Dalberg

WIRAL + Climate – Insights, Opportunities and Strategy

LITERATURE REVIEW SYNTHESIS

CGAP

Disclaimer

This work was funded in whole or in part by CGAP. Unlike CGAP's official publications, it has not been peer reviewed or edited by CGAP, and any conclusions or viewpoints expressed are those of the authors, and they may or may not reflect the views of CGAP staff.

This literature review is structured in six sections – each serving a distinct purpose and providing different levels of detail

Section	Purpose	Level of detail	Link to section
I. Introduction	Provides introductory context to the WIRAL programme and the purpose of the literature review	n/a	Here
II. Executive summary	Provides a synthesized view of how climate change impacts WIRAL, how WIRAL can build resilience against climate change, how stakeholders can support WIRAL and outstanding research questions	Provides a higher-level, narrative view across the literature review findings and outstanding questions	Here
III. Impact of climate change on WIRAL	Explains how WIRAL's access to and returns from labor and markets are impacted by climate change, as captured in existing secondary research	Provides more detailed research findings, including specific examples and references from cited literature	Here
IV. Opportunities for WIRAL to build climate resilience	Explains how WIRAL can build resilience against climate change, as captured in existing secondary research		Here
V. Recommendations from the literature for stakeholders	Explains how different stakeholders can support WIRAL build resilience against climate change based on best practices identified in secondary research		Here
VI. Bibliography	Provides a list of documents consulted by key theme and links to the source documents	n/a	Here

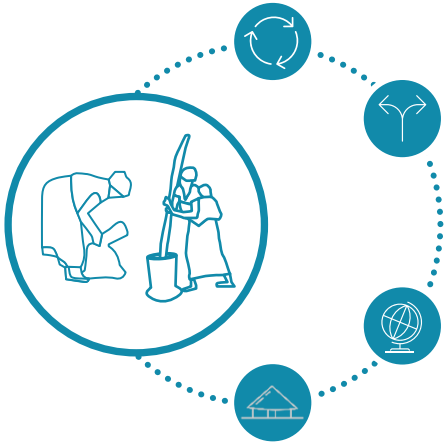
Contents

There is a disproportionate need and strategic opportunity to improve the lives and livelihoods of women in rural and agricultural livelihoods

Who are WIRAL?

Women in rural and agricultural livelihoods (WIRAL) are diverse and have various roles and identities that influence their ability to capture opportunities and build resilience. WIRAL's characteristics and needs can be influenced by:

Lifecycle stage: WIRAL tend to experience five distinct life stages: finishing school, getting married, becoming a mother, entering work and as a matriarch



Livelihood: WIRAL engage in a range of paid and unpaid work, in agriculture and other sectors, such as earning income as wage labor and managing enterprises

Geography: WIRAL come from broad geographical backgrounds with different social and cultural contexts that can shape their attitudes and behaviors

Household dynamics: WIRAL's household size and domestic relationships can influence their level of autonomy and dependency

Why focus on WIRAL?

- **Rural women are highly engaged in agriculture and rural economies, as laborers, producers for the market and their households, and key consumers.** Agriculture is the primary activity of 79% of economically active women in low-income countries (IFPRI 2014), and their labor is a critical driver of the agricultural sector
- **Rural women represent a majority of the financially underserved.** Women represent 56% of unbanked adults, about one billion people. They live mostly in rural areas, and often in poverty (Fiorillo and Kellison 2019)
- **Despite the important role of women in rural economies, few services and solutions respond specifically to their needs and ambitions.** Only around 7% of extension resources target women and 14% of donor resources target smallholder women farmers (MCA 2018) provision – far less than their proportion of the market.
- **Women face greater exposure to climate change, further underlining the importance of improving the resilience of their livelihoods.** Due to gendered social norms, and compared to men, women have less mobility, rights, and access to resources, as well as lower access to social capital, productive resources, and technology, affording them less capacity to adapt and diversify their livelihoods (MCA 2020)

Further detail on CGAP's strategy for women in rural and agricultural livelihoods can be found **here**

CGAP's WIRAL program is seeking to increase access to and returns from labor and markets for rural women

CGAP focuses on how financial services can play a positive role in increasing WIRAL's access and returns to labor and markets in order to improve their opportunities and resilience

Opportunities and resilience for WIRAL

Access to and returns from labor and markets

Labor			Markets	
Hired labor *Timely, quality, affordable labor, creating further opportunities for laborers and female managers*	**Saved labor** *Efficient labor practices, such as through mechanization, saving time, conserving energy, and increasing productivity*	**Wage labor** *Decent, dignified, safe work, generating income*	**Local markets** *Local and regional markets, offering in-person opportunities to sell outputs, access information, and cultivate social networks*	**Digital markets** *Digital marketplaces, creating opportunities to sell outputs and access a range of information and services*

Key factors impacting WIRAL lives and livelihoods	**Climate change**	*Women are more vulnerable to the impacts of climate change and yet have less access to technology, social capital, and productive resources, and less capacity to adapt and diversify their livelihoods*
	Socio-cultural norms	*The social, cultural, historical and power norms that underpin attitudes and practices of and towards women across personal, household, community and institutional contexts*
Key elements of WIRAL-focused solutions	**Bundled services**	*The bundling of service offerings (e.g. financial and non-financial) to drive adoption by rural women and promote the sustainable use of a wider range of services*
	Digital tools and data	*The application of digital tools and data to provide services to rural women to lower costs, increase outreach and drive scale*

Further detail on CGAP's strategy for women in rural and agricultural livelihoods can be found **here**

WIRAL face constraints across labor, markets and socio-cultural norms that limit their opportunities and resilience

CGAP and Dalberg undertook a literature review in 2021 which detailed the constraints facing WIRAL across labor, markets and socio-cultural norms as summarized below. The report providing further detail on these constraints can be found here

Opportunities and resilience for WIRAL

Access to and returns from labor and markets

WIRAL constraints linked to labor

Hired labor
- WIRAL managers face more difficulties when hiring external labor
- WIRAL managers generate lower returns from male hired laborers than male equivalents

Saved labor
- WIRAL have lower access to time-saving tools that could save time/ increase productivity
- WIRAL are less likely to access the training required to use such tools

Wage labor
- WIRAL often have lower access to decent, wage labor jobs
- WIRAL have lower levels of educational attainment and skills, limiting their employment prospects

WIRAL constraints linked to markets

Local markets
- WIRAL have lower access to timely market information require to compete in markets
- WIRAL are less likely to hold relationships with brokers/traders

Digital markets
- WIRAL have lower access to digital technologies that could enable them to use digitally marketplaces
- WIRAL have lower digital literacy that enables use of digital marketplaces

WIRAL constraints linked to access to and usage of financial services and assets
- WIRAL have lower overall access to finance and earnings than man that could increase their access to and returns from labor and markets

WIRAL constraints linked to availability of time and mobility
- WIRAL have less time to dedicate to labor and markets beyond domestic duties and have lower mobility in accessing labor and markets opportunities

WIRAL constraints linked to socio-cultural norms

WIRAL attitudes towards services
- WIRAL are more likely to have lower trust of partners and greater risk aversion that limit their adoption of services

Decision-making powers
- Women have lower decision-making power when it comes to both financial and agricultural issues

Gender-based violence
- WIRAL are more likely to face GBV, reducing their participation in labor and market opportunities

Roles and responsibilities
- Gender roles defining WIRAL as caregivers restrict them from receiving help and having agency in seizing opportunities

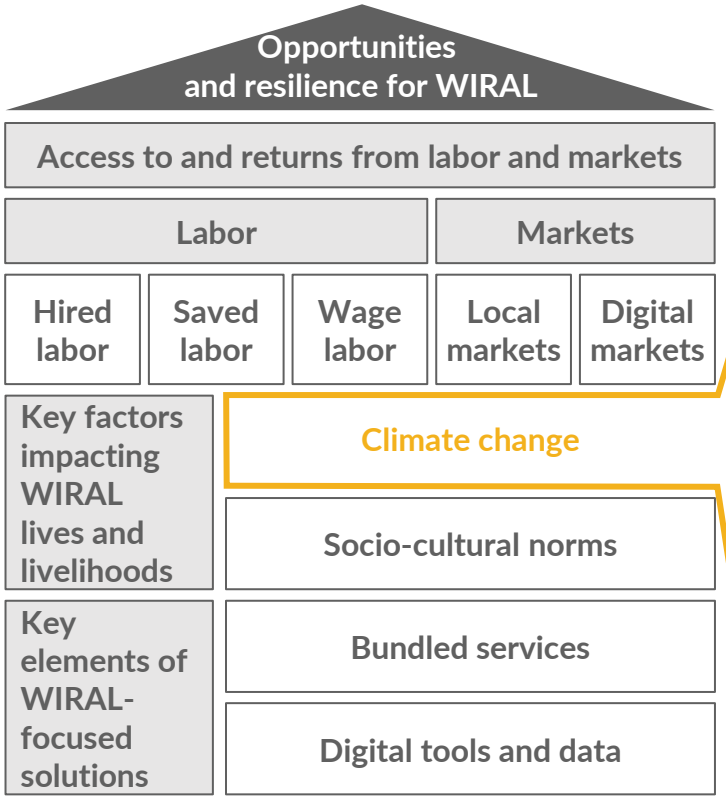
Leadership and representation
- WIRAL participation in group leadership is limited, and those in leadership roles tend to be at lower-level roles

Laws and regulation
- WIRAL's access to economic opportunities can be curtailed by and entrenched in laws and regulations

This literature review focuses on the intersection of WIRAL, climate change and (digital) financial services

What is in the scope of this literature review?

The literature review is intended to **consolidate a foundation of research conducted to-date that provides a broad view of the intersection of WIRAL, climate change and (digital) financial services, and can serve as a platform for future, more targeted research efforts**



The literature review seeks to better understand three main topics:

1. **How climate change impacts WIRAL**'s access to and returns from labor and markets
2. **How WIRAL can be empowered to build resilience** in the face of climate change
3. **What actions various stakeholders can take** to support WIRAL as frontline actors facing climate change

Across these topics, the literature review is also intended to identify where the body of existing research lies and highlight gaps that could be the focus of future research

What is not in the scope of the literature review?

This literature review **does not** focus on:

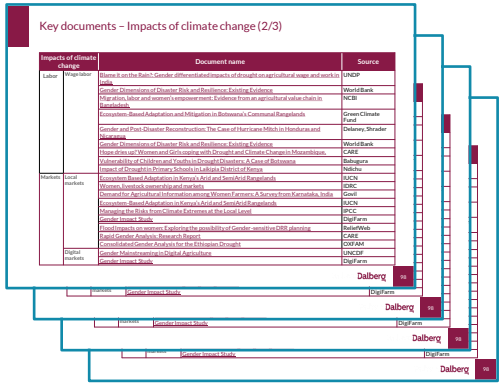
- **Areas outside the direction intersection of climate change and WIRAL's access to and returns from labor and markets** (e.g. climate change and health, natural risks such as earthquakes/tsunamis)
- **Broader macro trends that also affect WIRAL** and should be considered alongside the specific impacts of and opportunities created by climate change, such as:
  - Global macro-economic trends (e.g. inflation of food, input, fuel prices)
  - Economic policies (e.g. interest rates impacting borrowing costs)
  - Recovery from COVID-19
  - Political instabilities and conflicts
- **Supply-side constraints in serving WIRAL**

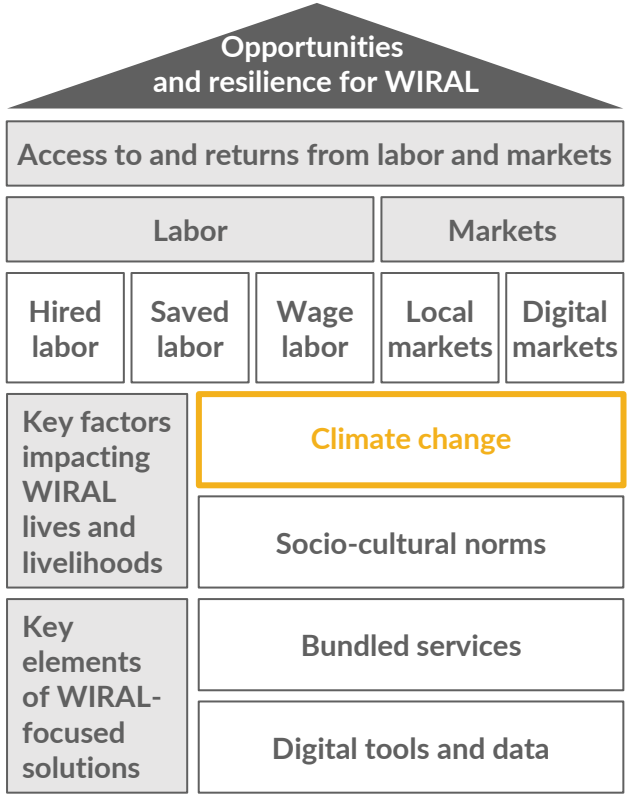
This literature review has been informed by a range of secondary research materials and expert interviews

Over six weeks Dalberg used a combination of research methods to better understand the intersection of climate change with WIRAL's access to and returns from labor and markets, including access to and usage of (digital) financial services:

SECONDARY RESEARCH

Dalberg consulted a range of documents to understand research conducted to-date and highlight areas that require further research – the documents consulted can be found in the Bibliography section of the report





EXPERT INTERVIEWS

Dalberg conducted interviews to surface relevant research and test emerging findings from the literature review with the following individuals holding expertise across climate change, gender, agriculture and financial inclusion:

- Debisi Araba, The Malabo Montpellier Panel
- Flavia Howard, Dalberg Advisors
- John Mundy, One Acre Fund
- Tamer El-Raghy, Acumen Resilient Agriculture Fund
- Venu Aggarwal, 60 Decibels
- Vicki Wilde, Bill and Melinda Gates Foundation
- Victoria Clause, Mercy Corps AgriFin

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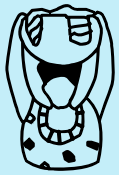
This executive summary is intended to provide a high-level narrative view to answer four key questions

Key findings

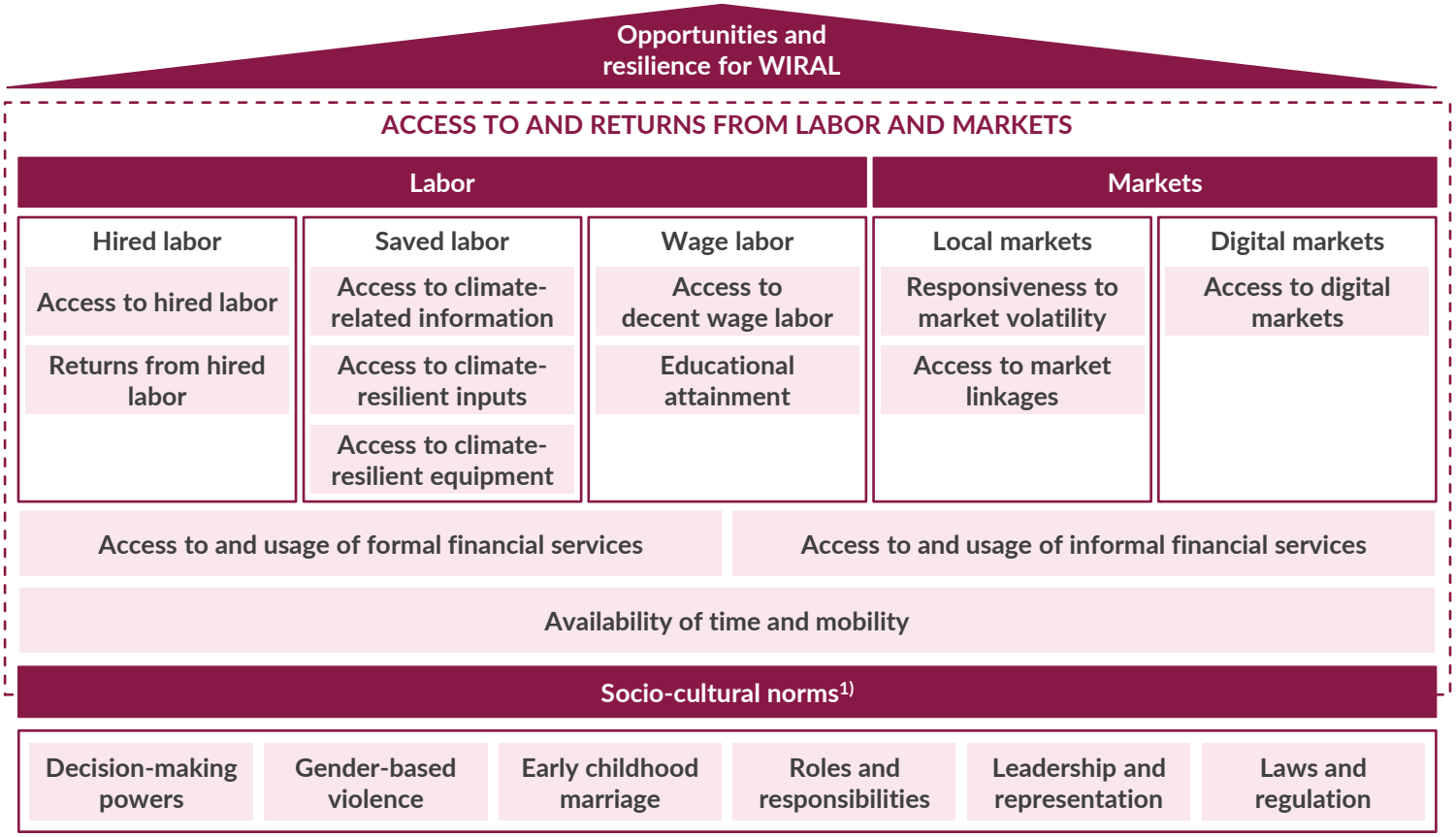
Literature overview

1 **Impacts of climate change on WIRAL**		**How does climate change impact WIRAL's access to and returns from labor and markets?**
2 **Opportunities for WIRAL to build climate resilience**		**How can WIRAL be empowered to build resilience** in the face of climate change?
3 **Recommendations from the literature for stakeholders**		**What actions can various stakeholders take** to better support WIRAL in building resilience to climate change?
4 **Outstanding questions**		**What are the research gaps** and **what outstanding questions could warrant further investigation** in future research activities?

Contents

① Climate change intersects with the following themes within labor and markets, which are also underpinned by socio-cultural norms

- The literature review assesses the impact of climate change on WIRAL's access to and returns from labor and markets
- It also assesses the inter-linkage of labor and markets with the following six interwoven socio-cultural norms, which are key drivers/ barriers to WIRAL's ability to build resilience to climate change



1) Includes history, power and cultural contexts

① WIRAL's access to and returns from hired labor is reduced by climate change and a lower ability to apply climate-resilient labor practices

		Intersection with climate change	Key drivers (including socio-cultural norms)[1]
Hired labor	Access to hired labor 	WIRAL's **ability to hire labor is reduced** because of climate change (e.g. due to outward migration, which although predominantly male migration, creates perceived skills gaps as the remaining women have received less training)	• WIRAL's have often **lower access to financial resources** to hire labor after climate-related shocks • WIRAL have **lower agency** in hiring labor (e.g. seeking spousal consent, lacking confidence) • **Lower education of WIRAL** creates a perceived skills gap after outward male migration
	Returns from hired labor 	WIRAL's **returns from hired labor are reduced in the face of climate change** as they are less likely to be able to understand and oversee the adoption of climate-resilient practices by their hired labor	• WIRAL have **lower access to and understanding of climate-resilient practices** • WIRAL have **lower time and financial resources to invest** in the learning and adoption of climate-resilient practices
Saved labor	Access to climate-related information 	WIRAL **have lower access to the training** (e.g. extension services) and **information** (e.g. early warning, weather forecasts) required to understand how they can apply climate-resilient practices, which can increase productivity, save time and would enable them to increase their resilience	• **Time and mobility constraints** (e.g. due to domestic duties) limit ability to attend trainings • **Lower digital literacy and device ownership** (incl. mobile phones) limits ability to access information • **Social norms restrict WIRAL attendance of trainings** • WIRAL are **less likely to appear on extension lists**
	Access to climate-resilient inputs 	WIRAL are **less likely to have access to and knowledge of climate-resilient inputs** (e.g. seeds, fertilizers) that would enable them to increase productivity, save time and increase their resilience in the face of climate change	• **Socio-cultural norms can restrict WIRAL's decision-making power** to determine what agricultural inputs to use and when to purchase them • WIRAL often **lack the financial resources to purchase inputs** (directly or on credit) • WIRAL have **lower confidence invest in new inputs**
	Access to climate-resilient equipment 	WIRAL are **less likely to own, use or understand how to maintain mechanized equipment** (e.g. solar irrigation) that could enable WIRAL to adopt climate-resilient practices that could increase productivity, save time and build climate resilience	• WIRAL often **lack the financial resources to purchase their own equipment** • **WIRAL needs (e.g. size/weight) are neglected** in designing tools • WIRAL that own such equipment are **more likely to have to sell these** to generate emergency liquidity

1) Non-exhaustive - key drivers that are most common for WIRAL

①

WIRAL's wage labor opportunities and market access are also often disproportionately affected by climate change

		Intersection with climate change	Key drivers (including socio-cultural norms)[1]
Wage labor	Access to decent wage labor jobs	WIRAL's access to decent, secure wage labor is often compromised by climate change, with **female labor often sacrificed before men's** (e.g. due to reduced demand for female labor), whilst **working conditions can also deteriorate** under the stress of climate change (e.g. due to increase risk of gender-based violence)	• **Socio-cultural norms influence the view female labor is inferior to men's** • **Gendered roles** (e.g. greater domestic work and caregiving responsibilities to the youth/elderly in the household and community) **reduce WIRAL's ability to pursue wage labor opportunities**
	Educational attainment	WIRAL's **education is more likely to be sacrificed in response to climate change** (e.g. parents are no longer able to afford girls' education or girls are required to support increased domestic work), which thereby limits their longer-term employment prospects	• **Socio-cultural norms dictate that girls' education is often of secondary importance** compared to boys • Gendered roles place **greater domestic responsibilities on women** in the face of climate events (e.g. spending more time fetching water)
Local markets	Responsiveness to market volatility	WIRAL have **lower visibility of market information and price volatility which are heightened by climate events** (e.g. through smaller networks) and a **lower ability to respond to promptly to market volatility** (e.g. requiring husbands' permission to sell output at a given price)	• WIRAL have **lower networks for accessing accurate price information** • Social norms give WIRAL **lower decision-making power over when to sell output** and at what price • WIRAL have **less access to and control over post-harvest storage**
	Access to market linkages	WIRAL's **access to market linkages is disproportionately affected by climate change** (e.g. lower physical access), whilst WIRAL's **agricultural produce is more likely to be reserved for long-term storage** as a precaution against climate events rather than being sold at markets	• WIRAL **time and mobility constraints can be exacerbated by climate change** (e.g. spending more time fetching water), limiting their ability to travel to markets • Socio-cultural norms give WIRAL **lower decision-making power** over when to sell or store output
Digital markets	Access to digital markets	WIRAL have **lower access to digital marketplaces** that would enable them to sustain market access in the face of climate change (e.g. after floods, earthquakes that can restrict access to physical markets)	• WIRAL have **lower ownership of mobile devices** • WIRAL have **lower digital literacy** to use more sophisticated digital markets (e.g. on smartphones) • WIRAL have **lower financial resources** to afford mobile devices (e.g. mobile phones, airtime, data)

