[7], Gianluca Franceschini[7]

[1]IFPRI, [2]IFAD, [3]World Bank, [4]AFD, [5]TSIBA Business School, [6]WUR, [7]FAO

Development of IFAD Integrated WEAI (IFAD i-WEAI)

- The challenge:
  - Measuring women's empowerment *along with* many other outcome indicators in IFAD's Research and Impact Assessment (RIA) questionnaire
  - Need to minimize survey time and show relevance to projects

- Response:
  - Adapting questions from RIA standard questionnaire to proxy 5 pro-WEAI indicators by associating them with individuals in household roster
  - Additional questions for 5 pro-WEAI indicators not covered in RIA-Qx

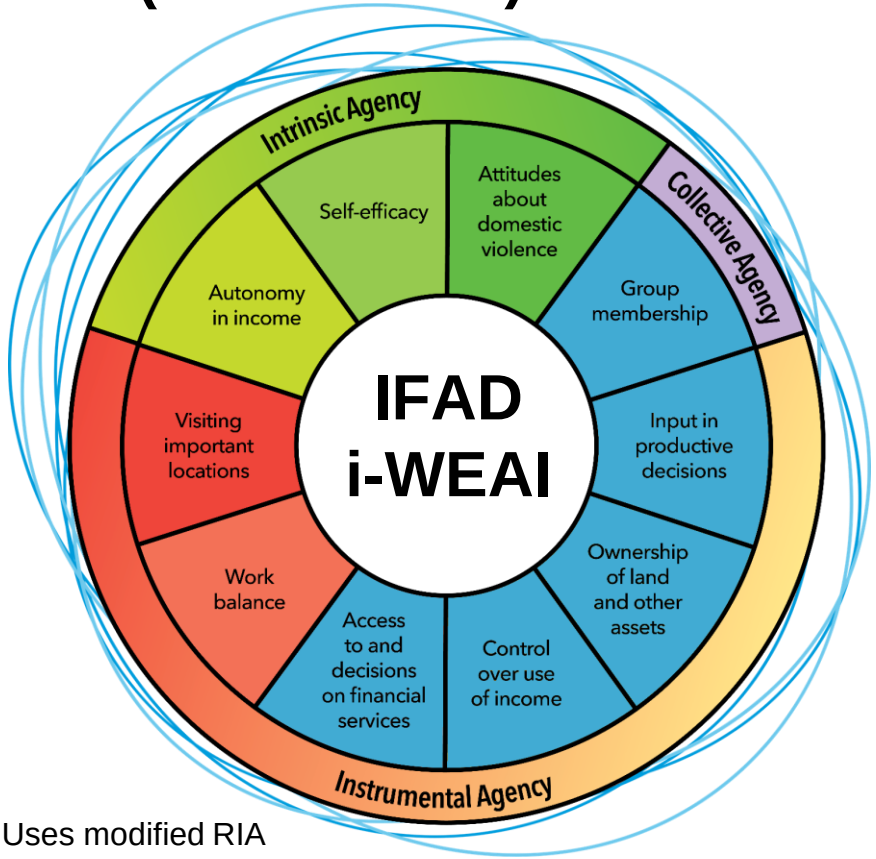
- Further challenges:
  - Proxy respondent for some questions
  - Differences in question wording and indicator construction *vis-à-vis* pro-WEAI

- Experiment:
  - Comparison of full *pro-WEAI* with *IFAD i-WEAI* for subsample (in Kenya)

IFAD Integrated WEAI (IFAD i-WEAI)

Each indicator receives an **equal** proportion (1/10) of the overall weight

Empowered if adequate in 80% of indicators



NOTE: Subsequent to the completion of these impact assessments, pro-WEAI was revised to include only 10 indicators. The IA results are based on the 12-indicator version, which includes indicators for *respect among household members* and *membership in influential groups*.

Uses modified RIA questions

IFAD-IFPRI Impact Assessments

6 projects (1/4 of impact assessment portfolio for IFAD11 replenishment)

- **Mali** -Rural Microfinance Programme (**PMR**)
- **Nigeria** -Value Chain Development Programme (**VCDP**)
- **Ghana** -Rural Enterprise Programme -Phase III- (**REP-III**)
- **Tanzania** -Marketing Infrastructure, Value Addition and Rural Finance Support Programme (**MIVARF**)
- **Kenya** -Upper Tana Catchments Natural Resources Management Programme (**UTaNRMP**)
- **Djibouti** -Programme to Reduce Vulnerability to Climate Change and Poverty of Coastal Rural Communities (**PRAREV**)

Method: i-WEAI and gender-disaggregated indicators

- i-WEAI indicators
  - *Empowerment score (ES): weighted sum of individual adequacy status across the 12 indicators*
  - *Intrahousehold inequality score: difference between ES of the man and woman (ranges from −1 to 1, where positive score indicates man is more empowered than the woman, negative score indicates the opposite)*
  - *Gender parity index: if (a) the woman is empowered or (b) the woman's ES is equal to or greater than the man's ES*
- i-WEAI 10 components
- Joint participation decisions on agricultural activities (crops to be planted, use of earnings) and production (value and share of harvest from jointly managed parcels)
- Female asset ownership (durable, land, TLU)
- Female FIES

Experimental design

I-WEAI	Pro-WEAI
• ~1600 households (IA sample) • I-WEAI questions included as part of the main survey • Interview with main respondent (typically male head) + shorter interview with partner/spouse	• ~300 households • Randomly selected (divided equally between treatment and control) • Survey included full pro-WEAI, plus basic demographics • Individual interviews with primary male and female respondents from each household

