



GENDER Impact
Platform

CGIAR GENDER Impact Platform · Working Paper #018

DECEMBER 2023

Gender and climate-resilient agriculture: a review of concepts and practical resources in support of gender-transformative change

By Valerie Nelson, Lora Forsythe



This publication is copyrighted by the International Livestock Research Institute (ILRI). It is licensed for use under the Creative Commons Attribution 4.0 International License. To view this license, visit <https://creativecommons.org/licenses/by/4.0>.



Unless otherwise noted, you are free to share (copy and redistribute the material in any medium or format) and adapt (remix, transform and build upon the material) for any purpose, even commercially, under the following conditions:

ⓘ ATTRIBUTION. The work must be attributed, but not in any way that suggests endorsement by ILRI or the author(s).

ISBN: 92-9146-804-5

Citation: Nelson, Valerie and Lora Forsythe. 2023. *Gender and climate-resilient agriculture: a review of practical resources in support of gender-transformative change*. CGIAR GENDER Impact Platform Working Paper #018. Nairobi, Kenya: CGIAR GENDER Impact Platform.

ACKNOWLEDGMENTS

The CGIAR GENDER Impact Platform is also grateful for the support of CGIAR Trust Fund Contributors: www.cgiar.org/funders.

Working group members: Sophia Huyer (CCAFS), Elizabeth Bryan (IFPRI), Rohini Ram Mohan (IRRI), Iliana Monterroso (CIFOR), Hom Gartaula (CIMMYT), Houria Djoudi (CIFOR), Renee Bullock (ILRI), Ranjitha Puskur (IRRI).

Our thanks go to Sophia Huyer and Nitya Chanana for their support in commissioning, designing, conducting and reviewing this study. Their insights were invaluable. We are also grateful to Sophia and Nitya for their encouragement and support in presenting the initial findings of this study at the Cultivating Equality 2021: Advancing Gender Research in Agriculture and Food Systems conference. We also thank the Gender and Climate Smart Agriculture Working Group, particularly Elizabeth Bryan (IFPRI), for their guidance of the study, including reviewing the outline and the draft report. The team also recognizes the support of Adrienne Martin, who provided comments on the initial outline and approach. The authors express thanks to all the researchers and practitioners who have shared resources with us and provided us with information on useful materials to review.

COVER PHOTO CREDIT: Adaptation pioneers Kidane and Wilta demonstrating their innovative feed supplements in Ethiopia. Credit: Apollo Habtamu/ILRI.

ABOUT CGIAR GENDER IMPACT PLATFORM

Generating Evidence and New Directions for Equitable Results (GENDER) is CGIAR's impact platform designed to put equality and inclusion at the forefront of global agricultural research for development. The Platform is transforming the way gender research is done, both within and beyond CGIAR, to kick-start a process of genuine change toward greater gender equality and better lives for smallholder farmers everywhere. gender.cgiar.org

DISCLAIMER

This working paper has been internally peer-reviewed and the opinions expressed herein reflect those of the authors, not necessarily those of the CGIAR GENDER Impact Platform.

CONTACT

Valerie Nelson
Natural Resources Institute
V.J.Nelson@gre.ac.uk

CGIAR GENDER Impact Platform
Working Paper #018

DECEMBER 2023

*Gender and climate-resilient
agriculture: a review of
concepts and practical
resources in support of gender-
transformative change*