1) Non-exhaustive - key drivers that are most common for WIRAL

① Lower access to and usage of financial services and limited availability of time and mobility reduce WIRAL's ability to build climate resilience

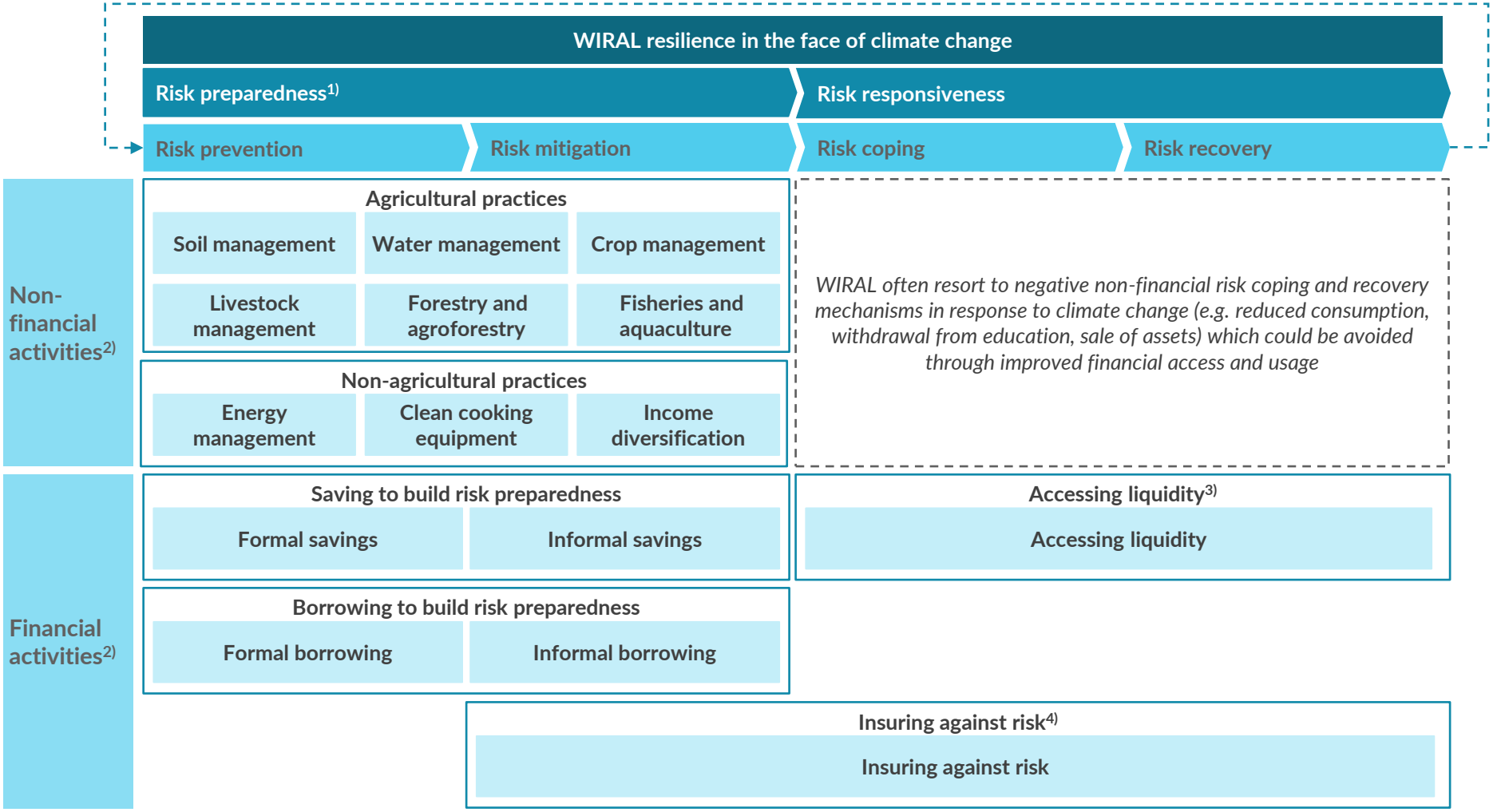
Cross-cutting

	Intersection with climate change	Key drivers (including socio-cultural norms)[1]
Access to and usage of financial services and assets 	WIRAL have **lower access to and usage of formal services** (e.g. savings, credit, insurance) that they could **use to finance the adoption of climate-resilient practices** (e.g. purchase of inputs, equipment) and **mitigate climate risks** (e.g. by providing secure access to liquidity in response to climate events)	• WIRAL have **lower access to or control over the resources required to access formal financial services** (e.g. land ownership for collateral) • Formal financial services are **not designed to meet the specific needs of WIRAL** and climate applications (e.g. aligning products with WIRAL's cash flow needs) • WIRAL have a **lower trust** towards formal providers
	Women are **more likely to use informal financial services** (e.g. VSLAs) which can be less well equipped to cope with significant climate-induced financial shocks (i.e. large-scale shocks that affect all members simultaneously); WIRAL also have a **greater propensity to hold their wealth in tradable assets** that more likely sold to generate liquidity in response to climate events	• Informal channels are viewed as **more accessible** than formal channels (e.g. lower registration requirements) • Informal channels **offer broader social networks** in addition to financial services and are often deemed more trustworthy
Availability of time and mobility 	WIRAL's **disproportionate time dedicated to domestic duties (e.g. fetching water and fuel) is exacerbated by climate change**, further reducing their time for income-earning opportunities; moreover, as WIRAL must travel further distances for such activities they are increasingly exposed to violence	• Regardless of changing work balance due to environmental changes, **gendered roles and responsibilities often assign women as domestic workers** and men as breadwinners • **Socio-cultural norms can stigmatize men** that support women with domestic duties
	WIRAL have **lower mobility in response to climate events**, increasing their exposure to harmful impacts and reducing their ability to build resilience	• **Socio-cultural norms can often restrict the movement of women** beyond their homes • **WIRAL have lower decision-making** than men, including when to flee climate events • WIRAL often have **lower access to information networks** (e.g. early warning systems) that can inform when to flee climate shocks (e.g. floods)

1) Non-exhaustive - key drivers that are most common for WIRAL

2

WIRAL can adopt a range of non-financial and financial activities to increase their resilience to climate change



1) Risk preparedness activities includes both climate mitigation (i.e. efforts to reduce or prevent emission of greenhouse gases) and adaptation (i.e. efforts to respond to and prevent the adverse impacts of climate change) activities; 2) Activities that WIRAL themselves can adopt, which must be supported by a broad range of stakeholders that are the focus of Section V; 3) Includes accessing emergency savings, borrowing and cash transfers; 4) Insurance products can also be used to de-risk investing in risk preparedness measures

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WIRAL can adopt a range of non-financial practices to increase their resilience as frontline actors against climate change

		Opportunities for WIRAL to build resilience	Key challenges in WIRAL seizing opportunities[1)]
Agricultural practices	Soil management	**Soil management** (e.g. not tilling, using climate friendly compost) can **promote more resilient crops, increase productivity and build soil health**	• WIRAL have **lower access to and usage of equipment** required to implement climate-resilient agricultural practices (e.g. WIRAL cannot buy/control equipment, equipment is not designed to WIRAL's needs), which is often driven by socio-cultural norms (e.g. WIRAL's equipment being sold first to generate liquidity) • WIRAL have **lower awareness of and access to the information and training** (e.g. extension) required to understand and adopt such practices • Socio-cultural norms limit WIRAL's **decision-making power** to apply such practices • WIRAL have **lower access to and usage of financial services** (e.g. input credit, asset financing) to enable adoption of climate-resilient agricultural practices • WIRAL's **time poverty** leaves less time to learn and apply climate-resilient agricultural practices • WIRAL's **lower access to digital technology and digital literacy** limits their ability to access and/or understand new climate-resilient practices
	Water management	**Water management** (e.g. water harvesting and storage, irrigation) can **build more resilient crops/livestock and alleviate WIRAL time poverty** (e.g. from fetching water)	
	Crop management	**Crop management** (e.g. crop choice, rotation, mulching, crop diversification, use of climate-resilient inputs) can **increase resilience, productivity and build soil health**	
	Livestock management	Livestock management (e.g. rotational grazing, manure treatment, cut and carry feeding, dual purpose poultry) can **diversify income and promote soil health**	
	Forestry and agroforestry	Planting trees and shrubs (e.g. boundary trees, fruit orchards, windbreaks) can **diversify income, reduce erosion and promote carbon sequestration**	
	Fisheries and aquaculture	**Integrating aquaculture and climate-adapted fishing techniques** (e.g. using ropes instead of nets) into **farm systems can diversify income and build resilience**	
Non-agricultural practices	Energy management	**Energy-efficient technologies** (e.g. solar irrigation) can **increase energy efficiency and reliability of energy and alleviate time poverty** (e.g. fetching wood, fuel sources)	• WIRAL have **lower awareness of and access to the information** (e.g. extension) required to understand and adopt such practices • Socio-cultural norms limit WIRAL's **decision-making power** to apply such practices • WIRAL have **lower access to and usage of financial services** (e.g. asset financing) to enable adoption of climate-resilient non-agricultural practices
	Clean cooking equipment	**Cleaner, alternative cooking equipment** (e.g. biomass cookstoves, LPG cooking fuel) can **alleviate WIRAL time poverty** (e.g. collecting wood) and **reduce CO^2 emissions**	
	Income diversification	**Income diversification** (e.g. into processing, packaging, cosmetics) can **decrease dependency on agricultural livelihoods and exposure to agriculture climate shocks**	

1) Non-exhaustive - key challenges that are most common for WIRAL

2

WIRAL can adopt financial practices to enable their adoption of climate-resilient practices, although these come with challenges

		Opportunities for WIRAL to build resilience	Key challenges in WIRAL seizing opportunities[1)]
Saving to build risk preparedness	Formal savings 	WIRAL can **open savings accounts from formal institutions that enable them to save money to invest in the adoption of climate-resilient practices** (e.g. mechanized equipment, inputs)	• WIRAL have **less understanding of savings' benefits** • WIRAL can be **deterred by complex registration requirements** (e.g. ID, long application processes) • WIRAL have **lower accessibility to services** (e.g. due to low time/mobility, low availability of rural services)
	Informal savings 	WIRAL can **access savings from savings groups** (e.g. VSLAs) and other informal channels that enable them to **invest in the adoption of climate-resilient practices** (e.g. mechanized equipment, inputs), whilst also **benefitting from such groups' social networks**	• Informal channels can have a **lower ability to withstand large-scale climate shocks** (e.g. being unable to provide funding in the event of mass withdrawals) and **low linkage with formal providers** that could increase their resilience
Borrowing to build risk preparedness	Formal borrowing 	WIRAL can **access credit from financial institutions to invest in equipment and inputs** that enable them to adopt climate-resilient practices; **savings groups can also borrow from formal providers and make the money available to their members**	• WIRAL often have a **lower ability to qualify for formal borrowing** (e.g. lack of collateral, formal ID) • WIRAL often have a **lower understanding of formal borrowing and its benefits** • WIRAL often **lack the confidence** to borrow money
	Informal borrowing 	WIRAL can **borrow from informal channels** (e.g. VSLAs) to **finance equipment and inputs necessary for climate adaptation** with **greater accessibility than formal channels** (e.g. lower qualification requirements) and while still **benefitting from such groups' social networks**	• Informal channels can have a **lower ability to withstand large-scale climate shocks** (e.g. being unable to provide funding for mass withdrawals) • Informal channels have **lower capital for larger WIRAL investments** (e.g. for mechanized equipment)
Insuring against risk	Insuring against risk 	WIRAL can **purchase insurance** (e.g. crop insurance, livestock insurance or weather-based index insurance) to **insure against climate-related risks** and **increase the security of investing in the adoption of climate preparedness practices**	• WIRAL have a **low understanding of the benefits of insurance** • Insurance **products being ill-tailored** to meet WIRAL's climate needs (e.g. only covering single risks) • WIRAL often **mistrust insurance institutions**
Accessing liquidity	Accessing liquidity 	WIRAL can **access short-term funds** (e.g. remittances from friends/family, digital credit) during climate events to **meet short-term liquidity needs instead of resorting to negative coping mechanisms** (e.g. reduced consumption, withdrawal from education, sale of assets)	• Short-term liquidity channels are **not fully reliable** (i.e. not guaranteeing liquidity when it is most needed)

1) Non-exhaustive - key challenges that are most common for WIRAL

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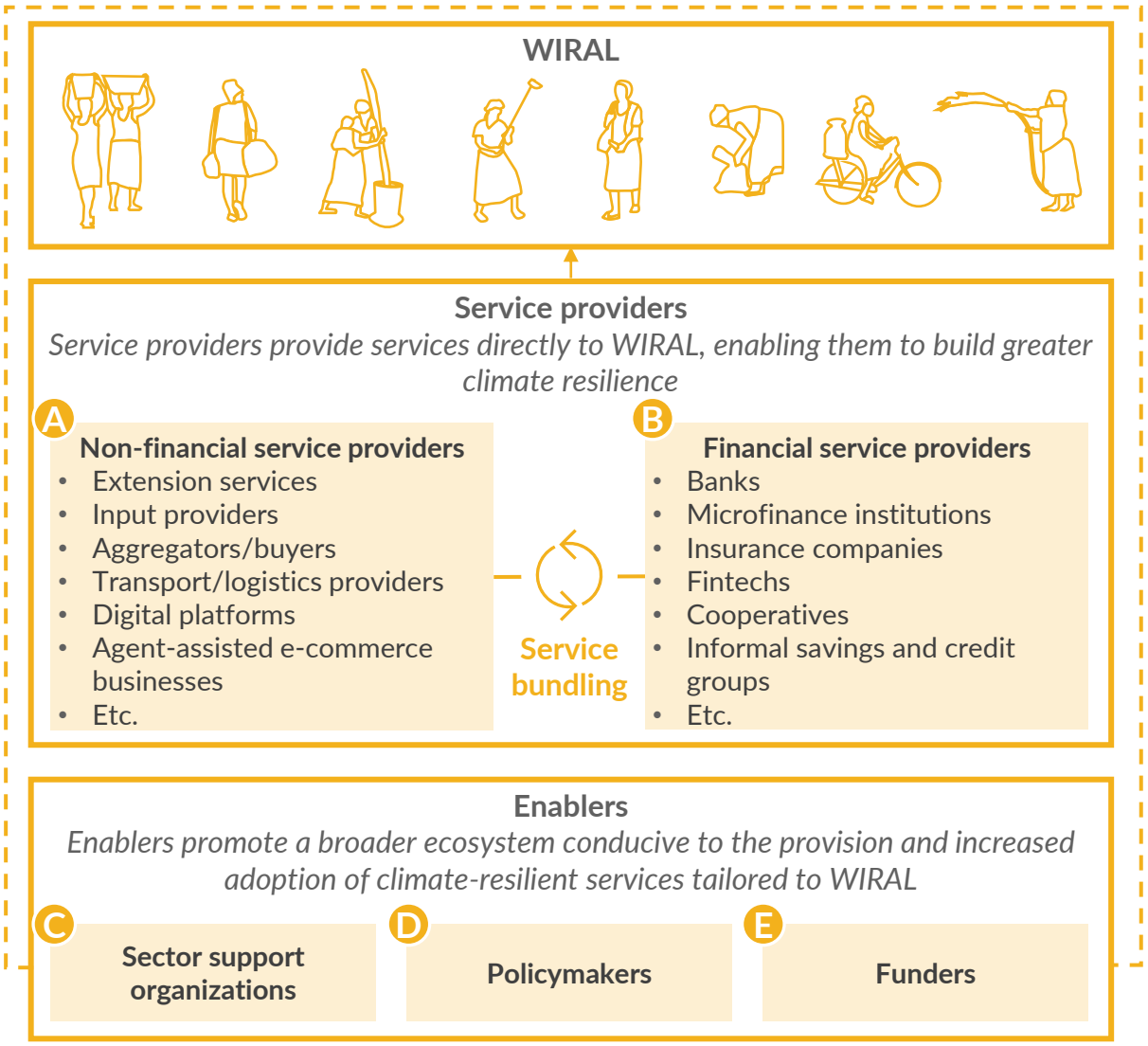
Broad engagement of stakeholders, including both service providers and enablers, is required to support WIRAL build climate resilience



WIRAL are diverse and heterogenous across different lifecycle stages, livelihoods, geographies and households, and stakeholders must therefore accommodate this wide range of characteristics and needs when trying to support WIRAL build climate resilience

A **Non-financial service providers** provide a range of non-financial services that can help WIRAL build climate resilience (e.g. training, early warning, market access, logistics)

B **Financial service providers** provide a range of financial services that can help WIRAL build climate resilience (e.g. savings, borrowing, insurance, payments)

C **Sector support organizations** include actors that inform and guide service providers and other stakeholders on better serving WIRAL through a range of activities (e.g. research, convening, knowledge sharing)

D **Policymakers** include national and local government bodies that design and implement policy that can either directly or indirectly support the provision and adoption of services for/by WIRAL

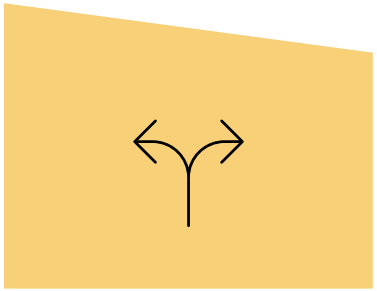
E **Funders** include donors and investors that can provide sources of capital to finance the development and delivery of service provided to WIRAL

3

Stakeholders should develop interventions that are targeted to the specific needs of WIRAL and build climate resilience

Capture geographical nuance

Although many impacts of climate change upon WIRAL are common, interventions should recognize the **local context and prevailing socio-cultural norms** that can influence the nature and severity of climate change's impact, and determine the most effective channels for reaching WIRAL

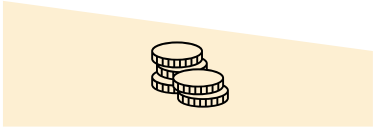


Target the most applicable livelihood or WIRAL segment

Stakeholders should determine the **most important livelihoods or customer segments** (e.g. a specific segment of WIRAL within a specific livelihood or value chain) for interventions, which will have implications for which opportunities have the greatest potential to build WIRAL's resilience

Adopt the most effective non-financial practice(s)

Within the diversity of WIRAL livelihoods stakeholders should **identify which practices have the greatest potential for increasing WIRAL resilience** (e.g. application of practices, use of technologies, use of services) and **adapt these to the constraints already facing WIRAL** (e.g. lower access to labor, time poverty, lower digital literacy, social norms)



Tailor financing to support these practices

Given the practices being encouraged, **stakeholders should tailor and support financial services that support these specific activities** (e.g. by understanding investment time horizons, perceived risk, cash flow requirements, accessible/existing financial channels and infrastructure)

3

The literature review identified a range of recommendations on how stakeholders can support WIRAL resilience against climate change

SERVICE PROVIDERS

A Non-financial service providers

- Engage WIRAL in information networks
- Share information in forms accessible to WIRAL
- Design equipment that is practical for WIRAL
- Engage men in trainings
- Promote alternative land rights registration

B Financial service providers

- Link formal and informal providers
- Bundle formal financial products
- Tailor qualification terms to WIRAL + Climate
- Tailor repayment terms to WIRAL + Climate

A B Non-financial and financial service providers

- Bundle financial and non-financial solutions
- Target WIRAL community groups
- Leverage existing agent networks
- Demonstrate value to peers and gatekeepers
- Tailor digital technology to WIRAL needs

ENABLERS[1)]

C Sector support organizations

- Foster partnerships between service providers and community groups
- Partner with local networks and leaders to address socio-cultural norms
- Research WIRAL's behavioral change and incentives
- Promote the collection and use of gender disaggregated data

D Policymakers

- Invest in climate-resilient infrastructure that accommodates WIRAL's needs
- Tailor social support mechanisms to increase accessbility to WIRAL
- Target subsidies to de-risk adoption of climate-resilient practices
- Reform land ownership rights

E Funders

- Deploy innovative funding to de-risk investing in WIRAL + Climate
- Apply a longer-term funding horizon aligned with climate change needs
- Adopt measures and standards to track the impact for both women and climate change
- Promote the collection and use of gender disaggregated data

1) High-level recommendations for enablers – the focus of the literature review is on developing recommendations for service providers

3

Non-financial service providers can apply specific recommendations to increase WIRAL adoption of climate-resilient practices

Non-financial service providers

Ⓐ

	Service provider recommendations[1)]	How this supports WIRAL build climate resilience
Engage WIRAL in information networks 	Engage WIRAL and WIRAL groups in the **design and implementation of climate-related information networks** Ex: Extension services, early warning systems, pricing information networks	• **Engages WIRAL who can better understand and share their own needs an identify the information required to meet them** • Such WIRAL leadership can also **erode social norms**
Share information in forms accessible to WIRAL 	Share climate-related information **in formats, times and channels aligned with WIRAL's needs and capabilities** Ex: IVR, female extension agents, via existing social, savings and commodity groups	• **Increases the accessibility of climate-related information** to WIRAL by circumventing social norms (e.g. gendered roles) and time/mobility constraints
Design equipment that is practical for WIRAL 	**Incorporate WIRAL needs into the design of climate-resilient equipment** Ex: Planters that do not require oxen, grain storage that is easily accessible and with windows	• **Increases WIRAL's ability to efficiently use climate-resilient equipment** (and increases the perceived value of such equipment and associated practices)
Engage men in trainings 	**Conduct joint trainings that engage both men and women** in adopting climate-resilient practices Ex: Household/participatory trainings	• Helps **erode some social norms** blocking WIRAL's adoption of practices, whilst also **potentially increasing access to male networks**
Promote alternative land rights registration 	**Promote alternative land right registration processes** or **support WIRAL to circumvent ownership constraints** Ex: Digitized land rights registration, land leasing	• **Increases WIRAL's accessibility to land-based collateral** that could increase their access to formal finance and agency of land-based decision making