Objective: Assess the effects of the **I-WEAI** approach versus the **pro-WEAI** approach to **survey respondent selection** and **questionnaire design** on the measurement of empowerment

Comparing aggregate outcomes for pro-WEAI and IFAD i-WEAI

Empowerment score

	Model 1	Model 2
Experiment (0/1)	0.01	0.02
	(0.011)	(0.011)
Female (0/1)	-0.02***	-0.02*
	(0.007)	(0.007)
Experiment x Female	**0.01**	**0.01**
	(0.016)	**(0.016)**
Controls	No	Yes
Observations	2,468	2,468
R-squared	0.007	0.129

Household inequality score

	Model 1	Model 2
Experiment (0/1)	**-0.02**	**-0.03***
	(0.014)	**(0.014)**
Controls	No	Yes
Observations	921	921
R-squared	0.002	0.144

- Women's empowerment score and household inequality score **mostly similar** (0.10 = 1 indicator difference)

Empowered status (0/1)

	Model 1	Model 2
Experiment (0/1)	-0.02	0.00
	(0.037)	(0.037)
Female (0/1)	-0.09***	-0.10***
	(0.022)	(0.023)
Experiment x Female	**0.11***	**0.12****
	(0.052)	**(0.051)**
Controls	No	Yes
Observations	2,652	2,468
R-squared	0.008	0.076

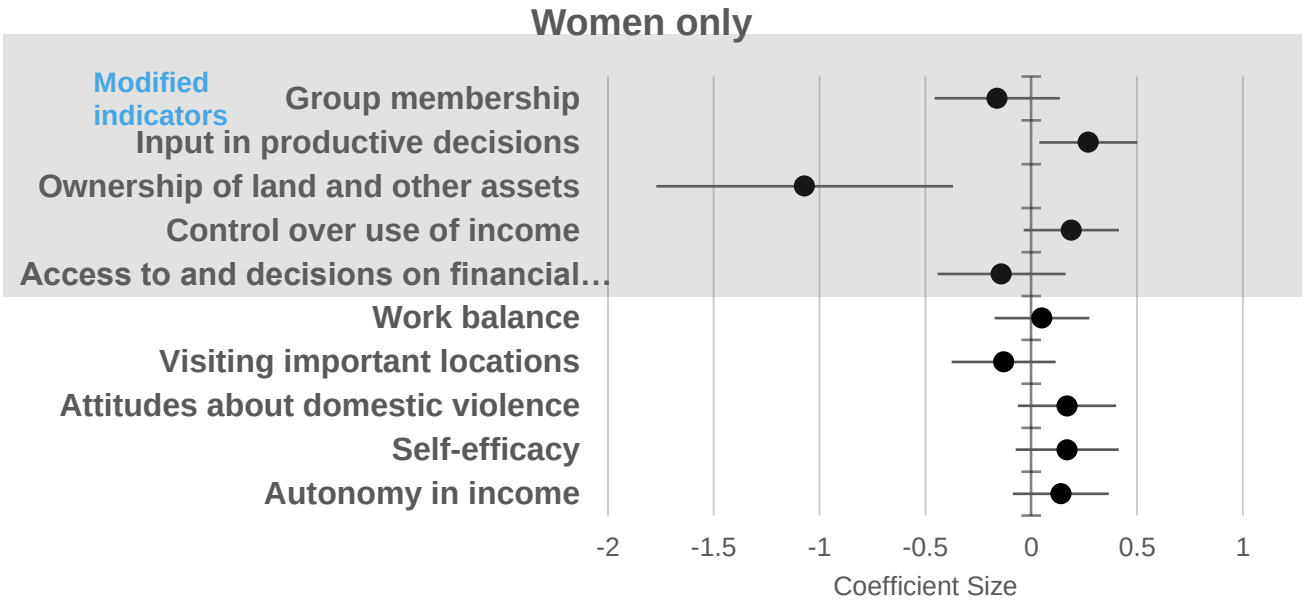
Gender parity status (0/1)

	Model 1	Model 2
Experiment (0/1)	**0.15*****	**0.15*****
	(0.036)	**(0.036)**
Controls	No	Yes
Observations	921	921
R-squared	0.017	0.116

- Women's empowered status and gender parity status **higher** for pro-WEAI
- No difference for men's empowerment score and status

Comparing women's indicators for pro-WEAI and IFAD i-WEAI

- *Input in productive decisions* **higher** for pro-WEAI compared to I-WEAI
- *Ownership of land and other assets* **lower** for pro-WEAI compared to I-WEAI



Note: *Error bars indicate 90% confidence interval*

Lessons learned

- IFAD I-WEAI requires approximately 50% fewer questions compared to pro-WEAI, much of which can be attributed to changes in questions about decision making
- IFAD I-WEAI provides less precise (more conservative) measurement of empowerment compared to pro-WEAI
  - Women's empowerment status and gender parity status are 11-15 pp higher for pro-WEAI
- Differences are primarily driven by *Ownership of land and other assets*
  - Women's ownership of non-agricultural land, mechanized farm equipment, large consumer durables are 19-32 pp lower and ownership of agricultural land is 18 pp higher for pro-WEAI
- Implementing IFAD i-WEAI using the pro-WEAI assets module might provide a more accurate estimate of women's empowerment, especially important for interventions aimed at improving women's asset ownership