Valerie Nelson

Natural Resources Institute

V.J.Nelson@gre.ac.uk

Lora Forsythe

Natural Resources Institute

L.Forsythe@gre.ac.uk

TABLE OF CONTENTS

| | |
|---|----|
| Abstract | iv |
| 1. Introduction | 1 |
| 1.1 <i>Background</i> | 1 |
| 1.2 <i>The need for tools, methods and guidance on gender and climate-resilient agriculture</i> | 8 |
| 1.3 <i>Study purpose, objectives, methods and limitations</i> | 8 |
| 2. Gender and CRA practical resources | 11 |
| 2.1 <i>Using anticipatory tools/methods for foresight and scenarios</i> | 13 |
| 2.2 <i>Analyzing context and enabling environments for gender and CRA</i> | 14 |
| 2.3 <i>Mapping causes and patterns of gendered vulnerability and resilience to climate shocks and stressors</i> | 16 |
| 2.4 <i>Analyzing gender and climate dimensions of agricultural research and extension innovation systems</i> | 20 |
| 2.5 <i>Analyzing opportunities, barriers, preferences and decisions about CRA practices, technologies, innovations and services</i> | 21 |
| 2.6 <i>Appraising specific CRA practices</i> | 23 |
| 2.7 <i>Assessing gendered CRA outcomes of processes and interventions at different scales</i> | 25 |
| 2.8 <i>Analyzing the transformative potential of CRA policies and programming, or that encourage transformative CRA</i> | 26 |
| 3. Challenges and ethical issues | 27 |
| 4. Gaps and promising practical resources for adaptation | 28 |
| 4.1 <i>General gaps and opportunities</i> | 28 |
| 4.2 <i>Value chain resources and sustainable economies</i> | 29 |
| 4.3 <i>Sustainable territories, landscape and environmental management</i> | 29 |
| 4.4 <i>Agricultural research and extension systems</i> | 30 |
| 4.5 <i>Anticipatory and foresight research and development practice</i> | 30 |
| 4.6 <i>Land rights</i> | 31 |
| 4.7 <i>Gender-based violence, climate security and conflict</i> | 31 |
| 4.8 <i>Indigenous Peoples' rights</i> | 31 |
| 4.9 <i>Gender, CRA and migration</i> | 32 |
| 4.10 <i>Governance and policies</i> | 32 |
| 4.11 <i>Mapping vulnerability and resilience</i> | 32 |
| 4.12 <i>Challenging gender norms</i> | 32 |
| 5. Conclusions | 33 |
| References | 35 |
| Appendix 1. Detailed assessment framework | 40 |

Abstract

To advance the use of gender-transformative approaches in climate-resilient agriculture (CRA), a review of practical resources that could support researchers and practitioners in applying gender and CRA was undertaken. The review consolidates and assesses diverse, practical resources—including research tools, methods and broader guidance—that aim to address gender inequalities/inequities, climate and agriculture, albeit to varying degrees. A conceptual framework was developed to guide the review, which helped to establish the gender dimensions of climate-resilience processes, and then to assess how the practical resources addressed these dimensions.

The types of practical resources identified as critically important for climate resilience are as follows: (1) anticipatory, foresight and scenarios; (2) context and enabling environment; (3) causes and patterns of vulnerability and resilience; (4) CRA agricultural innovation systems; (5) CRA practices, technologies, innovations and services; (6) appraisal of specific CRA practices; (7) assessing CRA outcomes of processes and interventions; and (8) transformative change. In total, 44 practical resources were identified, of which 16 were identified as tools/methods, and 28 as broader guidance documents (such as information notes).

The review considers how gender and intersectionality are addressed in each practical resource, and the quality and ethical issues that may arise from using the resource. After mapping the existing resources, the review identified key gaps in the practical resources available. These gaps included: anticipatory and foresight resources, enabling environment to support gender and CRA, and analysis of gender and agricultural research and extension. A range of promising practical resources are identified that could be adapted to support gender-transformative approaches to CRA, from areas such as gender and value-chain analysis, gender-based violence, landscape approaches, migration, gender and social norms, and men and boys' engagement.

Keywords: *gender, climate, resilience, agriculture, tools*

This review of tools for analyzing and/or addressing gender in design, deployment and evaluation of agricultural technologies is part of a series of studies to curate and synthesize a portfolio of tested gender methods and tools. This gender research on key themes was conducted as part of the Methods module of the CGIAR Generating Evidence and New Directions for Equitable Results (GENDER) Impact Platform. The review also has broader value to the community of researchers and development practitioners focused on rural areas and food systems.