1) For more specific examples see section in the full Synthesis deck - Recommendations from the literature for stakeholders

3

FSPs can apply recommendations to increase financial inclusion and enable WIRAL's adoption of climate-resilient practices

B

Financial service providers

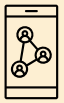
	Service provider recommendations[1)]	How this supports WIRAL build climate resilience
Link formal and informal providers 	**Link formal financial services with existing informal channels** embedded amongst WIRAL Ex: Insuring savings groups or extending credit to saving groups	• **Provides greater resilience and/or capacity to informal channels**, whilst retaining their pre-existing benefits (e.g. accessibility to WIRAL, social networks)
Bundle formal financial products 	**Bundling formal financial products to provide broader financial support** Ex: Offering credit with built in crop and/or livestock insurance, insurance with a savings component	• Allows WIRAL to **build pre-/post-risk resilience**, with more security of investing in climate preparedness • Offers a **more time-efficient** service via bundling
Tailor qualification terms to WIRAL + Climate 	**Tailor qualification terms for climate finance to align with WIRAL's climate needs and capabilities** Ex: Using acquired climate-resilient assets as collateral, using alternative data (e.g. digital transaction history) to prove WIRAL credit worthiness	• **Increases the accessibility of formal credit** to WIRAL thereby promoting increased adoption of climate-resilient practices
Tailor repayment terms to WIRAL + Climate 	**Tailor repayment terms for climate finance to align with the cashflow needs of WIRAL and climate-resilient practices** Ex: PAYG solar irrigation, credit for climate-resilient seeds	• **Increases the accessibility of formal credit** to WIRAL thereby promoting increased adoption of climate-resilient practices

1) For more specific examples see section Recommendations for stakeholders

3

Recommendations for non-financial/financial service providers can also help increase adoption of climate-resilient services by WIRAL

Service providers (A, B)

Service provider recommendations[1)]	How this supports WIRAL build climate resilience
Bundle financial and non-financial solutions 	**Bundle financial services with non-financial services** (based on research and understanding of WIRAL needs) to provide more holistic climate-resilient services Ex: credit and insurance with education, training and early warning	• Services are interdependent and mutually reinforcing, **increasing the perceived value and adoption by WIRAL** • Bundled solutions are **more time-efficient** and can circumvent WIRAL's time poverty challenges
Target WIRAL community groups 	**Target WIRAL community groups**, which are already common among WIRAL and have built strong social relationships for the delivery of services Ex: existing social, savings and commodity groups	• **Increases the accessibility of services to WIRAL** by using trusted channels, without exacerbating WIRAL time poverty by requiring additional time and travel • **Enables greater and faster penetration of services** amongst WIRAL by leveraging existing relationships to promote adoption of services
Leverage existing agent networks 	**Identify and leverage the most effective agent networks** (e.g. extension, input sales agents) for the delivery of services to WIRAL, inlcuding using female agents who are viewed as more accessible by WIRAL Ex: extension agents, input sales agents, e-commerce agents	• Provides **greater accessibility of services to WIRAL** with time and mobility constraints • Enables **greater and faster penetration of services** amongst WIRAL by leveraging existing relationships to promote adoption of services
Demonstrate value to peers and gatekeepers 	**Engage WIRAL "champion" adopters to demonstrate the value of climate-resilient practices to other WIRAL and gatekeepers** Ex: faith-based groups, community leaders (champions), husbands, fathers, mothers/mothers-in-law (gatekeepers)	• **Increases awareness of the value of empowering WIRAL** to build climate resilience • **Erodes social norms** that restrict WIRAL decision-making and adoption of climate-resilient practices
Tailor digital technology to WIRAL needs 	**Leverage digital channels to deliver services that are aligned with WIRAL's typically lower technology capabilities** which are often also decreased in response to climate events Ex: Community radio, IVR, SMS/USSD rather than apps, deploying human agents alongside digital channels	• **Increases the accessibility of services** to build WIRAL's climate resilience by circumventing time, mobility, and digital literacy constraints facing WIRAL

1) For more specific examples see section Recommendations for stakeholders

3

Sector support organizations, policymakers and funders can support an enabling environment for WIRAL to build climate resilience

	Enabler recommendations[1)]	How this supports WIRAL build climate resilience
C Sector support organizations	**Foster effective partnerships and collaboration between community groups and service providers**	**Enhances cooperation between service providers and community groups** to accelerate WIRAL's adoption of climate-resilient practices
	Work with local networks, which are well-versed in location-specific cultural realities, **to address restrictive social norms**	**Leverages local knowledge** to understand what it takes for WIRAL to **erode entrenched social norms** that restrict WIRAL resilience
	Undertake research on WIRAL's behavioral change and incentives for the adoption of climate-resilient practices	Would **shed light on WIRAL's attitudes towards climate-resilient practices**, thereby informing how services can be tailored to their needs
	Support the collection and use of gender disaggregated data, including the articulation of clear use-cases and value-add of applying such data	Can **improve understanding of WIRAL's use of climate-resilient services** and inform how to better design these to meet WIRAL needs
D Policymakers	**Invest in climate-resilient infrastructure** that incorporates WIRAL's vulnerabilities and needs (e.g. water/energy supply)	**Supports WIRAL's broader accessibility to and adoption of climate-resilient practices** (e.g. irrigation, energy management)
	Tailor and design gender-sensitive social support mechanisms (e.g. naming women as co-recipients of household transfers)	**Increases the accessibility of govt-funded liquidity** to finance responses to climate events and reduce use of negative coping mechanisms
	Target subsidies to de-risk adoption of climate-resilient practices (e.g. for climate-resilient inputs, weather insurance products)	**Reduces the cost of climate-resilient practices** making them more affordable to WIRAL, in turn increasing adoption
	Reform land ownership rights and processes to reduce discrimination against WIRAL (e.g. tax rebates for women who register land titles)	**Increases WIRAL accessibility to and control over land**, which is often a constraint to accessing finance or making land-based decisions
E Funders	**Deploy innovative funding to de-risk investing in WIRAL/climate-specific services** (e.g. guarantees, first-loss tranches)	**Catalyzes broader investment in the development of services** to build WIRAL climate resilience
	Deploy funding with longer-time horizons more aligned with time horizons of WIRAL investment in adoption of climate-resilient practices	**Increases the attractiveness of investing in WIRAL** adoption of climate-resilient practices, which are more aligned with funder time horizons
	Adopt measures and standards or build tools to **measure and track the specific impacts of investments to both women and climate change**	**Demonstrates the value of investing specifically in WIRAL/climate solutions**, thereby attracting further funding
	Support the collection and use of gender disaggregated data, including the articulation of clear use-cases and value-add of applying such data	Can **improve understanding of WIRAL's use of climate-resilient services** and inform how to better design these to meet WIRAL needs

1) High-level recommendations for enablers – the focus of the literature review is on developing recommendations for service providers

3

High-level principles for stakeholders to support WIRAL build climate resilience emerged across the literature

1 Incorporate the voice of WIRAL

Interventions designed to build WIRAL's climate resilience **should understand the different segments of WIRAL, motivations behind their behavioral changes and incentives for adopting climate-resilient practices** and accommodate these accordingly to develop solutions most accessible and attractive to WIRAL

2 Avoid the unintentional exclusion of WIRAL

Many programmes promoting the adoption of climate-resilient practices (e.g. carbon credits for agroforestry, flood insurance schemes) **unintentionally exclude WIRAL** (e.g. by requiring legal land titles for registration) and **must therefore incorporate WIRAL needs into their program design to increase adoption**

3 Be aware of potentially adverse impacts

The adoption of some climate-resilient practices **can also bring unintended negative consequences for women** (e.g. the implementation of sustainable land management practices can sometimes exacerbate time poverty) which **should be considered against the benefits of adopting such practices**

4 Leverage WIRAL's social capital

Interventions should seek to **harness – rather than supplant – the trusted and highly valued relationships that WIRAL cultivate through social networks and informal channels** (e.g. VSLAs) to increase the penetration and adoption of services, and use these networks **identify the most vulnerable women in communities**

5 Collect and apply gender disaggregated data

The ability to develop effective, targeted interventions to serve WIRAL is often **contingent on the availability of gender disaggregated data**, which could more accurately inform who to serve and how (including the development of business cases for WIRAL-specific interventions)

Contents

4

Moving forward, targeted research will enable the development of more specific and actionable stakeholder recommendations

Key: Outstanding research questions from literature review

Literature review

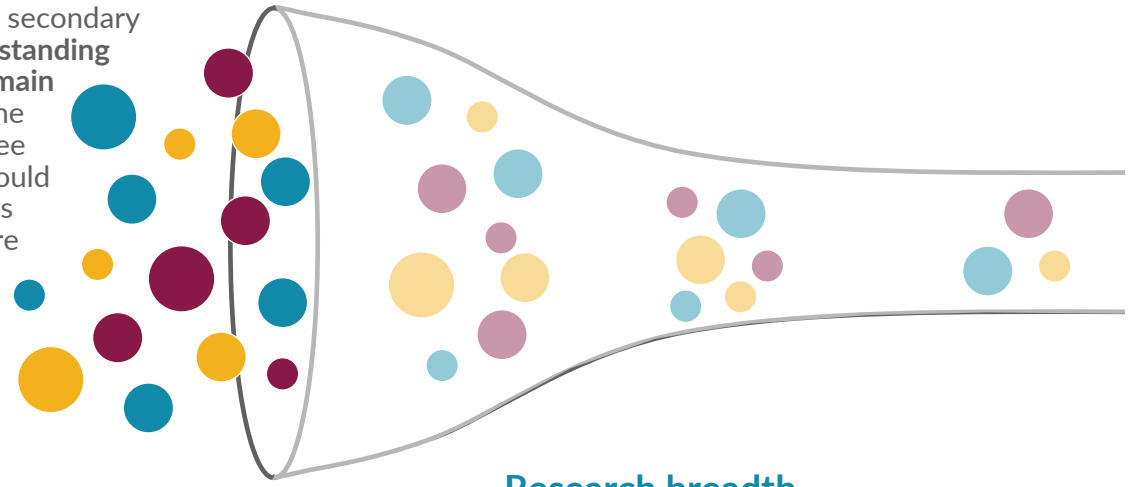
- The **literature review is intended to be a foundational piece of research** that applies a broad lens across existing research at the intersection of WIRAL, climate change and (digital) financial services
- Given this breadth and sole focus on secondary research, **outstanding questions remain** (outlined in the following three pages) that could form the basis of future more targeted research efforts

Prioritization of research themes

- Beyond this literature review, a **next step is to prioritize outstanding themes that warrant further research**; for example, focusing on:
  - Specific climate change impacts aspects within labor, markets or socio-cultural norms
  - Specific non-financial or financial activities that can build WIRAL climate resilience
  - Implementation of specific stakeholder recommendations

Targeted research

- Having determined prioritized research themes, **more detailed research in these areas will enable the development of more actionable recommendations** tailored to specific WIRAL needs (e.g. focusing on specific geography, livelihood, WIRAL segment, non-financial activities and how financial services can support WIRAL)



4

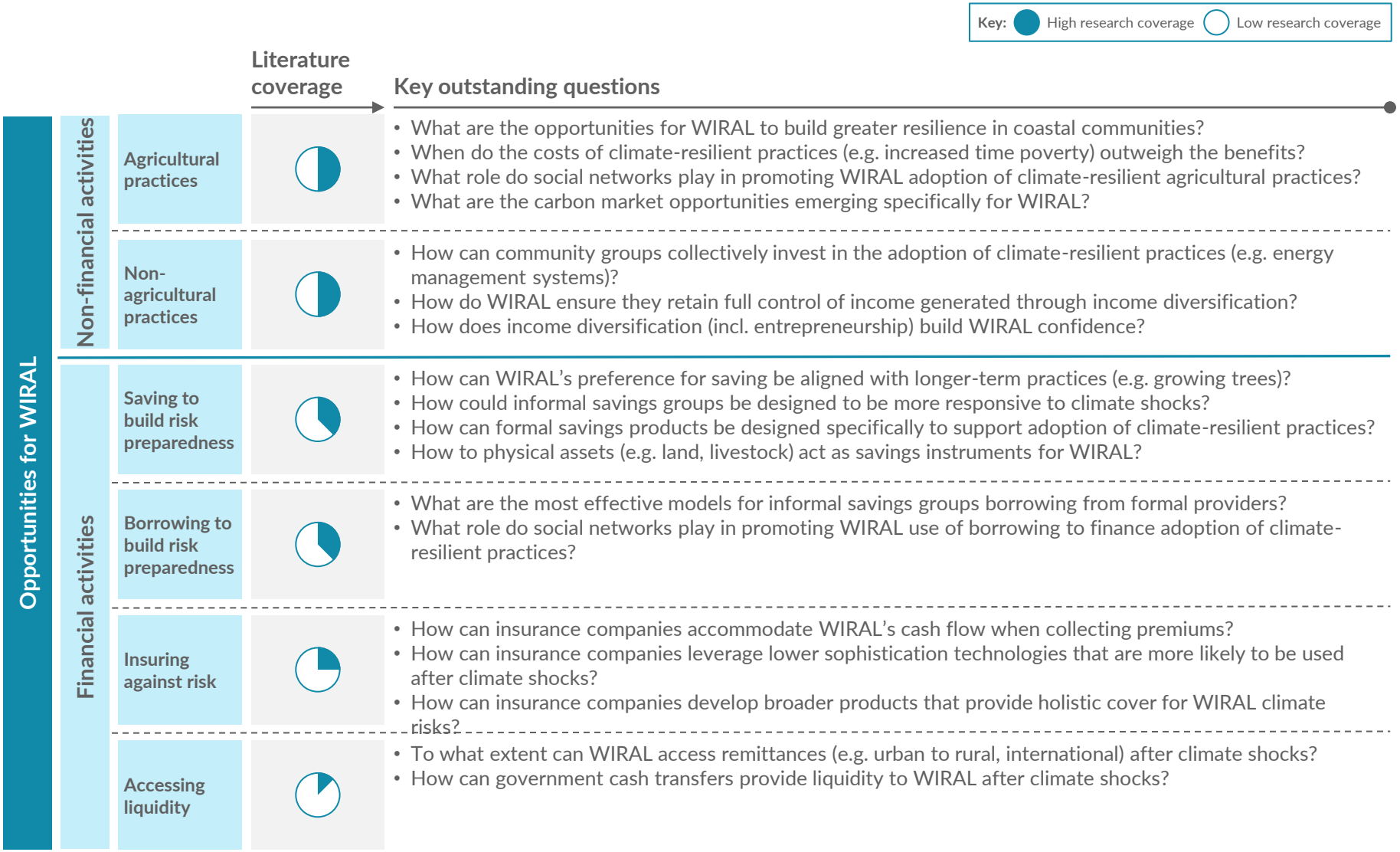
The literature review as surfaced outstanding questions that could warrant future research (1/3)

Key: High research coverage / Low research coverage

			Literature coverage	Key outstanding questions
Impacts of climate change	Labor	Hired labor		• How does climate change affect WIRAL's access to labor networks? • How does climate change affect WIRAL managers' costs of hiring labor (e.g. after outward male migration)? • Are female managers more likely to substitute male labor (e.g. after outward migration) with female labor?
		Saved labor		• What approaches (e.g. leasing, local agents) can facilitate adoption of climate-resilient practices? • What role do gendered networks play in sharing climate information and do these disadvantage WIRAL? • What are WIRAL's behavioral changes and incentives for adopting climate-resilient practices?
		Wage labor		• What are the (perceived) skills gaps that limit WIRAL's ability to replace male labor (e.g. post-migration)? • To what extent do WIRAL retain control of income generated by new, climate-driven wage labor jobs? • Does WIRAL agency for accessing wage labor opportunities increase after outward male migration?
	Markets	Local markets		• How do WIRAL retain control of agricultural output allocated for post-harvest storage rather than markets? • How could traders/brokers be leveraged to sustain/increase WIRAL market access after climate events? • Does WIRAL's market access and responsibility for selling output increase after outward male migration?
		Digital markets		• How resilient and responsiveness are digital market platforms to unexpected climate shocks? • To what extent to digital markets incorporate WIRAL needs when providing climate-resilient inputs? • How is WIRAL's access to digital technology (e.g. data, airtime, electricity) impacted by climate events?
	Cross-cutting	Access to and usage of financial services		• How are the most vulnerable (e.g. displaced) WIRAL's access to and usage of financial services affected by climate change? • How is WIRAL's confidence and risk appetite for using financial services impacted by climate change?
		Time and mobility		• How does WIRAL's access to transport services in the event of climate emergencies compare to men's? • Under what circumstances can WIRAL's time poverty be exacerbated by the adoption of climate-resilient-practices?
		Socio-cultural norms		• How can levels of GBV and early childhood marriage be reduced in the event of climate-related shocks? • How can gatekeepers be better incentivized to support WIRAL adoption of climate-resilient practices? • Are the roles of gatekeepers diminished after outward male migration and gatekeepers are no longer present?

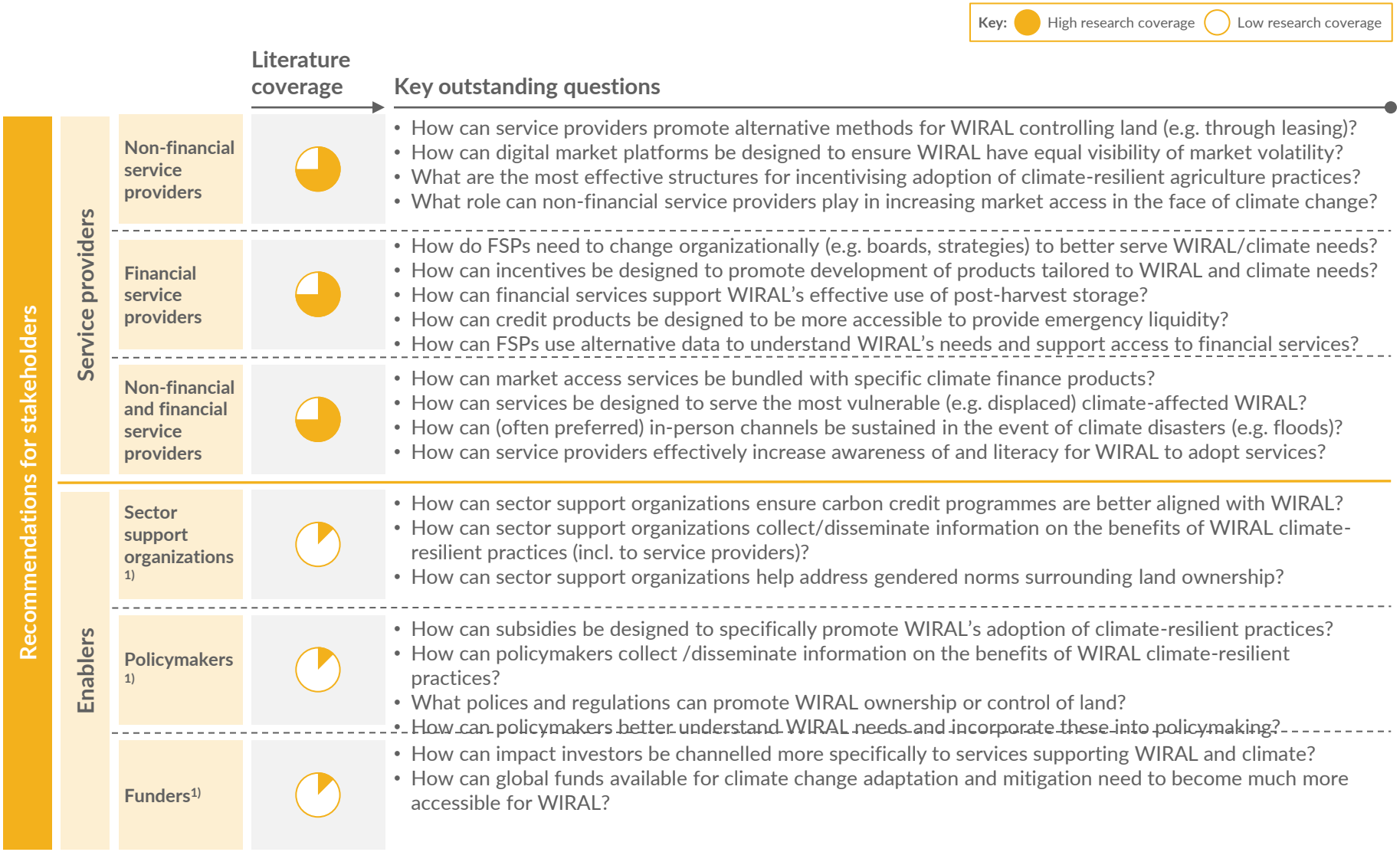
4

The literature review as surfaced outstanding questions that could warrant future research (2/3)



4

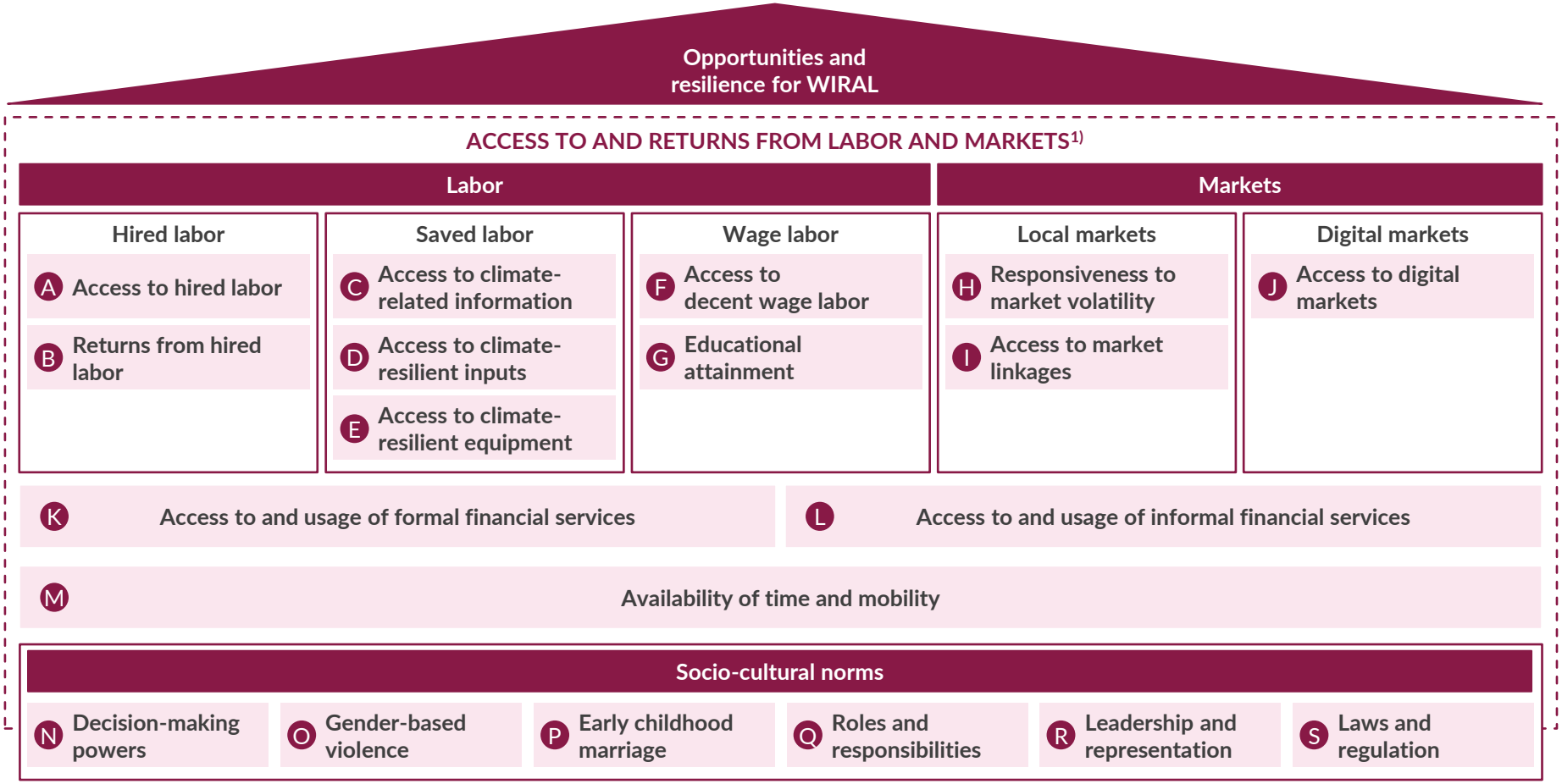
The literature review as surfaced outstanding questions that could warrant future research (3/3)



1) Recommendations for enablers are derived from higher level research in comparison to the more detailed research focused on service providers

Contents

WIRAL's access to and returns from labor and markets are impacted by climate change in the following key areas



Contents

Ⓐ

WIRAL's ability to hire labor can be reduced by climate change due to shortage of labor and a reduction in financial assets

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Access to hired labor

Explanation of impact

WIRAL's **ability to hire labor can be reduced because of climate change** (e.g. their financial assets are reduced, there are few laborers to hire (e.g. because of outward migration))

Examples

- In Nepal, male out-migration from the Terai floodplains leads to a shortage in the availability of agricultural labor, which leads to lower food production and the higher exposure of women living off subsistence farming to climate change risks (Climate Change Impacts on Livelihoods: Nepal Assessment)
- In dryland areas of Mali, Tanzania, Vietnam, and Nigeria, studies show that poorer and female-headed households are more likely to undergo labor shortages and feminization as these households cannot hire external male labor to take over farming activities in the absence of male household members (A Review of the Effects of Migration on the Feminization of Agrarian Dryland Economies)
- In Tajikistan, rural Tajik women face significant time burdens due to massive male outward migration, that is further exacerbated by the changes in climate. With labor shortages, rural Tajik women work for wages on dekhan farms, grow food for consumption, they provide care for the elderly and children and perform competing household chores, including the collection of water and fuel. All of which increase time poverty for women. The concentration of women in agriculture is a coping strategy rather than an empowering process (Feminization of Agriculture in the Context of Rural Transformations: What is the Evidence?)

Key underpinning socio-cultural norms

M Decision-making powers	N Gender-based violence	O Early childhood marriage	**P Roles and responsibilities**	Q Leadership and representation	R Laws and regulation

Ⓑ

WIRAL managers' returns from hired labor can also be reduced due to climate change

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Returns from hired labor

Explanation of impact

WIRAL managers' **returns from hired labor can be lower** due to their lower ability to oversee climate-resilient practices that can sustain or increase productivity

Examples

- In rural Guatemala, women cited that male outward migration led to labor unavailability, and with the few available, women had a weak negotiating power and inability to monitor quality. While women may wish to stay in agriculture, their lack of knowledge and access to labor and other inputs hampers them from becoming more productive (Women in Agriculture: The Impact of Male Out-Migration on Women's Agency, Household Welfare, and Agricultural Productivity)
- In Nepal, the slim labor force causes women to manage farms with less attention, adopt less-intensive farming practices, plant fewer crops, or even abandon their land in Nepal, due to male outward migration (The Effects of Male Out-Migration on Food Security and Food Sovereignty in Rural Nepal Security and Food Sovereignty in Rural Nepal)
- A study concluded that because women face challenges in accessing, monitoring and supervising male labor due to climate-forced migrated, their returns from hired male labor are expected to be low. If women cannot successfully hire labor, more land will simply increase their workload and the workload and welfare of other household members, including children. Furthermore, if the migrant husbands send high remittances this may discourage women from continuing to farm if the returns from farming are not high enough (Feminization of Agriculture in the Context of Rural Transformations: What is the Evidence?)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	**Roles and responsibilities**	Leadership and representation	Laws and regulation

WIRAL have lower access to the training and information required to apply climate-resilient practices which save time and labor

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Access to climate-related information

Explanation of impact

WIRAL have **lower access to the training (e.g. extension) and information (e.g. early warning, weather forecasts) required to understand how they can apply CSA practices** that could increase efficiency and productivity in the face of climate change, thereby saving time and labor that would otherwise be spent on less efficient practices

Examples

- In rural Uganda, a study surfaced that women did not seem able to understand the seasonal forecast presented during the study or its implications for agricultural decision-making, while the men were able to do so (Understanding Gender dimensions of Agriculture and Climate Change in Smallholder Farming Communities)
- In some parts of rural Tanzania and Burkina Faso women are often limited from participating in trainings and meetings where climate-based advisories are discussed due to norms that associate public meeting participation with men and restrict cross-gender interaction in public spaces (Gender-responsive rural climate services: a review of the literature)
- In India women have limited access to weather-based agro-advisories as farmers' group requirements disadvantage women. Participation in farmers' clubs facilitate enhanced knowledge and awareness of agro-meteorological advisory services; however, annual membership fees can be costly for resource-poor farmers, including women, thus limiting their opportunity to participate (Assessment of India's Integrated Agro-meteorological Advisory Service program from a farmer perspective)
- In Senegal, women cannot access information about the predicted start of the rains, livestock production-related information, and pest and disease outbreaks due to gendered roles in agriculture (Implications of gender-focused research in Senegal for farmers' adaptation to climate change)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	**Roles and responsibilities**	Leadership and representation	Laws and regulation

WIRAL are less likely to have access to climate-resilient inputs that enable them to apply CSA practices and increase their resilience

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Access to climate-resilient inputs

Explanation of impact

WIRAL are **less likely to have access to climate-resilient inputs (e.g. seeds, fertilizers)** that can yield a higher productivity from a similar investment of time and effort than unsuitable varieties whilst also increasing their climate resilience

Examples

- In Uganda, women are less likely to access climate-resilient inputs as they are cost-prohibitive, and not well marketed towards women:
  - A study found out that nearly all female-headed households in the study reported a desire to expand agricultural activities but lacked the money to purchase items including inputs such as seeds, fertilizer and pesticides ("I Sell My Labor Now": Gender And Livelihood Diversification In Uganda)
  - There are few seed companies that have an inclusive marketing approach targeting women, most seed companies have employed a one-size-fits-all marketing strategy with no gender lens to reach women farmers, nor deliberate avenues by which to reach women as a distinct market segment (Gender Dynamics In Seed Systems In Sub-Saharan Africa And Worldwide Lessons Workshop)
- In Malawi, female-headed households were significantly less likely than male households to receive a fertilizer coupon. In one region, female-headed households were 11 percentage points less likely to receive this coupon. Some of the reasons included credit constraints (farmers had to pay a nontrivial amount for fertilizer), time constraints (farmers had to queue for up to a week to receive the coupons), and poor targeting, which lowers women's demand and access to fertilizer (Targeting Agricultural Input Subsidy Coupons In Malawi)
- In Kenya, there is evidence showing much lower adoption rates of improved seeds and fertilizers for female-headed households than for male-headed households. These differences are partly explained by lower education levels (Gender And Agriculture: Inefficiencies, Segregation, And Low Productivity Traps)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	**Roles and responsibilities**	Leadership and representation	Laws and regulation

E

WIRAL are less likely to own or have access to mechanized tools that could enable them to implement CSA practices

Legend: High research coverage | Low research coverage | Key underpinning social norm

Access to climate-resilient equipment

Explanation of impact	Examples
WIRAL are **less likely to own or have access to mechanized tools** (e.g. weeders, seeders, spreaders) that could enable them to efficiently implement labor-intensive climate-smart agriculture practices and build resilience	• In Bangladesh, women cannot own nor access agricultural machinery due to negative socio-cultural perceptions. It is perceived as inappropriate and socially unacceptable for women to operate agricultural machinery (Innovative Approaches To Including Gender Within Agricultural Mechanization) • In Ghana, given the lack of appropriate technologies for most farming activities across rural Ghana, women perform labor-intensive tasks with the use of simple and traditional farming implements. Where technologies are available to women, they are normally very expensive for them to be able to afford (National Gender Profile Of Agriculture And Rural Livelihoods – Ghana)
Most agricultural tools are also not designed to the ergonomics or needs of women, making them too large or heavy, conflicting with social norms, or otherwise unsuitable limiting CSA application by WIRAL	• In some parts of India, women cannot cultivate the land as most of the equipment used for farming are heavy and meant for men. These tools are mostly left behind by men when they migrate due to severe drought and other natural disasters caused by the climate change (Climate Change: India Plans Women-friendly Agricultural Equipment) • In Zambia, Zimbabwe, and South Africa, a study found that women faced difficulties using treadle pumps as the designs did not consider the ergonomic aspects of women (Sustainable Irrigation And The Gender Question In Southern Africa)
WIRAL's **productive assets are likely be sold first to generate liquidity** in response to climate events	• In some parts of Africa in households coping with famine, women's productive assets are among the first to be sold, limiting the household's future income generating possibilities (Famine And Household Coping Strategies)

Key underpinning socio-cultural norms

M Decision-making powers	N Gender-based violence	O Early childhood marriage	**P Roles and responsibilities**	Q Leadership and representation	R Laws and regulation

Ⓕ

WIRAL's access to decent, secure wage labor opportunities is often compromised by climate change

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Access to decent wage labor

Explanation of impact

WIRAL's **access to decent, secure wage labor is often compromised by climate change**, with female labor often sacrificed before men's (e.g. due to greater domestic responsibilities or reduced demand for female labor), whilst working conditions can also deteriorate under the stress of climate change (e.g. due to increase risk of gender-based violence). Furthermore, with adverse climate effects, the supply of factory inputs (e.g. crops) lowers, forcing processors to re-locate and reducing the number of jobs available

Examples

- In India women traveled 50 km within Nuagaon the district to do transplanting work in the drought year since no work was available near their village and lower wages were quoted due to the influx of many women from other villages seeking work (Blame It On The Rain?: Gender Differentiated Impacts Of Drought On Agricultural Wage And Work In India)
- In rice-growing areas of India, low rainfall shocks are associated with a decrease in female farm workers' wages, but do not affect men's wages, indicating that demand for female farm labor is more sensitive to rainfall variability (Gender Dimensions Of Disaster Risk And Resilience: Existing Evidence)
- In Botswana, some women are said to turn to sex work to earn income in times of climate stress – since women need to support their families. The women are aware of the dangers of this trade, however, their desire to provide for the family outweighs the negative aspects of sex work (Ecosystem-based Adaptation And Mitigation In Botswana's Communal Rangelands)
- In Nicaragua and Honduras, it was easier for men to find work before women after the hurricane. Women in the agro-processing industry had yet to return to their jobs in the aftermath of Hurricane Mitch, whereas men quickly found work in construction and rehabilitation activities (Gender And Post-Disaster Reconstruction: The Case Of Hurricane Mitch In Honduras And Nicaragua)
- In Bangladesh, outward male migration to urban areas does not necessarily create hired labor opportunities for women that remained. As such, male and female labor are not viewed as perfect substitutes for one another (Migration, Labor And Women's Empowerment: Evidence From An Agricultural Value Chain In Bangladesh)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	**Gender-based violence**	Early childhood marriage	**Roles and responsibilities**	Leadership and representation	Laws and regulation

WIRAL's education is often sacrificed in response to climate change which thereby limits their longer-term employment prospects

Legend: High research coverage | Low research coverage | Key underpinning social norm

Educational attainment

Explanation of impact

WIRAL's education is more likely to be sacrificed in response to climate change (e.g. parents are no longer able to afford education, where they tend to sacrifice girls' education more than boys'). In other occasions girls are required to support increased domestic work such as collecting water in drought periods, making them miss school), which thereby limits their longer-term employment prospects

Examples

- In Uganda, it was identified that girl child's labor was used as a buffer in increased responsibilities due to climate change. A 15% decrease in rainfall in Uganda resulted in a 5% decrease in girls' enrollment for the highest grade of elementary school enrolment. Even when school was free, a decrease in rainfall was associated with lower test scores for girls (and a drop in enrollment among the poorest girls) due to increased duties such as fetching water. Boys, on the other hand, were unaffected, indicating that parents continue to prioritize their education (Gender Dimensions Of Disaster Risk And Resilience: Existing Evidence)
- In Mozambique, across the drought zones, there has been a growing drop-out of girls from formal schooling to take up household-related chores including to search for and transport water for household consumption (Hope Dries Up? Women And Girls Coping With Drought And Climate Change In Mozambique)
- In Botswana, a study on droughts and the vulnerability of children and young people found that 70% of children taken out of school were girls, and over 50% of girls reported an increase in traveling further to collect resources for their household (Vulnerability Of Children And Youths In Drought Disasters: A Case Of Botswana)
- In Kenya's district of Laikipia, more girls than boys reported being out of school than boys for reasons such as family errands, migration of parents, and lack of food as a result of drought (Impact Of Drought In Primary Schools In Laikipia District Of Kenya)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	**Roles and responsibilities**	Leadership and representation	Laws and regulation

Contents

WIRAL have lower visibility of market information and ability to respond to price volatility caused by climate-related events

Legend: High research coverage | Low research coverage | Key underpinning social norm

Responsiveness to market volatility

Explanation of impact	Examples
WIRAL have **lower visibility of market information and price volatility caused by climate related events** (e.g. through smaller networks). WIRAL struggle to access this relevant information and with climate change they suffer an even greater impact	• In some parts of India, women have access to information related to only typical activities they engage in, (e.g. the production of crops and farm activities, livestock rearing, cultivating crops for household consumption, weeding, and harvesting) Women have limited access and visibility to market information such as market rates which are influenced by climate events (Demand For Agricultural Information Among Women Farmers: A Survey From Karnataka, India) • In Kenya, women in dryland communities have uneven access to climate change responses and disaster risk reduction measures. Women have a limited access to markets for animals and products due to a relative lack of contacts and information. In addition, women had limited access to mobile phones which are essential for livestock trading. Limited participation in livestock cooperatives reducing their influence (Ecosystem Based Adaptation In Kenya's Arid And Semiarid Rangelands)
WIRAL have a **lower ability to respond to promptly to market volatility** (e.g. requiring husbands' permission to sell output at a given price) which is increased due to climate change and therefore further disadvantages WIRAL	• In the drylands of Kenya, women were offered lower prices by livestock traders who had visibility and ability to access better market prices elsewhere, and who know women have fewer market options due to their limited mobility and needed to have their husband's permission to make livestock sales (Ecosystem Based Adaptation In Kenya's Arid And Semiarid Rangelands) • In Burkina Faso, women are restricted in responding to market volatility during climate change as although women take care of the livestock, animals (except farmyard birds) belong to the men who dictate when to sell and the price to sell the animals (Climate Change And Women Farmers In Burkina Faso: Impact And Adaptation Policies And Practices)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	**Roles and responsibilities**	Leadership and representation	Laws and regulation

WIRAL's access to physical markets is disproportionately affected by climate change

Legend: High research coverage | Low research coverage | Key underpinning social norm

Access to market linkages

Explanation of impact

WIRAL's **physical access to market linkages is disproportionately affected by climate change** (e.g. increased domestic responsibilities, decreased mobility), thereby limiting their income-earning opportunities

Examples

- In Ethiopia, women cannot access physical market linkages due to loss of trading items (especially those more sold by women) and increased domestic responsibilities:
  - During drought, lots of livestock tend to die causing women's access to livestock products such as milk, butter and meat to diminish significantly. Women cannot therefore engage in market activities (e.g. selling milk), due to the loss of livestock consequently. Women have also lost access to income from selling milk products, over which they had relatively independent decision-making power before the drought. With limited money in circulation, petty traders, who are mostly women, have been forced to cease or significantly reduce their business activity. (Consolidated Gender Analysis For The Ethiopian Drought)
  - Female-headed households that engage in petty trade are unable to sustain their businesses during climatic emergencies/disasters because of their increased responsibilities for managing their households after climate-related shocks (Rapid Gender Analysis: Research Report)
- In Cambodia, during floods, there is limited mobility for women and it is highly risky for them to commute to work, market or health center due to their limited life-saving skills such as swimming, tree climbing, boat rowing. When the flood recedes, women become increasingly occupied with both home/children caring activities and home-bound activities since men have to travel out of the village to work (Flood Impacts On Women: Exploring The Possibility Of Gender-sensitive DRR Planning)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	**Roles and responsibilities**	Leadership and representation	Laws and regulation

Ⓙ

WIRAL have lower ownership of digital technologies and access to digital marketplaces that would enable them to sustain market access

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Access to digital markets

Explanation of impact

WIRAL have **lower ownership of digital technologies and access to digital marketplaces** that would enable them to sustain market access in the face of climate change (e.g. after floods that can restrict access to physical markets) and view up-to-date market information (e.g. pricing) which is increasingly volatile in response to climate-related events (WIRAL's lower access to digital markets is therefore a driver of their lower responsiveness to market volatility, which is further detailed here)

Examples

- In Kenya, women farmers are less likely to own smartphones and more likely to own feature phones, which have storage limitations and cannot accommodate complex digital platforms. This means that WIRAL are missing the opportunity to explore additional features (e.g. IVR) which can enable women to access information/learn while undertaking domestic responsibilities which often increase after climate shocks (Gender Impact Study)
- In Kenya, women farmers' engagement is easier with simpler channels (e.g. SMS and IVR calls). It is hard for women to navigate more complex platform components (e.g. USSD-based services and applications). This results in women farmers' requiring more guidance to navigate more complex digital platforms (Gender Impact Study)
- In Kenya, time poverty which can be further deepened by climate change is a barrier to exploring digital platforms and their additional features as women's additional responsibilities limit the time available to engage with some of these technologies (Gender Impact Study)
- In Uganda, many women cannot afford the cost of purchasing a mobile phone which requires full payment of the cost of the phone and frequent airtime top-ups which may be more than women can afford (Gender Mainstreaming In Digital Agriculture)
- In Uganda, due to power/electricity limitations, women cannot charge cell phones. This means that even when they access them, they cannot use them (Gender Mainstreaming In Digital Agriculture)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	**Roles and responsibilities**	Leadership and representation	Laws and regulation

Contents

WIRAL's lower access to formal financial services limits their capacity to build resilience to climate change

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Access to and usage of formal financial services

Explanation of impact	Examples
WIRAL **have lower access to and usage of formal savings accounts**, which could support adoption of climate-resilient practices and provide secure access to short-term liquidity	• In Peru, only 2% of rural women save in the formal banking system compared to 12% of rural men which limits their ability to manage disruptions and limits their farm investments. (How Grassroots Savings-and-credit Unions Can Improve Access To Finance For Rural Women) • In Fiji, more men than women own bank accounts which limits women's access to financial services that can help them overcome damages from disasters . (5 Facts On Gender Equality And Access To Disaster Risk Finance In Fiji)
WIRAL have **lower access to credit** that could finance adoption of climate-resilient practices (e.g. purchase of climate-resilient inputs, mechanized equipment)	• In Africa, women receive less than 10% of the credit granted to small producer farmers limiting their ability to take full advantage of climate adapting technologies. (Why Women Inclusivity Is Vital For Uptake Of Agricultural Insurance) • In Malawi, women smallholder were likely to pay for treadle pumps in cash while men used loans, a likely indicator of women's less access to financing in relation to irrigation. (Smallholder Farmers And Climate Smart Agriculture: Technology And Labor-productivity Constraints Amongst Women Smallholders In Malawi) • In Zambia, women farmers find it difficult to obtain loans as land is often required as collateral which women lack ownership of. (Zambia: Strengthening Climate Resilience Of Agricultural Livelihoods In In Agro- Ecological Regions I And II)
WIRAL have **lower access to and usage of insurance** that could mitigate climate risks and increase the security of adopting climate-resilient practices	• In Bangladesh, women's uptake of weather index insurance is limited due to lack of trust and information from FSPs and low financial literacy. (The Influence Of Gender And Product Design On Farmers' Preferences For Weather-Indexed Crop Insurance) • In Ghana, female farmers are less likely to use weather-index insurance than men, linked in part to their higher illiteracy and lower financial literacy (Agricultural Insurance Access And Acceptability: Examining The Case Of Smallholder Farmers In Ghana)

Key underpinning socio-cultural norms d

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	**Roles and responsibilities**	Leadership and representation	Laws and regulation

Ⓛ

WIRAL's are more likely to use informal financial services and coping mechanisms that can be less resilient than formal equivalents

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Access to and usage of informal financial services

Explanation of impact	Examples
WIRAL are **more likely to use informal financial services (e.g. VSLAs) due to limited awareness, trust and access to the formal equivalents** and these can be less equipped to cope with significant climate-induced financial shocks	• In Fiji, women are more likely to ask their friends and family for assistance as a coping mechanism due to limited access to formal financial services. These sources are however unreliable as they are also likely to be affected by the same climatic shock. (5 Facts On Gender Equality And Access To Disaster Risk Finance In Fiji) • In developing countries, in case of an emergency, women tend to rely on informal finance such as loan sharks, community savings groups, remittances and small-scale lending from friends however this credit only helps them recover from less severe events as these sources tend not to cover disaster impacts as they run out of money. (Gender Dimensions Of Disaster Risk And Resilience)
Tangible assets that are sacrificed first in response to climate events are **more likely to be held by women** as **lower access to financial services limits their ability to own financial assets** that are preserved	• In Uganda, since assets conducive to trading make up a larger share of women's wealth, women's assets decrease when a household is affected by drought while husband's assets remain unchanged as women's wealth is sold to cope. (Gender Dimensions Of Disaster Risk And Resilience) • In Mali and Northern Ghana, women hold their wealth in livestock which they sell to reduce liquidity constraints. (Assessing The Determinants Of Women Farmers' Targeted Adaptation Measures In Response To Climate Extremes In Rural Ghana) • In Mexico, prolonged drought led to women who were already resource limited, to sell their small livestock ultimately reducing their financial capital. (A Literature Review Of The Gender-differentiated Impacts Of Climate Change On Women's And Men's Assets And Well-being In Developing Countries)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	**Roles and responsibilities**	Leadership and representation	Laws and regulation

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WIRAL's time constraints and lower mobility limit their income generating activities and resilience during and after climatic events

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Availability of time and mobility

Explanation of impact	Examples
WIRAL **undertake a disproportionate amount of unpaid home care work** (e.g. fetching water and fuel) which becomes increasingly **time consuming** due to climate change effects **reducing their time for income-earning opportunities**	• In Kenya, during drought, women take care of the household while men travel long distances in search of pasture, reducing women's time to engage in other economic activities. (Women Use Trees To Boost Fodder Production In Drought Prone Areas) • In Bangladesh, women shoulder unpaid regular and time-consuming domestic tasks, including food preparation, collecting fuel and water, and caring for dependents With increasing male outmigration, women must also manage the farm leaving them time poorer. (Climate Change And Time Poverty Trap Women In A Vicious Cycle) • In Kenya's Northern region, due to drought women spent much of their time looking for water, walking long distances to reach boreholes where they queue at water kiosks, competing for water with the large numbers of livestock. (Cyclical Drought In Northern Kenya Takes Toll On Women And Girls)
WIRAL have **lower mobility** in response to climate events, increasing their exposure to harmful impacts and reducing their ability to build resilience	• In Bangladesh, travel is difficult for women during monsoon due to social norms that prohibit them from entering crowded buses. (Understanding Gender Dimensions Of Agriculture And Climate Change In Smallholder Farming Communities) • In Ethiopia, during drought, women's mobility to urban areas is limited due to a lack of education and other socio-cultural reasons that make it difficult to find a job in the urban areas. (Climate Change, Gender Inequality And Migration In East Africa) • In Somalia and Ethiopia, men migrate to urban areas due to drought leaving women behind who face increased risk of expulsion from their families as well as sexual violence. (Climate Change, Gender Inequality And Migration In East Africa)

Key underpinning socio-cultural norms

M Decision-making powers	N Gender-based violence	O Early childhood marriage	**P Roles and responsibilities**	Q Leadership and representation	R Laws and regulation

Contents

Ⓝ

WIRAL's lower decision-making powers in both agricultural and financial issues limits their agency in responding to climate change

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Decision-making powers

Explanation of impact

WIRAL have **lower decision-making** power on both agricultural and financial issues which **reduces their agency over how to respond** to climate change. This may **limit their adoption of climate-adaptive techniques in agriculture** such as climate smart agriculture and **adoption of other adaptive practices such as migration**

Examples

- In Africa, inaccessibility to decision-making processes and limited mobility prevent women from migrating, leaving them in locations where they are disproportionately exposed to climate change. (Women In The Shadow Of Climate Change)
- In East Africa, rural women do not have access to decision-making processes and resources that can help them cope with the changing climate. As a result, they have a weaker ability to migrate and adapt. In Ethiopia, pastoral women cannot gain access to real property other than through their male kin which affects their adaptive capacity because the lack of equal access to property inhibits their access to resources such as credit and inputs. (Climate Change, Gender Inequality And Migration In East Africa)
- In Uganda, women have limited authority on how household income is spent and would need permission from a male family member to buy crop insurance. (Feasibility Study On Agricultural Insurance For Oilseed Farmers)
- In South Africa, men make decisions on climate adaptation and women have little bargaining power. (Resilience To Climate-Induced Disasters And Its Overall Relationship To Well-being In Southern Africa: A Mixed-methods Systematic Review)
- In Ethiopia and Somalia in pastoral areas, when the husbands migrate due to drought, it is the eldest son or male relatives who make decisions regarding land, livestock, crop production and sales. (Climate Change, Gender Inequality And Migration In East Africa)
- In Ghana, some husbands seek to maintain their power positions by preventing women from cultivating their own plots, even though it could compensate for yield losses due to shifting precipitation patterns. (Managing The Impacts Of Climate Change On Poverty)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	Roles and responsibilities	Leadership and representation	Laws and regulation

Gender-based violence increases during climatic events, affecting WIRAL as well as displaced and migrant women

Legend: High research coverage | Low research coverage | Key underpinning social norm

Gender-based violence

Explanation of impact	Examples
WIRAL face increased sexual and gender-based violence during and after climate related-disasters	• In Tanzania, droughts lead to an increase in intimate partner violence where females are less empowered. (Gender Equality, Environment & Climate Change) • In Micronesia, during periods of drought, women forced to walk farther to water wells reported rising incidence of rape and abuse. (A Crisis Within A Crisis: Climate Change And Gender-Based Violence) • In Uganda during droughts and prolonged dry spells, women faced domestic violence, rape, and other harmful practices; In Chad, due to drought women and girls are forced to walk longer distances to obtain water which increases their exposure to sexual harassment and assault and due to male out-migration, women left behind to provide for their families are exposed to sexual violence and exploitation (Climate Change And Gender-Based Violence: What Are The Links?) • In Pakistan, violence against women increased after floods. (Five Ways Climate Change Hurts Women And Girls)
WIRAL **displaced and forced to migrate** because of climatic events often face **increased** gender-based violence	• In Ethiopia, women living in overcrowded shelters due to climate displacement faced higher levels of sexual violence. (Climate Woes Growing For Women, Hit Worst By Displacement And Migration) • In Somalia and Angola, when populations are displaced due to drought, women and girls faced increased gender-based violence at refugee or internally displaced persons camps (Five Ways Climate Change Hurts Women And Girls)

Key underpinning socio-cultural norms

M Decision-making powers | **N Gender-based violence** | O Early childhood marriage | P Roles and responsibilities | Q Leadership and representation | R Laws and regulation

Ⓟ

Girls are at increased risk of early childhood marriage as a coping mechanism in response to climate-related events

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Early childhood marriage

Explanation of impact

Early childhood marriage of rural girls increases in response to climate events, as increases in poverty linked to weather shocks like floods and droughts can lead families to marry off their daughters to generate income from dowries and to reduce the number of family dependents, often reducing girls' education and income-generating prospects

Examples

- In Malawi, minor girls were forced to get married due to shortage of food resulting from dry seasons in the country; In Uganda during droughts and prolonged dry spells, there was an increase in early child marriage. (Role Of Climate Change In Exacerbating Sexual And Gender-Based Violence Against Women: A New Challenge For International Law)
- Countries with high climate vulnerability such as Bangladesh, Mozambique, Zimbabwe and Malawi have relatively high rates of child marriage; In Mozambique, the 2016 drought caused families to use bride price from child marriages to raise income or to reduce dependents. (Gender Equality, Environment And Climate Change)
- In Northern Kenya, more families pulling their daughters from school and marrying them so as to cope with droughts and climate caused by a locust plague. (Kenya Is Trying To End Child Marriage. But Climate Change Is Putting More Young Girls At Risk)
- In Bangladesh male farmers turn to dowry as a means of income when they lose their livelihoods due to flooding or droughts. (How Is Climate Change Driving Child Marriage?)
- In Mozambique, 30%- 40% of child marriages are due to floods and droughts as the loss of income leads to child marriage to reduce dependents. Sometimes girls also request to be married as a solution to their problems. (Why Climate Change Is Creating A New Generation Of Child Brides)
- In South Sudan, due to poverty caused by climate change, parents are marrying their daughters off in exchange for livestock using the bidding process, "Whoever bids with the highest number of cows will take the girl"; In South Asian countries, families who face financial difficulties from the likelihood of natural disasters like floods, droughts, river erosion, and storms resort to marry off their daughters. (Children Risk Early Marriage: Climate Change One Of The Factors)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	Roles and responsibilities	Leadership and representation	Laws and regulation

Strict gender roles increase WIRAL's vulnerability to climate change and increase their work burden during climatic events

Legend: High research coverage | Low research coverage | Key underpinning social norm

Roles and responsibilities

Explanation of impact	Examples
WIRAL's **household responsibilities increases** their vulnerability to climate induced activities and the **increased workload** puts pressure on the **girls to drop out** of school to help out	• In Africa, women have greater responsibility cleaning up after floods. (Managing The Impacts Of Climate Change On Poverty) • In Vietnam, women must collect water from sources that are increasingly further each drought. In Senegal, women have to travel further in search of water as well as spend more time checking different wells for water availability. In Botswana, during droughts, 70% of children taken out of school were girls and 56% of them reported spending more time and traveling longer distance to fetch water for household use. (Gender And Climate Change: A Closer Look At Existing Evidence) • In Kenya, South Sudan Ethiopia and Somali, young women and girls spend up to eight hours a day fetching around 20 litres of water due to the drought. (Seven Weeks For Water 2017, Week 2: "Feminization Of Water Poverty In Africa")
WIRAL's roles in producing household crops and livestock increases their exposure to climatic events and often exacerbates pre-existing time poverty caused by providing food for the family	• In Vietnam, reduced crop yields as a result of climate change increased women's workload as they had to replant rice crops more often to replace lost production; In Tanzania, women report that they are replanting certain crops that they are responsible for (such as groundnuts) more often because of changes in weather patterns that are destroying seeds; In Iran, pressures related to drought are increasing women's farm responsibilities, even in relatively well-off households. (Gender And Climate Change: A Closer Look At Existing Evidence) • In India, workload increased for women in rainfed farming households due to the fluctuating crops yields and the longer distance needed to travel for fuel fodder and water (The Role Of Women In Agriculture)

Key underpinning socio-cultural norms

M Decision-making powers | N Gender-based violence | O Early childhood marriage | **P Roles and responsibilities** | Q Leadership and representation | R Laws and regulation

WIRAL are less likely to hold leadership positions, which limits their influence on decisions to build climate resilience

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Leadership and representation

Explanation of impact

WIRAL's **lower participation** in sector group leadership **deprives them of influence in collective decision-making** and **excludes them** in programs or in the **implementation of policies aimed at increasing their resilience** to climate change

Examples

- In East Africa, women are often excluded from important decision and policy-making forums and institutions, making them more vulnerable to the impacts of climate change. (Climate Change, Gender Inequality And Migration In East Africa)
- In Nepal, women constitute only about 30% of village forestry committees, and are usually "silent" participants as they are overshadowed by men who make most of the decisions. (Gender Equality, Environment And Climate Change)
- In Bangladesh, after Cyclone Amphan, 65% of women respondents in a rapid gender assessment noted that they were not consulted by service providers involved in the response effort and only 13% noted involvement of women-led NGOs in the response. (Study On Women And Girls' Participation In Community Disaster Risk Management In Bangladesh)
- In Kenya, women's limited participation in livestock cooperatives reduces their influence in livestock sales and still requires them to have their husband's permission to make livestock sales. (TWENDE* Towards Ending Drought Emergencies: Ecosystem Based Adaptation In Kenya's Arid And Semi Arid Rangelands)
- In West Africa, big producers and millers from the irrigation schemes dominate in national associations and unions at the expense of rain-fed rice farmers, most of whom are women. (West African Food System Resilience)
- In the Asia- Pacific region, women are not well represented in decision-making processes, which constrains their ability to meaningfully participate in decisions on adaptation and mitigation. (Overview Of Linkages Between Gender And Climate Change)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	Roles and responsibilities	**Leadership and representation**	Laws and regulation

WIRAL's ability to adopt climate-resilient practices is often limited by laws and regulation that limit their ability to own and control land

Legend: ● High research coverage ○ Low research coverage ■ Key underpinning social norm

Laws and regulation

Explanation of impact

WIRAL's ability to adopt climate-resilient practices (e.g. climate smart agriculture, usage of formal credit) is limited as they **often do not hold land rights due to prohibitive laws regarding land tenure and ownership**

Examples

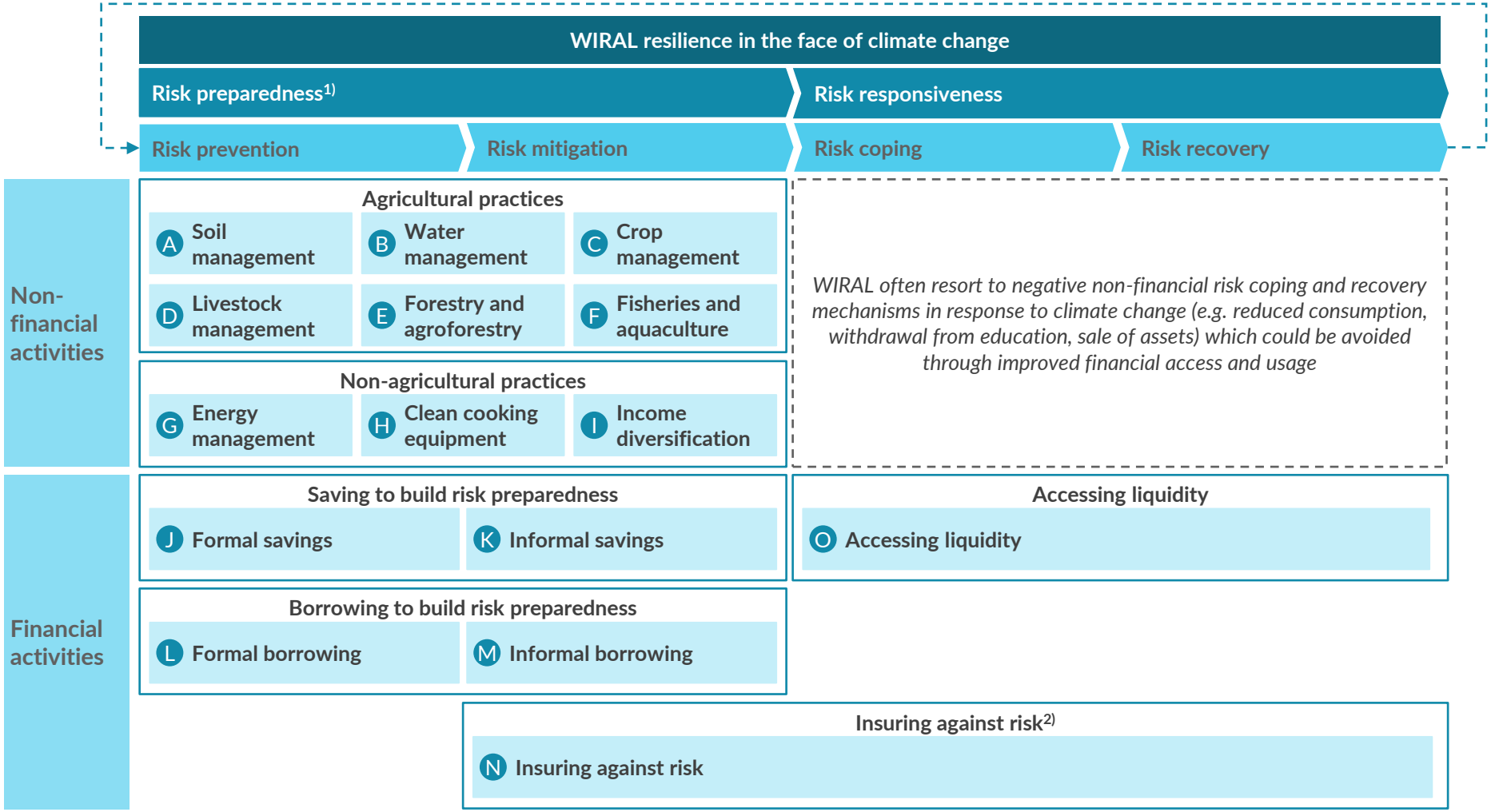
- In East Africa, although they are primary and secondary users of land through their role as livestock managers, women do not have equal rights with men. (Climate Change, Gender Inequality And Migration In East Africa)
- In Guatemala, women are prevented from enjoying legal rights to land and are insecure in their access due to patriarchal customs and attitudes; In Guyanhave, 90% of female heads of farm households have no title to their land and are therefore unable to access credit to expand or improve their farming activities. (Land Tenure & Gender: Promoting Equity & Climate Resilience Through Land Ownership)
- In Mali, women often have temporary land use rights, which are easily taken away from them (Empowering Women Through Climate-Resilient Agriculture In West And Central Africa)
- In Kenya, over 65% of land is governed by customary laws that discriminate against women, limiting their land and property rights which means they have no right to own, use as collateral or sell the output without consent from the men. (Women Grow 70% Of Africa's Food But Have Few Rights Over The Land They Tend)

Key underpinning socio-cultural norms

M	N	O	P	Q	R
Decision-making powers	Gender-based violence	Early childhood marriage	Roles and responsibilities	Leadership and representation	Laws and regulation

Contents

WIRAL can adopt non-financial and financial activities – in preparation and response – to increase their resilience to climate change



1) Risk preparedness activities includes both climate mitigation (i.e. efforts to reduce or prevent emission of greenhouse gases) and adaptation (i.e. efforts to respond to and prevent the adverse impacts of climate change) activities; 2) Insurance products can also be used to de-risk investing in risk preparedness measures

Contents

A

WIRAL can deploy a range of soil management techniques to promote more resilient crops, increase productivity and build soil health

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Soil management

Explanation of opportunity

WIRAL can **deploy a range of soil management techniques** (e.g. not tilling, using climate friendly compost and manure instead of synthetic fertilizers) to promote more resilient crops, increase productivity and build soil health; understanding and applying these techniques can enable WIRAL to save time and increase productivity from agricultural activities

Examples

- In Ethiopia, women are using mulching to retain moisture in the soil and reduce irrigation workload in cabbage farming. Once these women cover the soil surface surrounding the plants with crop residues—a practice called mulching—they don't need to spend as much time and labour in irrigation (Ethiopia: Women Use Mulching To Reduce Workload In Cabbage Farming)
- In some parts of Kenya, women farmers are turning away from traditional techniques and instead using mulching and machinery to protect their soil from the worst effects of drought (To Fight Drought, Kenyan Women Farmers Adopt Conservation Agriculture)
- In Peru, women take care of fertilizing the land with animal manure, while they are also responsible for the supply of fertilizers by engaging in backyard breeding of animals (Mainstreaming Gender For Sustainable Soil Management)
- In some islands of Micronesia, women manage home gardens and engage in active soil management by applying compost or seaweed to maintain or replenish soil nutrients (Mainstreaming Gender For Sustainable Soil Management)

Impact of opportunity on access to and returns from labor and markets

Hired labor	**Saved labor**	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	**Availability of time and mobility**	Socio-cultural norms		

B

WIRAL can adopt water management techniques to promote more resilient crops and livestock, and alleviate time poverty challenges

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Water management

Explanation of opportunity

WIRAL can **adopt water management techniques** (e.g. water harvesting and storage, irrigation) contributing to more resilient crops and livestock and saving WIRAL significant time (e.g. that would otherwise be spent fetching water) that they can otherwise use to generate income and build resilience

Examples

- In India, women are improving water maintenance through water reuse and innovative rainwater harvesting technologies to strengthen climate resilience.
  - Women's self-help groups in Tamil Nadu India protect the areas around hand pumps. The women canalize wastewater and use it to water vegetable and fruit gardens. They collect a water users' fee from every household for the maintenance of the hand pumps (Women Farmers Adapting To Climate Change)
  - In Gujarat, an innovative rainwater harvesting technology has empowered women and strengthened climate resilience. A rainwater harvesting technique called Bhungroo allows for the successful storing of excess rainwater underground, making it more accessible for farming, and pumps it out for use during dry spells (Innovative Rainwater Harvesting Empowers Women In Gujarat, India)
- In Zanzibar, water storage technologies are bringing women vegetable farmers back into agriculture. Previously, the challenges of dryland and saltwater entering the fields had forced women to neglect their lands (Water Storage Technology Brings Women Back Into Agriculture)
- In Cambodia, water collection and management techniques such as rooftop water collection, drip irrigation and plastic mulching saves time, especially for women and children who are often responsible for water collection (Rooftop Water Collection, Drip Irrigation And Plastic Mulching In Home Garden Conditions In Drought-prone Areas)

Impact of opportunity on access to and returns from labor and markets

Hired labor	**Saved labor**	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	**Availability of time and mobility**	Socio-cultural norms		

WIRAL can adopt of range of crop management practices to increase climate resilience, productivity and build soil health

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Crop management

Explanation of opportunity

WIRAL can adopt **crop management practices** (e.g. crop rotation, mulching, crop diversification, use of climate-resilient inputs) to increase climate resilience, productivity and build soil health, whilst also increasing income-earning opportunities. These activities reduce time and effort spent on agricultural gendered roles for females in the long run (e.g. weeding, re-planting crops when damaged)

Examples

- Women in Uttarakhand, India grow traditional drought-resistant crops and crops resistant to different environmental conditions (such as heavy rain) to mitigate against unpredictable climatic conditions. They use crops such as finger millet, sorghum, sesame, and pigeon pea. The women use traditional knowledge to conserve, preserve and select seeds that work in extreme temperature and humidity (Women Farmers Adapting To Climate Change)
- In Pakistan, women are increasing efforts to practice crop rotation through increased awareness of the damage being done to the land through monoculture. In this way the women are shield from adverse climate effects including land degradation (Women Pastoralists, Preserving Traditional Knowledge Facing Modern Challenges)
- In Southern Malawi, some women are using crop rotation to cushion themselves against the harsh effects of droughts and heavy downpours. The women use crop rotation of maize and legumes, like cowpea and pigeon pea as well other climate-smart agriculture practices (Rural Women Of Eastern And Southern Africa Gain Ground)
- In Ethiopia, women adopt drought-resistant maize varieties and rotate them with pepper, sweet potato and anchote, a local tuber similar to cassava. This has helped them boost climate resilience and beat drought risks (Ethiopian Farmers Weatherproof Their Livelihoods)

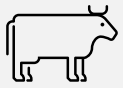
Impact of opportunity on access to and returns from labor and markets

Hired labor	**Saved labor**	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	**Availability of time and mobility**	Socio-cultural norms		

WIRAL can manage livestock to diversify income and promote broader environmental benefits

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Livestock management



Explanation of opportunity

WIRAL can **manage livestock to diversify income and improve livestock management practices** (e.g. rotational grazing, manure treatment, cut and carry feeding, dual purpose poultry) to promote soil health and increase income-earning opportunities; WIRAL management and ownership of livestock can also empower WIRAL with greater decision-making powers (e.g. livestock management strategies, when to sell livestock)

Examples

- WIRAL in Uttarakhand prefer rearing oxen, cows and goats which have lower feeding requirements as well as select the most tolerant drought species. This means that WIRAL's time poverty is reduced, and they can spend time engaging in other activities other than searching for animal feed and looking for water (Livestock Farming In The Uttarakhand Himalaya, India: Use Pattern And Potentiality)
- In Kenya and Ethiopia study shows that combining the introduction of improved forage technology with gender sensitivity training led to the production of high-quality forages for animals, improved livestock raising, availability of milk in the household, increased income through the sale of surplus milk and forages, and increased opportunities for decision-making by women in households (Gender Dynamics Around Introduction Of Improved Forages In Kenya and Ethiopia)
- In the horn of Africa, in order to survive the impacts of climate change, women in the pastoralist communities have had to establish coping and adaptation strategies such as herd diversification. Some other coping and adaptive strategies included the sale of assets other than livestock, and the slaughtering of livestock to provide food for families (Effects Of Climate Change On Pastoralist Women In The Horn Of Africa)

Impact of opportunity on access to and returns from labor and markets

Hired labor	Saved labor	Wage labor	**Local markets**	Digital markets
Access to and usage of financial services and assets	**Availability of time and mobility**	**Socio-cultural norms**		

WIRAL can combine planting crops and managing livestock with planting trees and shrubs to improve biodiversity and reduce erosion

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Forestry and agroforestry

Explanation of opportunity

WIRAL can **combine planting crops and managing livestock with planting trees and shrubs** (e.g. boundary trees, windbreaks, fruit orchards) to diversify income, improve biodiversity, reduce erosion, increase soil moisture content (limiting the time needed to fetch water for irrigation) and promote carbon sequestration; WIRAL's participation in managing and selling crops can also increased their agricultural and financial decision-making powers

Examples

- In Vietnam, women coffee growers engage in agroforestry to mitigate climate change risks. These agroforestry systems in Vietnam have a significant capacity to reduce greenhouse gas emissions by sequestering carbon and reducing the need for fertilizers, fungicides and other agricultural inputs for women (Women Coffee Growers In Vietnam Boost Climate Mitigation Through Agroforestry)
- In Jaman South Municipality of Ghana, women are increasingly participating in agroforestry and mostly practice agri-silviculture. This agroforestry system practiced in the study area along with technologies such as home garden, scattered trees on farm lands, improved fallow, alley cropping and taungya. The high level of participation in agroforestry across the communities is because sale of crops (especially the tree crops), contributes to their household income (Participation Of Women Farmers In Agroforestry Practices In The Jaman South Municipality, Ghana)
- In Kenya, a research study for residents of Makindu and Nguumo locations established that women adopted various agroforestry technologies more than men which helped them to adapt to climate change and variability effects (Influence Of Women Empowerment On Adoption Of Agroforestry Technologies To Counter Climate Change And Variability In Semi-arid Makueni County, Kenya)

Impact of opportunity on access to and returns from labor and markets

Hired labor	Saved labor	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	**Availability of time and mobility**	**Socio-cultural norms**		

F

WIRAL can increase their resilience by diversifying their livelihoods through integrating aquaculture into their farming systems

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Fisheries and aquaculture

Explanation of opportunity	Examples
WIRAL can **increase their resilience by diversifying their livelihoods through integrating aquaculture into their farming systems (e.g. using a homestead farm)**	• In Nepal, a research project carried out involving women evaluated the role of farm pond in diversifying livelihoods and reducing vulnerability. Women engaging in Integrated agriculture-aquaculture farming (IAA) proved to be more resilient in coping with ecological, social and economic perturbations than their counterparts practicing traditional mixed crop-livestock farming (Aquaculture And Resilience: Women In Aquaculture In Nepal) • In Bangladesh, women practice the integrated production of diverse fish species together with vegetables in backyard ponds, coastal and inland waters, such as fish-rice systems. With more food in the homestead farm, women have the opportunity for an additional income source, improving their finances, hence expanding their roles in household management and decision-making (6 Aquatic Food System Innovations Transforming Women's Livelihoods)
WIRAL can increase their resilience by **applying new climate-adapted fishing techniques (e.g. using ropes and bait instead of nets)**	• In Togo, women are introducing new climate-adapted fishing technique on Lake Togo where they fish using ropes and bait tied to mangrove trees, instead of nets. (Women Introduce New Climate-adapted Fishing Technique On Lake Togo And Gain Foot In A Male Dominated Sector) • In Zambia, women use fish cage farming to supplement the shortage of local fish in rivers due to climate change. A group of 18 community members (15 women) formed to undertake a fish cage farming project in a lagoon on the Mbeta Island and together through funding, they built two cages and bought fish fingerlings and fish feed (In Zambia, Increasing Climate Resilience For Rural Communities Through Support To Sustainable Livelihoods)

Impact of opportunity on access to and returns from labor and markets

Hired labor	Saved labor	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	Availability of time and mobility	**Socio-cultural norms**		

WIRAL can adopt energy-efficient technologies and save time that would be spent seeking/using alternative fuel sources

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Energy management

Explanation of opportunity

WIRAL can **adopt energy-efficient technologies** (e.g. solar-powered irrigation systems, processing machines or ram pumps for irrigation, gravity-fed irrigation) to increase energy efficiency, reliability of energy and save time that would often otherwise be spent seeking/using alternative fuel sources

Examples

- In rural Kenya, solar-powered pumps are empowering women farmers build resilience against climate change as well save time and energy which they would have used to fetch water. The solar water pumps can pump water from as deep as 100 meters to use for crop irrigation and livestock rearing, and domestic uses (Climate-Smart Agriculture: Solar Powered Pumps Empower Women Farmers)
- In Saint-Louis, Senegal, fish smoking, a women's activity, is moving away from the using expensive, high-emitting and polluting sources of energy. They are now piloting a sustainable, economical and ecological energy solution by recovering waste from their activities through composting units (organic fertilizer) and mechanization (Gender Just Climate Solutions)
- In Uganda, women engaging in vegetable production are switching to solar-powered water pumps after learning they protect the environment, resources and health, and are also cheaper in the long run. The women are now learning the use of solar energy to seal packaging bags, for solar drying and grinding of produce, and its relevance for communication by charging phones, radios or television (Women Farmers Switch To Solar-Powered Water Pumps)
- In Senegal, women have introduced solar water pumps, solar streetlamps and renewable energies to power their rice transformation units, and actions are underway to develop a financing mechanism to dramatically reduce the reliance of the rice value chain on fossil fuels (Women In Climate Resilient Agriculture In West And Central Africa: Key Results Of UN Women's Flagship Programme)

Impact of opportunity on access to and returns from labor and markets

Hired labor	**Saved labor**	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	**Availability of time and mobility**	Socio-cultural norms		

WIRAL can use cleaner, alternative cooking equipment that can alleviate time poverty and reduce CO^2 emissions

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Clean cooking equipment

Explanation of opportunity

WIRAL can **use cleaner, alternative cooking equipment** (e.g. biomass cookstoves, LPG cooking fuel) that can alleviate WIRAL time poverty (e.g. reduced time collecting wood) and reduce CO^2 emissions

Examples

- In Uganda, Kenya, and Nepal, women are now using clay cookstoves that burn fuel efficiently and completely, ensuring that no toxic gases are emitted into the home as the fuel burns. This process also creates a hotter fire that requires less wood. (Clean Cookstove Project)
- In Sudan, women are moving to adopt the use of butane gas stoves to reduce the need for firewood. The introduction of clean fuel with support from UNDP is expected to ease the burden of wood collection, reduce cooking time, and have broader positive impacts on gender relations, environmental protection and women's empowerment (Climate Resilient Women: Women Play A Central Role In Achieving Zero Hunger And Protecting Our Planet)
- The majority of the women in rural Western Kenya are increasingly having an appeal for LPG as clean energy for cooking, which rose in 2020 due to the VAT exemptions and use of flexible packaging containers (Barriers To The Adoption Of Improved Cooking Stoves For Rural Resilience And Climate Change Adaptation And Mitigation In Kenya)
- In Ghana, women are adopting the use of green cookstoves to limit the use of trees, and also improve the health and cooking conditions of the women. The women affirm that the gas is not only cleaner but also cheaper, and better for the environment (Green Cook Stoves Improving Women's Lives In Ghana)

Impact of opportunity on access to and returns from labor and markets

Hired labor	**Saved labor**	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	**Availability of time and mobility**	Socio-cultural norms		

WIRAL can diversify incomes to non-agricultural sources to increase income generation and reduce exposure to climate change

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Income diversification

Explanation of opportunity

WIRAL can **diversify beyond agricultural livelihoods by engaging in value addition** (e.g, light processing, branding and packaging) for their produce and **other vocational activities** (e.g. sewing to diversify their income). These activities also have potential to erode social norms (e.g. WIRAL's roles as caregivers) by demonstrating the value women can generate through diversified income sources

Examples

- In Côte d'Ivoire and Nigeria, women have developed cosmetic products from the transformation of shea nuts, incorporating new shea butter processing and standards for both local and international market (Women In Climate Resilient Agriculture In West And Central Africa: Key Results Of UN Women's Flagship Programme)
- In DRC, 110 women's cooperatives and women-led agri-MSMEs have produced a number of new cassava-based products such as soap, bread, waffles, donuts, flour, pasta and biscuits (Women In Climate Resilient Agriculture In West And Central Africa: Key Results Of UN Women's Flagship Programme)
- In Mali, 8 women's cooperatives and 12 women's agri-MSMEs have developed a number of new products such as rice noodles, corn and fonio spaghetti, puffed rice, infant flours, fonio cookies, corn cookies, brioches and bread, which has increased their product value between 3 and 10 times (Women In Climate Resilient Agriculture In West And Central Africa: Key Results Of UN Women's Flagship Programme)
- In Kenya, pastoralist women cope with climate change variability through engaging in small-scale bead-work enterprises (Women Pastoralists And Climate Change Impacts In Kilosa District, Tanzania)
- In Mali's vulnerable communities, women engage in sewing workshops and soap and ointment production to generate income. This enhances women and producer group's adaptive capacities to secure livelihoods production from climate impacts (Climate Resilient Women: Women Play A Central Role In Achieving Zero Hunger And Protecting Our Planet)

Impact of opportunity on access to and returns from labor and markets

Hired labor	Saved labor	**Wage labor**	**Local markets**	Digital markets
Access to and usage of financial services and assets	Availability of time and mobility	**Socio-cultural norms**		

Contents

J

WIRAL can use formal accounts to save money to purchase inputs and for climate adaptation although access to these services is limited

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Formal savings

Explanation of opportunity

WIRAL can **open savings accounts from formal institutions** that enable them to save money to invest in the adoption of climate-resilient agriculture practices (e.g. mechanized equipment, inputs); however; access to these accounts may be limited by low accessibility (e.g. low digital literacy, time/mobility constraints), ability to open accounts (e.g. lack of ID, proof of income) and low willingness (e.g. low confidence, trust in formal providers)

Examples

- In Senegal and Mali, women smallholder use MyAgro, a mobile savings model to put away small amounts of cash which they later use to buy seeds and fertilizer useful amid climate change (Social Innovation Helping Women Escape Poverty)
- In Kenya, when women-headed households adopted mobile money savings accounts, poverty dropped, savings rose, which 185,000 women used as a platform for leaving agricultural jobs for more reliable, higher paying positions in business or retail that have a lower exposure to climate risks (Women's Digital Financial Inclusion In Africa)

Impact of opportunity on access to and returns from labor and markets

Hired labor	Saved labor	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	Availability of time and mobility	Socio-cultural norms		

WIRAL can access savings from savings groups and other informal channels to purchase equipment and inputs and for climate adaptation

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Informal savings

Explanation of opportunity

WIRAL can **access savings from savings groups** such as Village Savings and Loan Association Groups and other informal channels that enable them to invest in the adoption of climate-resilient agriculture practices (e.g. mechanized equipment, inputs) and to diversify their income; however, these channels may be less well equipped to cope with significant climate-induced financial shocks (e.g. having sufficient reserves to respond to mass withdrawals after large climate shocks)

Examples

- In Niger, women use VSLA's to diversify their income beyond agriculture to increase their household resilience in coping with frequent droughts, unreliable rainfall and other climatic pressures. (In Drought-Hit Niger, Women's Savings Could Be Route To Resilience)
- In Ghana, women use their collective savings from the VSLAs to purchase higher quality agricultural inputs such as seeds and fertilizers and to expand their farms beyond growing just one staple crop. (Six Ways Ghanaian Women Thrive In Village Savings And Loan Associations)
- In Ghana, women use savings from a VSLA, to hire a tractor to plow their land as they know of the importance of double plowing to retain moisture especially during rainfall variability (Ghanaian Women Thrive Under Village Savings And Loan Association (VSLA))
- In Uganda women in groups contribute money to buy seeds for one another in a rotating system. This arrangement allows them to maintain and increase the collective seed pool, while adding some cash to the households. (How Resilient Are Farming Households And Communities To A Changing Climate In Africa? A Gender-Based Perspective)
- In Malawi, rural women use VSLAs to save and at the end of a period, they get share outs which they use for agricultural investment particularly to buy fertilizer for maize (Impact Of Village Savings And Loan Associations: Evidence From A Cluster Randomized Trial)

Impact of opportunity on access to and returns from labor and markets

Hired labor	**Saved labor**	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	Availability of time and mobility	Socio-cultural norms		

WIRAL can access credit from formal channels to enable them to invest in equipment and inputs and to adapt to climate change

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Formal borrowing

Explanation of opportunity

WIRAL can **access credit from financial institutions** to invest in time saving equipment and inputs that enable them to adopt climate smart practices, which can increase productivity and save time (e.g. using solar irrigation instead of fetching water); in some cases, the village savings loan associations borrow funds from the financial providers and make the money available to their members

Examples

- In Ghana, access to credit influenced the women farmers' use of changing of planting dates as targeted adaptation strategy in response to drought and moving away from flood prone areas as targeted adaptation strategy against floods. (Assessing The Determinants Of Women Farmers' Targeted Adaptation Measures In Response To Climate Extremes In Rural Ghana)
- In Philippines, about 225 women used loans from Agronomika microfinance institutions to help them diversify their farms by adding cacao trees to increase their farm income (Adapting To A New Normal Strengthening Resilience To Climate Change: Best Practices From The European Microfinance Award 2019)
- In Ghana, Kenya, Mali, Senegal and Uganda, community level women's groups make available loans from funds provided by external microfinance institutions. The funds are combined with women's savings and through these funds, they pay for labor in their farms which increases their ability to intensify production . (How Resilient Are Farming Households And Communities To A Changing Climate In Africa? A Gender-Based Perspective)
- In Ghana, women use an asset financing plan from PEG Africa to access solar irrigation pumps which leads to increased crop yields and higher incomes as a result of time and labor savings. (Savings At The Pump: Financing Solar Irrigation To Support Rural Women)

Impact of opportunity on access to and returns from labor and markets

Hired labor	**Saved labor**	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	**Availability of time and mobility**	Socio-cultural norms		

WIRAL can access loans from informal channels to invest in equipment and inputs and to diversify income as an alternative to formal channels

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Informal borrowing

Explanation of opportunity

WIRAL can **borrow from informal channels** such as village savings and loan associations (VSLAs) to access time saving equipment and inputs necessary for climate adoption; such channels are especially useful for women given their limited access to formal credit

Examples

- In some Sahel communities, women accessed funding from their VSLA groups to buy improved cowpea seeds at $3 per kilo to plant in a communal field. As the seeds grew, each member family member received some fruit and paid back what they owned to the group (The Resilience Champions (When Women Contribute To The Resilience Of Communities In The Sahel Through Savings And Community-Based Adaptation)
- In Ghana, women access loans from village saving and Loan Association to invest in dry season livelihoods in agriculture, commerce , or trade (Six Ways Women Thrive In Village Savings And Loan Associations In Ghana)
- In Ethiopia, women use loans from VSLAs to diversify their incomes by investing in small businesses to help their husbands during drought and to generally build resilience to climate change (Women Mean Business, Savings Groups In Ethiopia Make It Happen)
- In Kenya, women use loans from community savings and loan groups to purchase efficient cook stoves that reduce the demand and time taken to collect firewood. (Savings Groups Enable Women To Afford An Efficient Cook Stove In Kenya)
- In Malawi, women use credit from their savings group to purchase high value resources such as small hand pumps for irrigation. (Empowering Women Through Savings Groups: A Study From The Wellness And Agriculture For Life Advancement (WALA) Program)

Impact of opportunity on access to and returns from labor and markets

Hired labor	**Saved labor**	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	**Availability of time and mobility**	**Socio-cultural norms**		

WIRAL can purchase insurance products to protect against climate risks although many of these products do not meet their needs

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Insuring against risk

Explanation of opportunity

WIRAL **can purchase insurance (e.g. crop insurance and livestock insurance or weather-based insurance) to insure against climate related risks**, although there is a low uptake amongst WIRAL due to several reasons (e.g. mistrust in insurance institutions, financial illiteracy, lack of decision-making power and products being ill-tailored to WIRAL's needs)

Examples

- In Mali, women use index insurance to stabilize their income and break the cycle of poverty when they experience unseasonal rain; In Kenya, women use index insurance (which includes purchasing seeds with a replanting guarantee that cover the risk of poor rainfall during the germination phase) to protect their households and to eradicate poverty risks (Index Insurance: Helping Women Farmers Around The World)
- In Kenya and Ethiopia, women pastoralist purchase the index-based livestock insurance to deal with the effects of severe droughts that are becoming increasingly frequent in the arid and semi arid land. These women make up 45% of the livestock owners who have purchased the product and in Ethiopia most of the purchasers were women led households (Why Women Are Among The Best Clients For Livestock Insurance In East Africa)
- In Kenya, women purchased the IFAD supported KCEP-CRAL insurance policy in the arid and semi arid areas to protect the rainfed crops against droughts, floods, pest and diseases. In 2022, women made up to about 57% of those who were receiving payouts as a result of drought in 2021. (Promises Kept: Crop Insurance Makes A Difference For Kenya's Small-Scale Farmers)
- In Mali, women use index insurance to stabilize their income and break the cycle of poverty when they experience unseasonal rain (The Resilience Champions (When Women Contribute To The Resilience Of Communities In The Sahel Through Savings And Community-based Adaptation)

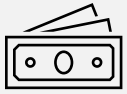
Impact of opportunity on access to and returns from labor and markets

Hired labor	Saved labor	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	Availability of time and mobility	Socio-cultural norms		

WIRAL can access savings and short-term funds from friends and family during emergencies to respond to climatic events

Legend: ● High research coverage ○ Low research coverage ■ Opportunity improves access/ to returns from labor and markets

Accessing liquidity



Explanation of opportunity

WIRAL **can access savings and short-term funds** from friends and family (through digital/mobile channels) during emergencies to respond to climatic events **although the terms of lending for some of these channels might be restrictive** increasing the women's vulnerability; however, these often channels have a lower ability to respond to large scale climate shocks as individuals sending money are more likely to be affected by the same shocks

Examples

- In Kenya, access to savings accounts led to women using savings as self-insurance which prevented them from dipping into their working capital in response to shocks. (Building Resilience Through Financial Inclusion: A Review Of Existing Evidence And Knowledge Gaps)
- In Kenya, women used mobile money savings account labelled emergency savings in response to shock and therefore were less likely in transactional sex as a risk coping response to shock (Building Resilience Through Financial Inclusion A Review Of Existing Evidence And Knowledge Gaps)
- In Kenya, women use mobile money service M-Pesa to borrow funds from family or friends that help them ride out irregular harvests caused by climate change (How Digital Financial Services Boost Women's Economic Opportunities)
- In Fiji, women are more likely to ask their friends and family for assistance to cope after assistance (5 Facts On Gender Equality And Access To Disaster Risk Finance In Fiji)
- In Fiji, women receive remittances from relatives or acquaintances who live abroad and use the remittances to deal with emergencies. (Fiji's Data-Driven Financial Inclusion Solutions)
- In Philippines, women received remittances that make them less vulnerable to sudden shocks as they are able to move from subsistence agriculture to running (Rural Women And Migration)

Impact of opportunity on access to and returns from labor and markets

Hired labor	Saved labor	Wage labor	Local markets	Digital markets
Access to and usage of financial services and assets	Availability of time and mobility	Socio-cultural norms		

Contents

Service providers and enablers can adopt several recommendations from the literature to increase WIRAL resilience to climate change[1)]

SERVICE PROVIDERS

Non-financial service providers

- **A** Engage WIRAL in information networks
- **B** Share information in forms accessible to WIRAL
- **C** Design equipment that is practical for WIRAL
- **D** Engage men in trainings
- **E** Promote alternative land rights registration

Financial service providers

- **F** Link formal and informal providers
- **G** Bundle formal financial products
- **H** Tailor qualification terms to WIRAL + Climate
- **I** Tailor repayment terms to WIRAL + Climate

Non-financial and financial service providers

- **J** Bundle financial and non-financial solutions
- **K** Target WIRAL community groups
- **L** Leverage existing agent networks
- **M** Demonstrate value to peers and gatekeepers
- **N** Tailor digital tech. to WIRAL needs

ENABLERS[2)]

O Sector support organizations

- Foster partnerships between service providers and community groups
- Partner with local networks and leaders to address socio-cultural norms
- Research WIRAL's behavioral change and incentives
- Promote the collection and use of gender disaggregated data

P Policymakers

- Invest in climate-resilient infrastructure that accommodates WIRAL's needs
- Tailor social support mechanisms to increase accessbility to WIRAL
- Target subsidies to de-risk adoption of climate-resilient practices
- Reform land ownership rights

Q Funders

- Deploy innovative funding to de-risk investing in WIRAL + Climate
- Apply a longer-term funding horizon aligned with climate change needs
- Adopt measures and standards to track the impact for both women and climate change
- Promote the collection and use of gender disaggregated data

1) Recommendations from the literature for stakeholders require contextualization with broader macro trends that are outside of the scope of the literature review, as described here; 2) High-level recommendations for enablers – the focus of the literature review is on developing recommendations for service providers

Contents

A

Non-financial service providers should engage WIRAL in the design and implementation of climate-related information networks

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Engage WIRAL in information networks

Explanation of recommendation

Engage WIRAL and WIRAL groups in the design and implementation of climate-related information networks (e.g. extension, early warning systems) as WIRAL can **better understand and differentiate among WIRAL needs (incl. the most vulnerable groups) and inform service design accordingly**; WIRAL's leadership in information networks can **also erode social norms** (i.e. by proving the value of women in decision-making)

Examples

- In Chile, female participation in post-disaster and recovery phases proved to have transformative effects on gender dynamics in the society. In this longitudinal study, diffusing public and private spaces created an opportunity for women to move from low to high community involvement (Gender Dimensions Of Disaster Risk And Resilience : Existing Evidence)
- In Ghana, research documenting women's role in organizational networks recommended that women should be given greater involvement in disaster management operations at local level, due to their leading role in facilitating both the dissemination of information and subsequent response during climate shocks (Identifying User Needs For Weather And Climate Services To Enhance Resilience To Climate Shocks In Sub-Saharan Africa)
- In Senegal, women have been trained to measure rainfall and relay climatic information (seasonal forecasts, start of the rainy season, 10-day forecasts, 24-to-48-hour forecasts, immediate forecasts, rainfall measured) to other women during social events and in women's groups, in order to enable them to improve their agricultural yields and minimize the associated risks. The practice has made climatological and meteorological information more accessible and, improved ownership of this information by women (women's groups) (Making Weather And Climate Services More Gender-Sensitive)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
- Other non-financial practices
- Saving to build risk preparedness
- Borrowing to build risk preparedness
- Insuring against risk
- *Reduction in use of negative coping mechanisms*
- Accessing short-term liquidity

B

Service providers should share climate-related information in formats, at times and through channels aligned with WIRAL's needs

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Share information in forms accessible to WIRAL

Explanation of recommendation

Share climate-related information in formats, at times and through channels that are aligned with WIRAL's capabilities and livelihoods (e.g. IVR, female extension agents, on-demand training) as this **increases the accessibility of climate-related information** to WIRAL and **circumvents some social norms** (e.g. gendered roles) **and time/mobility constraints** that restrict WIRAL's access to information

Examples

- In Fiji, Women's Weather Watch collaborates with the Fiji Meteorological Service to ensure that weather information from the early warning stage is made accessible to women via an interoperable system, from community radio to SMS and various social media platforms. The model engages female leaders to deliver simplified weather alerts and early warnings to disadvantaged women and groups from remote areas (Making Weather And Climate Services More Gender-Sensitive)
- In Malawi, women farmers are supplied with the location-specific weather forecast in the local language and in a simple format to help them determine the onset of planting rains so that they can plant on time (Weather Forecasts Shift Climate Change Impact For Women Farmers In Malawi)
- In Zambia, mobile phones and solar-powered radios are used to enable women farmers to get weather forecasts. The collection and distribution of local rainfall information is helping smallholder farmers adjust their crop production methods to changing seasonal precipitation patterns (Real-Time Weather Forecasts Are Helping Zambian Women Farmers Win Their Battle Against The Impact Of Climate Change)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
- Other non-financial practices
- Saving to build risk preparedness
- Borrowing to build risk preparedness
- Insuring against risk
- *Reduction in use of negative coping mechanisms*
- Accessing short-term liquidity

Service providers should design solutions/equipment that are tailored to WIRAL ergonomics, norms, and tasks

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Design equipment that is practical for WIRAL

Explanation of recommendation

Design climate-resilient equipment with the needs of WIRAL in mind (e.g. planters that do not require oxen) as this **increases WIRAL's ability to efficiently use climate-resilient equipment**, thereby increasing their likelihood to invest in such equipment and the climate-resilient practices they enable (which are often time/labor intensive and therefore place a greater importance on ergonomic equipment design)

Examples

- In Zambia, Zimbabwe, and South Africa, a study on treadle pumps found that if women are to be empowered, treadle pumps must be redesigned considering ergonomic and social needs of women. The study also revealed other aspects such as price and other roles of women that should be taken into consideration to provide information to feed the participatory processes between designers and users (Sustainable Irrigation And The Gender Question In Southern Africa)
- In India, the mechanization development division of the agriculture ministry and Indian Council of Agriculture Research (ICAR) are working together to innovate women-friendly agriculture equipment. The government will also provide subsidies for the women-friendly agriculture equipment to encourage their use (Climate Change: India Plans Women-Friendly Agricultural Equipment)
- In Burkina Faso, a study to identify gender barriers and enablers to the adoption of agricultural technologies revealed that gender perspectives need to be included in the design, dissemination and adoption of the technologies. Some include the fact that the trainings should use local language and simplify terms and concepts to account for low literacy amongst many women (Gender Technology Assessment. Burkina Faso: Planter Technology)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
- Other non-financial practices
- Saving to build risk preparedness
- Borrowing to build risk preparedness
- Insuring against risk
- *Reduction in use of negative coping mechanisms*
- Accessing short-term liquidity

Non-financial service providers should offer mixed gender trainings to erode norms that limit WIRAL's ability to build climate resilience

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Engage men in trainings

Explanation of recommendation

Conduct joint trainings that engage both men and women in adopting climate-resilient practices; this helps **erode some social norms blocking WIRAL's adoption of practices** and can **also increase access to male networks**

Examples

- In Nepal and India, a Participatory Gender Training for Community Groups was developed and piloted. The training consists of three activities and three discussions to reflect on gender roles in families, communities and agriculture, to discuss the gendered division of labor and changing gender relations over time and space, and to create empathy and resolve conflicts through a bargaining role play with switched genders (Transformative Engagements With Gender Relations In Agriculture And Water Governance)
- In Uganda, Malawi and Zambia, joint household trainings are conducted to farmer spouses under the AgDevCo program. The spouses are jointly trained in planning and sharing of workload, transparent information sharing on production, practices and marketing as well as joint decision-making on the use of benefits from production and on household expenditure. Alongside other interventions, this has led to improved well-being and empowerment of women as families make more decisions together (Successful Models To Empower Women In Out-grower Schemes)
- Mixed sex group trainings help women overcome resource limitations by tapping into men's networks, resources, and information, which are often wider than women's. Research on forestry governance also reveals that women's participation in mixed-sex groups is associated with better decision making and improved resource management (Reducing The Gap In Agricultural Extension And Advisory Services)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
- Other non-financial practices
- Saving to build risk preparedness
- Borrowing to build risk preparedness
- Insuring against risk
- *Reduction in use of negative coping mechanisms*
- Accessing short-term liquidity

Non-financial service providers can digitize land rights processes to increase WIRAL accessibility to control of land

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Promote alternative land rights registration[1)]

Explanation of recommendation

Promote alternative land right registration processes to either increase the accessibility of land registration (e.g. through digitized processes) or circumvent ownership constraints (e.g. through leasing); this **increases WIRAL's accessibility to land-based collateral** that could increase their access to formal finance and **agency of land-based decision making**

Examples

- Across Ghana and Indonesia, Meridia, combines technology and on-the-ground expertise to unlock economic potential for women and smallholder farmers by providing them with legal titles to their land. Land rights stimulate financial inclusion, increase farmer productivity up to 45% and give women autonomy and almost four times more income. Meridia uses gender-adapted sensitization campaigns to increase awareness of potential and avoidable gender-related pitfalls in land rights documentation (Meridia: Unlocking Land Value, Securing Peace Of Mind)
- In Colombia, an Android-based application Suyo is reinventing the land-titling process. Suyo leverages innovative technology to provide low-income families with affordable and reliable property rights formalization services. Suyo is developing a partnership with Mercy Corps Colombia to extend its property formalization services to more households, often in rural communities (Suyo: Helping Families Secure Property Rights In Colombia)
- In Tanzania, the "Mobile Application to Secure Tenure (MAST)" project enables villagers to identify property boundaries and gather the information officials need to issue land ownership documents. Women are increasingly having greater security for their property (Smartphones Help Tanzanian Women Secure Land Rights)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
- Other non-financial practices
- Saving to build risk preparedness
- Borrowing to build risk preparedness
- Insuring against risk
- *Reduction in use of negative coping mechanisms*
- Accessing short-term liquidity

1) Promoting alternative land registration is also an important recommendation for policymakers and is also included as a recommendation for policymakers here

F

Formal FSPs can link with informal financial channels where appropriate to extend their reach and robustness for WIRAL

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Link formal and informal providers

Explanation of recommendation

Extend the reach of formal financial services to rural women through linkages with existing informal channels where appropriate (e.g. insuring savings groups, extending credit to saving groups) that are already embedded amongst WIRAL and have added benefits like social networks which promote **greater resilience of WIRAL groups' savings** (e.g. after large scale climate shocks), whilst retaining the benefits of existing groups

Examples

- In Ethiopia, research has shown uptake of weather index insurance to be higher when channeled through group-based informal schemes (*iddir*). (Bundling Weather Index Insurance With Microfinance: Trekking The Long Road Between Expectations And Reality. A Study On Sub-Saharan Africa)
- In Kenya, Equity and Equitel in partnership with CARE, developed a mobile-based solution that allows savings groups to make deposits and withdrawals via Equity agents while maintaining the security features associated with the group's traditional cash box which attracted new groups to open accounts by substantially reducing their total cost in travel and fees. (Delivering Formal Financial Services To Savings Groups)
- In Tanzania, Rwanda, Ghana and Zambia, Vision Fund supported community savings groups by linking them to FSPs. The FSP issues the group a linkage loan which is disbursed to their fund and managed according to their normal lending criteria and processes. No collateral is needed, and the group's capacity is assessed based on their share outs, internal loan repayments, and member retention rate. From this program, average savings per member increased by 71% and average loan size increased from $40 to $64 in three years (Expanding Our Cashbox: Piloting Savings Group Linkage)
- In Kenya and Tanzania, CARE partnered with four banks in the LINK UP project to link 10,000 VSLAs with formal financial institutions. As a result of the project, women participants were 15% more likely to have decision-making power in borrowing and group members made $40-$55 more than the control group. (LINK Up)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
- Other non-financial practices
- **Saving to build risk preparedness**
- **Borrowing to build risk preparedness**
- **Insuring against risk**
- *Reduction in use of negative coping mechanisms*
- Accessing short-term liquidity

FSPs can bundle financial products to increase uptake of services that support a broader climate resilience

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Bundle formal financial products

Explanation of recommendation

Bundling formal financial products (e.g. offering credit with built in insurance) increases WIRAL's ability to **build resilience in preparation for and response to climate events.** This greater protection increases WIRAL confidence to invest in climate preparedness activities

Examples

- In Ghana, Mumuadu Rural Bank offered randomly selected farmers a loan that incorporated crop price insurance. The loan specified that if crop prices at harvest dropped below a threshold, the bank will forgive 50% of the loan and interest payments. Farmers offered the loan spent significantly more on inputs (mainly fertilizer) than those with loans without crop insurance (Climate Change And Financial Inclusion)
- In Sub-Saharan Africa, to increase insurance uptake financial service providers have created innovative products through bundling weather index insurance (WII) with microfinance or using crop insurance to securitize the repayment of loans. In Northern Ghana, bundling loans with insurance increased the likelihood of loan applications from female farmers. In Kenya, the uptake of credit bundled with WII was significantly higher than traditional standalone credit. However, in some cases bundling reduced uptake of credit due to the lack of trust in the institutions, risk aversion and a lack of understanding of the products. Bundles services thus needs to be targeted and designed for the targeted community. (Bundling Weather Index Insurance With Microfinance: Trekking The Long Road Between Expectations And Reality. A Study On Sub-Saharan Africa)
- In Philippines, Vision Fund has been using a mixed credit and insurance solution by providing financial products that automatically trigger recovery lending in the immediate aftermath of a disaster (Adapting To A New Normal Strengthening Resilience To Climate Change: Best Practices From The European Microfinance Award 2019)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
- Other non-financial practices
- Saving to build risk preparedness
- **Borrowing to build risk preparedness**
- Insuring against risk
- *Reduction in use of negative coping mechanisms*
- Accessing short-term liquidity

FSPs can tailor the qualification terms for climate-responsive financial services so that they are more accessible to WIRAL

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Tailor qualification terms to WIRAL + Climate

Explanation of recommendation

Tailor the qualification terms for climate finance so that they are more accessible to WIRAL (e.g. use purchased assets as collateral, factor WIRAL's improved repayment prospects into credit scoring) which **increases the accessibility of formal credit to WIRAL** thereby promoting increased adoption of climate-resilient practices

Examples

- In Sub-Saharan Africa, several solar irrigation pump companies are attempting to fill a widespread credit gap by offering asset-based financing, through which they essentially provide farmers with a loan to purchase a pump, for which the pump itself serves as security. (Innovating For Financial Inclusion: Strengthening Asset-based Financing For Women Farmers)
- In Ethiopia, the World Bank worked with a fintech partner to pilot a psychometric credit score for women owned businesses which was an initiative to harness technology as a substitute for fixed asset collateral. Moreover, for those applicants who already had collateral, the test was designed to allow them to qualify for a larger loan size. (How Can Technology Help Close The Gender Gap In Financial Inclusion?)
- In Kenya, researchers found that asset-collateralized loans increased the take-up of rainwater harvesting tanks, which helped provide dairy farmers reliable and convenient access to water and improved their productivity (Climate Change And Financial Inclusion)
- In Ghana, PEG, an asset finance company offering solar irrigation financing, uses a credit scorecard that is designed to overcome traditional barriers to lending to women (e.g. requiring land ownership as collateral) both by offering non-collateralized loans and by scoring female borrowers higher in recognition of their stronger repayment behavior relative to men. (Savings At The Pump: Financing Solar Irrigation To Support Rural Women)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
- Other non-financial practices
- Saving to build risk preparedness
- Borrowing to build risk preparedness
- Insuring against risk
- *Reduction in use of negative coping mechanisms*
- Accessing short-term liquidity

FSPs can tailor repayment terms for climate responsive financial services so that they are more accessible to WIRAL

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Tailor repayment terms to WIRAL + Climate

Explanation of recommendation

Tailor repayment terms for climate-responsive financial services more accessible and aligned with cashflows generated by WIRAL through climate-resilient practices (e.g. PAYGO solar irrigation, input credit) which **increases the accessibility of formal credit to WIRAL** thereby promoting increased adoption of climate-resilient practices

Examples

- In Ghana, PEG, an asset finance company offering solar irrigation financing plans, offers non-collateralized financing that enables women to pay for the water pump over a 17-month period, with flexible repayments that can be tailored to cropping cycles to allow for higher payments once the harvest is complete. (Savings At The Pump: Financing Solar Irrigation To Support Rural Women)
- In Bangladesh, BRAC Microfinance provides seasonal loans for farmers residing in wetland areas that help them adapt to the changing crop cycle and to diversify into aquaculture, thereby increasing their climate resilience. These loans provide farmers with a convenient repayment scheme, allowing them the flexibility to invest and start paying their instalments at the end of their loan term allowing them to opt for one-time bullet payments at the end of the six-month maturity period instead of weekly or monthly instalments like other loans. This flexibility has allowed some women farmers to take up the loan with some taking it up to 8 times. The loans allow farmers to invest in high quality inputs, scale up production and harvest in different crops for each season. (Putting Farmers First: Introducing Seasonal Loans From BRAC Microfinance), (World Environment Day 2021: 5 Ways BRAC Supports People To Adapt To Climate Change)
- In Kenya, ACRE Africa introduced Bima Pima, a weather index insurance with flexible insurance sums and payment terms, allowing female farmers to select the insurance value they can afford with the option of paying premiums in small amounts over time. (ACRE Africa: Protecting Rural Africa Through Creative Partnerships And Technology)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
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- Saving to build risk preparedness
- **Borrowing to build risk preparedness**
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J

Service providers can bundle financial and non-financial services to provide more holistic climate-resilient and -adaptive services

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Bundle financial and non-financial solutions

Explanation of recommendation

Bundle financial services with non-financial services (e.g. credit and insurance with education, training, and early warning information) to provide more holistic climate-resilient services as these **services are interdependent and so can promote mutual adoption.**

Examples

- In Philippines, ASKI, a microfinance institution, provides rural farmers with financial products plus complementary nonfinancial services including financial education and business development services (Adapting To A New Normal Strengthening Resilience To Climate Change: Best Practices From The European Microfinance Award 2019)
- In Vietnam, TinhThuong Microfinance provides financial services plus nonfinancial services free to the client (e.g. training sessions on prevention and response to natural disaster risks and climate change). (Lessons From Farming Households: Agricultural Decision Making And Shifting Social Norms For Women's Economic Empowerment)
- In Nicaragua, Financiera Fondo de Desarrollo Local (FDL) offers agri-financial services together with non-financial services (e.g. commercial and productive technical assistance and training) (Lessons From Farming Households: Agricultural Decision Making And Shifting Social Norms For Women's Economic Empowerment)
- In Kenya bundling agriculture insurance with inputs such as seeds enabled smallholder farmers in Kenya to increase investment in their farms and increase productivity (Bundling To Make Agriculture Insurance Work)
- In Bangladesh, farmers valued insurance bundled with drought tolerant rice varieties; In India, subsidies on a picture-based insurance (which uses georeferenced ground pictures of crops to measure damage) was used to promote sustainable and climate smart farming by conditioning the subsidies on not burning crop residue which reduced the engagement of this practice. (Building Resilience Through Climate Risk Insurance)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
- Other non-financial practices
- Saving to build risk preparedness
- Borrowing to build risk preparedness
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Service providers can leverage trusted community groups among WIRAL to increase accessibility and adoption of services

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Target WIRAL community groups

Explanation of recommendation

Leverage WIRAL community groups with strong social networks that WIRAL already trust and feel comfortable engaging with (e.g. savings groups, church groups) to deliver climate-resilient services so as to **increase the accessibility and adoption of services amongst the most vulnerable WIRAL**

Examples

- In Kenya, Bidhaa sasa, a last mile distribution and finance company, leverages women's social capital to market their products to other women and grow their market share. (Lessons From Farming Households: Agricultural Decision Making And Shifting Social Norms For Women's Economic Empowerment)
- In Rwanda, World Relief, an international organization that primarily works through a network of churches to access last-mile households with an emphasis on women, utilizes both the VSLA and Farmer Field Schools models to build their resiliency through trainings and increased life skills. (Lessons From Farming Households: Agricultural Decision Making And Shifting Social Norms For Women's Economic Empowerment)
- In India, CARE's Pathways program has promoted innovative extension methods, such as the network of agri-kiosks which help meet the gap in supply and demand of agricultural inputs, and are a one-stop shop for all agricultural needs, providing services such as soil testing, seed selection, farm inputs and rental of the latest agricultural equipment (The Role Of Gender In Climate-Smart Agriculture)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
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Service providers should identify and leverage trusted local agents to better serve and increase outreach among WIRAL

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Leverage existing agent networks

Explanation of recommendation

Service providers can **identify and leverage the most effective agents** (e.g. extension workers, input sales agents, small business owners) to build networks that better serve WIRAL with lower mobility which improves the availability of a wider range of goods and services at lower cost in rural areas

Examples

- In Bangladesh, KU, an innovative agro-input microfinance network launched a pilot program that incorporated commercial banks and insurance service providers into their value chain and through the pilot, they learnt of the importance of agent banking as an alternative model that allows those with limited mobility to interact with service providers within a trusted community setting. (Lessons From Farming Households: Agricultural Decision Making And Shifting Social Norms For Women's Economic Empowerment)
- In India, the presence of local agro-meterological centres increased access and use of agro-meterological advisory services through communication channels including meetings and trainings with agricultural extension workers, local knowledge centers and farmer clubs. (Climate Information Services For Farmers: Lessons From Research)
- In India, DRC, Rwanda, Sri Lanka, Bangladesh, and Zambia, research has revealed that female customers prefer female agents when it comes to mobile services. ("Accessibility": How Mobile Operators Can Improve The Accessibility Of Their Services For Women To Help Close The Mobile Gender Gap)
- In Kenya, Copia, an e-commerce platform, uses roadside kiosks and village shops as well as agronomists, agrodealers, and veterinarians as agents, most of whom are rural women, to facilitate and aggregate orders from village customers, most of whom are also rural women, and provide centralized, cost-effective delivery within 48 hours (Investing For Impact: The Copia Global Impact Story)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
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Service providers should try to demonstrate the beneficial effects of WIRAL's adoption of climate-resilient practices

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Demonstrate value to peers and gatekeepers

Explanation of recommendation

Engage WIRAL "champion" adopters to demonstrate the value of climate-resilient practices to other WIRAL and gatekeepers (e.g. village leaders, mothers-in-law, husbands, fathers); this **increases awareness of the broad benefits of WIRAL's climate resilience** by proving the value of empowering WIRAL to both businesses and communities

Examples

- In Malawi, Tanzania and Ethiopia, CARE's "WE-RISE" program includes men in gender awareness-raising activities. Alongside new business opportunities, such as sheep and goat farming, honey production, crop management and even soap making, men are engaged in discussions against GBV and harmful practices such as FGM, rape and early marriage. As a result, such men have endorsed female adoption of CSA practices, promoting a range of benefits (e.g. yield increases through mulching, low tillage and planting in rows) (Good Practices For Integrating Gender Equality And Women's Empowerment In Climate-smart Agriculture Programmes)
- In Burundi and other countries where Plant with Purpose works, women learn, practice, and teach regenerative agriculture and reforestation. Women then proceed to become leaders in Farmer Field Schools where they spread the knowledge that has benefited them in peer-to-peer settings. The women use regenerative farming innovations that are helping to heal the soil, like silvopasture (integration of trees and grazing livestock operations on the same land), crop rotation, and bio-intensive agriculture (When It Comes To Climate, The Frontline Is Female, Plant With Purpose)
- In Zimbabwe, a female poultry business owner mentors rural smallholders - mostly women - across Zimbabwe to replicate the adoption of climate smart practices in the poorest, most marginalized areas, enabling them to increase productivity and create a livelihood in an area with few economic opportunities (Young Women's Grassroots Action On Gender And Climate Change)

Impact of recommendation on opportunities for WIRAL as frontline actors

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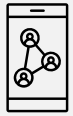
Service providers should leverage digital technology channels to deliver services aligned with WIRAL's digital capabilities

Legend: ● High research coverage ○ Low research coverage ■ Recommendation supports WIRAL build resilience as frontline actors

Tailor digital technology to WIRAL needs



Explanation of recommendation

Leverage digital technology channels (e.g. IVR, lower bandwidth) that are aligned with WIRAL's technology capabilities, which are typically lower than men's and often decreased after climate events, to deliver services; **this increases the accessibility of services to build WIRAL's climate-resilience by circumventing time and mobility challenges** that affect WIRAL

Examples

- In Uganda, Digital Extension Interactive Voice Response (IVR) calls are now gender-sensitive, addressing some of the constraints women face in accessing conventional extension services (e.g. limited time and tech capabilities) and contributing to increases in female farmers' knowledge of pig farming biosecurity and climate resilience (Digital Extension Interactive Voice Response (IVR) mLearning: Lessons Learnt From Uganda Pig Value Chain)
- In Mali, rural women farmers are empowered through a combination of skills training and access to modern technology. UN Women's "Buy from Women" mobile application provides rural women a wide range of real-time, reliable information on markets, prices, vendors, weather, and soil quality, which has increased their productivity and sales (Climate-Smart Agriculture Paving The Way For Women's Empowerment In Mali And Malawi)
- In Senegal, 3 radio stations in the Kolda region have developed the tools, networks and means to support digital and gender-sensitive agricultural extension services. Broadcasters have been supported with radio resources to improve programs for rural listeners. This program focuses on delivering quality information and improved communication services to 56,000 male and female farmers to increase their capacity to make informed decisions to improve their food security in a context of climate change (Digital Advisory Services For Climate Smart Agriculture)

Impact of recommendation on opportunities for WIRAL as frontline actors

- Agricultural practices
- Other non-financial practices
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Contents

Sector support organizations can support research, promote the use of gender-disaggregated data linked to climate variables

Sector support organizations[2)]

Explanation of recommendation[1)]	How this enables WIRAL to build climate resilience
Foster effective partnerships and collaboration between community groups, service providers and institutions, to enhance participatory community-led development approaches in provision of services, development of products and design of programs/ solutions	• The partnerships and participatory community-led development approaches can generate **substantial cooperation and speed up the adoption rate of climate-smart agriculture** practices by women and men
Work **with local networks, which are culturally congruent with communities and can create safe spaces for dialogue, to address socio-cultural norms**	• **Local networks are well versed in location-specific realities** and understand what it takes for WIRAL to contest and transform entrenched socio-cultural barriers and negotiate new socio-cultural norms and practices within and outside households
Support **research on WIRAL's behavioral change and incentives** for the adoption of climate-resilient practices (where there is a current shortage of specific research)	• Such research will enable service providers to **better understand specific barriers to WIRAL's adoption of climate-resilient practices and enable the design of services aligned with WIRAL preferences** (e.g. greater preference for savings) to incentivize adoption
Support the **development of tools and processes for the collection and application of gender-disaggregated data** linked to climate change variables	• Such data can more accurately **inform service providers who to serve and how** by understanding the needs and behaviors of different WIRAL segments regarding the adoption and climate-resilient practices
Articulate clear use cases of how service providers can use gender-disaggregated data to create value both for WIRAL users and their business.	• This will also enable the improved measurement of impact on WIRAL's livelihoods, which could be used to **inform the development of businesses cases for WIRAL/climate-specific interventions**

1) Recommendations for enablers are derived from a combination of higher-level research (i.e. wider than the research focused on service providers) and expert interviews; 2) Sector support organizations include organizations that can support service providers and other stakeholders to better serve WIRAL through a range of activities (e.g. research, convening, knowledge sharing)

Policymakers can invest in climate-resilient infrastructure, tailor social support mechanisms, use targeted subsidies and reform land rights

Policymakers

Explanation of recommendation[1)]	How this enables WIRAL to build climate resilience
Invest in climate-resilient infrastructure that **factors in WIRAL's vulnerabilities and increase their resilience** (e.g. rehabilitation of water supply, rural electrification, energy efficiency improvements, access to climate information)	• **Reduces women's time poverty** and burden of care (water infrastructure that provides running water to rural homes allocates more time to women and reduces **girls' vulnerability to GBV/assault** as they don't have to travel long distance in search of water) • **Reduces women vulnerabilities to climate change and builds their resilience** (e.g. investment in extension agents that provide climate information to women)
Tailor and design gender sensitive social support mechanisms (e.g. targeting women as recipients, naming women as co-recipients of household transfers, using delivery channels suitable for women (e.g. mobile money) to increase accessibility to WIRAL	• Targeted social support programs **reduce WIRAL vulnerability** by protecting them from immediate impacts **and enhance their ability to deal with climate shocks**
Target subsidies to de-risk adoption of climate-resilient practices (e.g. providing subsidies for climate smart inputs and weather insurance products bundled with loans)	• Subsidies **reduce the cost of climate-resilient practices** making them **affordable and socially acceptable to women** (e.g. subsidized insurance premiums), increasing their adoption
Reform land ownership rights and provide institutional measures that make it easier for **WIRAL to assert their land claims and rights** and ensure such land laws are not undermined by family or inheritance laws. (e.g. tax rebates for women who register land titles as well as lower fees for registering joint ownership to encourage women as co-owners)	• Secure tenure gives women the **incentive to make land related investments and adopt climate smart practices**. • Tenure allows women to **benefit from programs that may require land titles for participation.** (e.g most weather insurance schemes require farmers to have land titles) • Land titles can **provide collateral for women to access credit** for investment in equipment and inputs that enable adoption of climate smart practices

1) Recommendations for enablers are derived from a combination of higher-level research (i.e. wider than the research focused on service providers) and expert interviews

Funders can deploy innovative funding, apply longer-term time horizons and track co-benefits of investments to determine impact

	Explanation of recommendation[1)]	How this enables WIRAL to build climate resilience
Funders	**Deploy innovative funding to de-risk investing in WIRAL/climate-specific financial services** (guarantees, first-loss tranches, loss sharing)	• **Improves the risk/return profile of financing WIRAL/climate-focused services** (e.g. for solar irrigation) and therefore increases the WIRAL access to financing (e.g. through lower interest rates, longer repayment periods), which can in turn promote greater adoption of such climate-resilient practices
	**Apply longer-term funding horizons aligned with longer-term climate change needs** (e.g. agroforestry investment, improved irrigation and water harvesting techniques, erosion control measurements)	• Ensures that **funder investment cycles and target outcomes are realistically aligned with the time periods required to implement WIRAL/climate-specific interventions**, thereby increasing the attractiveness and allocation of funding to specifically support WIRAL's adoption of climate-resilient practices
	**Adopt measures and standards or build tools** to measure and track the co-benefits of investments to both women and climate change (e.g. WOCAN W+ Women's Empowerment Carbon Standard)	• Enables funders to **quantify, understand and communicate the tangible benefits of supporting WIRAL/climate interventions** to stakeholders and, in turn, crowd in further funding and support for WIRAL/climate initiatives
	Support the development of tools and processes for **the collection and application of gender-disaggregated data**	• **Encourages market actors to be more intentional about the data they collect** and solutions they offer to WIRAL (e.g. by providing funding contingent on the collection/application of gender-disaggregated data)
	Articulate clear use cases of how service providers can use such data and the value it will create for both service providers and WIRAL end users	• **Enable the improved measurement of impact on WIRAL's livelihoods**, which could be used to inform the development of businesses cases for WIRAL/climate-specific interventions

1) Recommendations for enablers are derived from a combination of higher-level research (i.e. wider than research focused on specific service providers) and expert interviews

Contents

Key documents – Impacts of climate change (1/3)

Impacts of climate change		Document name	Source
Labor	Hired labor	Climate Change Impacts On Livelihoods: Nepal Assessment	IFRC
		A Review Of The Effects Of Migration On The Feminization Of Agrarian Dryland Economies	Agrigender
		Women In Agriculture: The Impact Of Male Out-Migration On Women's Agency, Household Welfare, And Agricultural Productivity	World Bank
		The Effects Of Male Out-Migration On Food Security And Food Sovereignty In Rural Nepal	SIT Digital collections
	Saved labor	"I Sell My Labor Now": Gender And Livelihood Diversification In Uganda	Dolan
		Gender Dynamics In Seed Systems In Sub-Saharan Africa And Worldwide Lessons Workshop	CIMMYT
		Targeting Agricultural Input Subsidy Coupons In Malawi	SOAS
		Gender And Agriculture: Inefficiencies, Segregation, And Low Productivity Traps	World Bank
		Innovative Approaches To Including Gender Within Agricultural Mechanization	Agrilinks
		National Gender Profile Of Agriculture And Rural Livelihoods – Ghana	FAO
		Climate Change: India Plans Women-Friendly Agricultural Equipment	Business Standard
		Sustainable Irrigation And The Gender Question In Southern Africa	SDI
		Famine And Household Coping Strategies,	World Development
		Understanding Gender Dimensions Of Agriculture And Climate Change In Smallholder Farming Communities	Climate and Development
		Gender-Responsive Rural Climate Services: A Review Of The Literature	Climate and Development
		Assessment Of India's Integrated Agro-Meteorological Advisory Service Program From A Farmer Perspective	CCAFS
		Implications Of Gender-Focused Research In Senegal For Farmers' Adaptation To Climate Change	IFPRI

Key documents – Impacts of climate change (2/3)

Impacts of climate change		Document name	Source
Labor	Wage labor	Blame It On The Rain?: Gender Differentiated Impacts Of Drought On Agricultural Wage And Work In India	UNDP
		Gender Dimensions Of Disaster Risk And Resilience: Existing Evidence	World Bank
		Migration, Labor And Women's Empowerment: Evidence From An Agricultural Value Chain In Bangladesh	NCBI
		Ecosystem-Based Adaptation And Mitigation In Botswana's Communal Rangelands	Green Climate Fund
		Gender And Post-Disaster Reconstruction: The Case Of Hurricane Mitch In Honduras And Nicaragua	Delaney, Shrader
		Gender Dimensions Of Disaster Risk And Resilience: Existing Evidence	World Bank
		Hope Dries Up? Women And Girls Coping With Drought And Climate Change In Mozambique,	CARE
		Vulnerability Of Children And Youths In Drought Disasters: A Case Of Botswana	Babugura
		Impact Of Drought In Primary Schools In Laikipia District Of Kenya	Ndichu
Markets	Local markets	Ecosystem Based Adaptation In Kenya's Arid And Semiarid Rangelands	IUCN
		Women, Livestock Ownership And Markets	IDRC
		Demand For Agricultural Information Among Women Farmers: A Survey From Karnataka, India	Govil
		Ecosystem-Based Adaptation In Kenya's Arid And Semiarid Rangelands	IUCN
		Managing The Risks From Climate Extremes At The Local Level	IPCC
		Gender Impact Study	DigiFarm
		Flood Impacts On Women: Exploring The Possibility Of Gender-Sensitive DRR Planning	ReliefWeb
		Rapid Gender Analysis: Research Report	CARE
		Consolidated Gender Analysis For The Ethiopian Drought	OXFAM
	Digital markets	Gender Mainstreaming In Digital Agriculture	UNCDF
		Gender Impact Study	DigiFarm

Key documents – Impacts of climate change (3/3)

Impacts of climate change	Document name	Source
Access to and usage of financial services and assets	How Grassroots Savings-And-Credit Unions Can Improve Access To Finance For Rural Women	WEE
	5 Facts On Gender Equality And Access To Disaster Risk Finance In Fiji	UN University
	Why Women Inclusivity Is Vital For Uptake Of Agricultural Insurance	ACRE Africa
	Gender Dimensions Of Disaster Risk And Resilience	GFDRR
	The Influence Of Gender And Product Design On Farmers' Preferences For Weather-Indexed Crop Insurance	Akter, Kuprink, Rossi, Khanam
	A Literature Review Of The Gender-Differentiated Impacts Of Climate Change On Women's And Men's Assets And Well-Being In Developing Countries	CAPRI
Time and mobility	Women Use Trees To Boost Fodder Production In Drought Prone Areas	World Vision
	Climate Change And Time Poverty Trap Women In A Vicious Cycle	IRRI
	Understanding Gender Dimensions Of Agriculture And Climate Change In Smallholder Farming Communities	Jost, Kyazze, Naab, Neelormi
	Climate Change, Gender Inequality And Migration In East Africa	WJELP
Socio-cultural norms	Climate Change, Gender Inequality And Migration In East Africa	WJELP
	Overview Of Linkages Between Gender And Climate Change	UNDP
	A Crisis Within A Crisis: Climate Change And Gender Based Violence	Asia Foundation
	Climate Change And Gender-Based Violence: What Are The Links?	UNICEG
	Gender Equality, Environment And Climate Change	SIDA
	Climate Woes Growing For Women, Hit Worst By Displacement And Migration	Reuters
	Children Risk Early Marriage: Climate Change One Of The Factors	IPS
	How Is Climate Change Driving Child Marriage?	Girls Not Brides
	Managing The Impacts Of Climate Change On Poverty	World Bank
	Gender And Climate Change: A Closer Look At Existing Evidence	WEDO
	Study On Women And Girls' Participation In Community Disaster Risk Management Bangladesh	PLAN, Rapid Asia
	Land Tenure & Gender: Promoting Equity & Climate Resilience Through Land Ownership	ParlAmericas

Key documents – Opportunities for WIRAL (1/3)

Opportunities for WIRAL		Document name	Source
Agricultural practices	Soil management	Ethiopia: Women Use Mulching To Reduce Workload In Cabbage Farming	FARM Radio
		To Fight Drought, Kenyan Women Farmers Adopt Conservation Agriculture	New Humanitarian
		Mainstreaming Gender For Sustainable Soil Management	FAO
	Water management	Women Farmers Adapting To Climate Change	UNSCN
		Innovative Rainwater Harvesting Empowers Women In Gujarat, India	CDKN
		Water Storage Technology Brings Women Back Into Agriculture	IPP Media
		Rooftop Water Collection, Drip Irrigation And Plastic Mulching In Home Garden Conditions In Drought-Prone Areas	FAO
	Crop management	Women Farmers Adapting To Climate Change	UNSCN
		Women Pastoralists, Preserving Traditional Knowledge Facing Modern Challenges	IFAD
		Rural Women Of Eastern And Southern Africa Gain Ground	CIMMYT
		Ethiopian Farmers Weatherproof Their Livelihoods	CIMMYT
	Livestock management	Livestock Farming In The Uttarakhand Himalaya, India: Use Pattern And Potentiality	Current Science
		Gender Dynamics Around Introduction Of Improved Forages In Kenya And Ethiopia	ILRI
		Effects Of Climate Change On Pastoralist Women In The Horn Of Africa	Musau
	Forestry and Agroforestry	Women Coffee Growers In Vietnam Boost Climate Mitigation Through Agroforestry	Forest News
		Participation Of Women Farmers In Agroforestry Practices In The Jaman South Municipality, Ghana	GJDS
		Influence Of Women Empowerment On Adoption Of Agroforestry Technologies To Counter Climate Change And Variability In Semi-Arid Makueni County, Kenya,	IJESNR
	Fisheries and aquaculture	Aquaculture And Resilience: Women In Aquaculture In Nepal	Pant
		6 Aquatic Food System Innovations Transforming Women's Livelihoods	World Fish Center
		Women Introduce New Climate-Adapted Fishing Technique On Lake Togo And Gain Foot In A Male Dominated Sector	Women & Gender Constituency
		In Zambia, Increasing Climate Resilience For Rural Communities Through Support To Sustainable Livelihoods	World Bank

Key documents – Opportunities for WIRAL (2/3)

Opportunities for WIRAL		Document name	Source
Non-agricultural practices	Energy management	Women In Climate Resilient Agriculture In West And Central Africa: Key Results Of UN Women's Flagship Programme	UN Women
		Gender Just Climate Solutions,	Women & Gender Constituency
		Women Farmers Switch To Solar-Powered Water Pumps	Green People's Energy for Africa
		Women In Climate Resilient Agriculture In West And Central Africa: Key Results Of UN Women's Flagship Programme	UN Women
	Clean cooking equipment	Clean Cookstove Project	Global Peace Foundation
		Climate Resilient Women: Women Play A Central Role In Achieving Zero Hunger And Protecting Our Planet	ReliefWeb
		Barriers To The Adoption Of Improved Cooking Stoves For Rural Resilience And Climate Change Adaptation And Mitigation In Kenya	Nzengya
		Green Cook Stoves Improving Women's Lives In Ghana	UN Women
	Income diversification	Women In Climate Resilient Agriculture In West And Central Africa: Key Results Of UN Women's Flagship Programme	UN Women
		Women Pastoralists And Climate Change Impacts In Kilosa District, Tanzania	MU
		Climate Resilient Women: Women Play A Central Role In Achieving Zero Hunger And Protecting Our Planet	Relief Web

Key documents – Opportunities for WIRAL (3/3)

Opportunities for WIRAL		Document name	Source
Financial practices	Saving to build risk preparedness	Building Resilience Through Financial Inclusion: A Review Of Existing Evidence And Knowledge Gaps	Innovation for poverty Action
		Managing Risk With Insurance And Savings: Experimental Evidence For Male And Female Farm Managers In The Sahel	World Bank
		The Resilience Champions (When Women Contribute To The Resilience Of Communities In The Sahel Through Savings And Community-Based Adaptation	CARE
		How Resilient Are Farming Households And Communities To A Changing Climate In Africa? A Gender-Based Perspective	Perez, Cramer, Thornton, Forch, Barahona
		Impact Of Village Savings And Loan Associations: Evidence From A Cluster Randomized Trial	Ksoll, Lilleor, Lonborg, Rasmusse
	Borrowing to build risk preparedness	Adapting To A New Normal Strengthening Resilience To Climate Change: Best Practices From The European Microfinance Award 2019	European Microfinance
		How Resilient Are Farming Households And Communities To A Changing Climate In Africa? A GenderBased Perspective	Perez, Cramer, Thornton, Forch, Barahona
		Savings At The Pump: Financing Solar Irrigation To Support Rural Women	CGAP
		The Resilience Champions (When Women Contribute To The Resilience Of Communities In The Sahel Through Savings And Community-Based Adaptation	CARE
	Insuring against risk	Index Insurance: Helping Women Farmers Around The World	World Bank
		Why Women Are Among The Best Clients For Livestock Insurance In East Africa	CTA
	Accessing liquidity	How Digital Financial Services Boost Women's Economic Opportunities	World Bank
		5 Facts On Gender Equality And Access To Disaster Risk Finance In Fiji	UN University
		Rural Women And Migration	IOM
		Climate Smart Financing For Rural Msmes: Enabling Policy Frameworks	GFPI

Key documents – Recommendations for stakeholders (1/3)

Stakeholders		Document name	Source
Service providers	Non-financial service providers	Gender Dimensions Of Disaster Risk And Resilience : Existing Evidence	World Bank
		Identifying User Needs For Weather And Climate Services To Enhance Resilience To Climate Shocks In Sub-Saharan Africa	Caruso
		Making Weather And Climate Services More Gender-Sensitive	World Meteorological Organization
		Weather Forecasts Shift Climate Change Impact For Women Farmers In Malawi,	UN Women
		Real-Time Weather Forecasts Are Helping Zambian Women Farmers Win Their Battle Against The Impact Of Climate Change,	UNDP
		Sustainable Irrigation And The Gender Question In Southern Africa,	SDI
		Climate Change: India Plans Women-Friendly Agricultural Equipment, Business Standard	Business Standard
		Gender Technology Assessment. Burkina Faso: Planter Technology	Feed The Future
		Transformative Engagements With Gender Relations In Agriculture And Water Governance, NJSSPP	NJSS
		Successful Models To Empower Women In Out-Grower Schemes	AgDevCo
		Reducing The Gap In Agricultural Extension And Advisory Services	MEAS
		Meridia: Unlocking Land Value, Securing Peace Of Mind	MercyCorps
		Suyo: Helping Families Secure Property Rights In Colombia	Mercy Corps
		Smartphones Help Tanzanian Women Secure Land Rights	Reuters

Key documents – Recommendations for stakeholders (2/3)

Stakeholders		Document name	Source
Service providers	Financial service providers	Bundling Weather Index Insurance With Microfinance: Trekking The Long Road Between Expectations And Reality. A Study On Sub-Saharan Africa	Shumba
		Delivering Formal Financial Services To Savings Groups	SEEP Networks
		Climate Change And Financial Inclusion	IPA
		Innovating For Financial Inclusion: Strengthening Asset-Based Financing For Women Farmers	USAID
		Savings At The Pump: Financing Solar Irrigation To Support Rural Women	CGAP
		Putting Farmers First: Introducing Seasonal Loans From BRAC Microfinance	Ibne, Qader, Akangkha
		Adapting To A New Normal Strengthening Resilience To Climate Change: Best Practices From The European Microfinance Award 2019	European Microfinance Platform
	Non-financial and financial service providers	Good Practices For Integrating Gender Equality And Women's Empowerment In Climate-Smart Agriculture Programmes	CARE
		When It Comes To Climate, The Frontline Is Female	Plant with Purpose
		Young Women's Grassroots Action On Gender And Climate Change	CAMFED
		Digital Extension Interactive Voice Response (IVR) Mlearning: Lessons Learnt From Uganda Pig Value Chain	Frontiers in Veterinary Science
		Climate-Smart Agriculture Paving The Way For Women's Empowerment In Mali And Malawi	Relief Web
		Digital Advisory Services For Climate Smart Agriculture	WeHubIt
		Lessons From Farming Households: Agricultural Decision Making And Shifting Social Norms For Women's Economic Empowerment	MEDA Innovate
		Building Resilience Through Climate Risk Insurance	IFPRI
		The Role Of Gender In Climate-Smart Agriculture	FAO
		Climate Information Services For Farmers: Lessons From Research	Globaldev

Key documents – Recommendations for stakeholders (3/3)

Stakeholders		Document name	Source
Enablers	Sector support organizations	Women's Land Rights And Gender Justice In Land Governance: Pillars In The Promotion And Protection Of Women's Human Rights In Rural Areas	International Land Coaliton
		The Role Of Gender In Climate-Smart Agriculture	FAO
	Policymakers	Women's Land Rights And Gender Justice In Land Governance: Pillars In The Promotion And Protection Of Women's Human Rights In Rural Areas	International Land Coalition
		Impact Of Tax Rebate On Land Registration To Women's Empowerment In Nepal	Chhatkuli, Shrestha, Joshi, Habendra and Nairesiae
		Group Leasing Approach To Sustain Farming And Rural Livelihoods: The Journey Of Women Farmers In Kudumbashree Kerala	Choudhury, Roy, Munnangi
		How Joint Land Titles Help Women's Economic Empowerment: The Case Of Vietnam	World Bank
		What Women Want: First Steps To Inclusive Irrigation Investments	Agrilinks
		Catalysing Women Agri-preneurship And Food Trade In Africa	AGRA
		Women Extension Volunteers: An Extension Approach For Female Farmers	USAID
	Funders	Catalyzing Farmers' Irrigation Investments: Recommendations To Scale Sustainable Rural Transformation	Water for Food