1. Introduction

1.1 Background

1.1.1 Climate-resilient agriculture and gender inequality

Enhancing the climate resilience of food and agricultural systems is of critical importance in the contexts of climate change, growing social and economic inequality, and food and nutrition challenges. Agriculture (itself a cause of greenhouse gas emissions) and food and nutrition security are profoundly affected by the changing climate. The concept of climate-resilient agriculture (CRA) refers to processes that generally support and enhance resilience in food and agriculture systems. Gender equality is a key ingredient in resilience-building processes *and* a goal. Climate change impacts vary by context, but prevailing patriarchal norms mean that there are widespread and significant gender gaps in people's capacity to respond to climate shocks and stresses—women are more commonly at a disadvantage compared to men (Kristjanson et al. 2017). This leads to differences in: vulnerability and resilience to climate change, absorptive capacity, sensitivity to climate change, and adaptive capacity (i.e., the ability to respond to climate shocks and stresses) (Bryan et al. 2020; Nelson et al. 2015a, b). Participatory approaches addressing unequal power relations are essential for effective CRA (Huyer et al. 2021).

Inequalities in vulnerability and resilience to climate change are linked to differences in women's and men's access to resources (especially land), decision-making authority from household to policy levels, and labor contributions—that also differ by other factors of social difference, such as age, ethnicity and disability—which arise as a result of entrenched social norms and are perpetuated by informal and formal institutions (Forsythe et al. 2015; Huyer et al. 2021; Kristjanson et al. 2017; Nelson et al. 2002). In many dryland areas, for example, multiple forms of inequalities are experienced by pastoral households and communities, including gender inequalities intersecting with spatial marginalization of pastoralist groups in national development trajectories (Nelson et al. 2015a). Pastoralist livelihood systems have strong and inherent adaptive capacity that provide for adapted responses to climate variability, but gender norms also constrict women's agency (Nelson et al. 2015b). Another example from Latin America is research that shows the link between dominant notions of masculinity in Nicaragua as encouraging continued cattle ranching, sustaining broader systems of capitalism and thus the (re)production of gendered and racialized inequalities (Gonda 2019).

1.1.2 Definitions in climate-resilient agriculture

The concept of CRA has emerged partly in response to perceived limitations of climate-smart agriculture (CSA) approaches. This review initially focused on CSA and gender, but later included CRA at the request of the CGIAR GENDER Impact Platform. We review the definitions for both concepts to inform the review of practical resources.

CSA, according to the [FAO website](#), is an approach that “helps to guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate. CSA aims to tackle three main objectives: sustainably increasing agricultural productivity and incomes, adapting to and building resilience to climate change, and reducing and/or removing greenhouse gas emissions, where possible.” CSA is, according to the FAO, a broad concept rooted in the narrower conservation agriculture approach that comprises a limited set of practices such as minimum tillage, soil cover and intercropping/crop rotation (Kassam et al. 2009; Beuchelt and Badstue 2013). It also responds to priorities of climate adaptation, mitigation, and agricultural productivity and income.

CSA is widely promoted by the World Bank and CGIAR development organizations, but critiques of CSA include challenges from a gender perspective. Huyer and Partey (2019) note implicit emphases on market solutions and productivity outcomes which are questioned by feminist approaches (Collins 2018). Huyer and Partey (2019) cite Haapala (2018), who highlighted the risk of CSA interventions further embedding existing power inequalities within communities if not challenged explicitly, such as questioning who has control over technology and who benefits from the promoted practices. The tendency to allocate new labor-intensive activities in agriculture to women can result in a hesitancy among women to adopt new adaptive practices out of concern that their workload will increase (Beuchelt and Badstue 2013). The shift of market and technological ‘smart’ innovations to the resilience of agri-food systems—which can include decentralized, adaptive approaches (Leach et al. 2010)—is the basis of the shift from CSA to CRA.

The CRA concept has emerged in response to perceived climate and food-security challenges and broader work on socioecological system resilience. However, specific definitions of CRA definitions are lacking, which makes it difficult to distinguish clearly between CSA and CRA. Such ambiguity is not specific to CRA, but it reflects broader patterns of knowledge politics in stabilizing or contesting concepts (Loconto and Fueilleux 2019). One exception is a definition from Reddy (2015) that highlights the context of food security, adaptation and mitigation; and defines CRA approaches as contributing to increasing agricultural productivity and incomes, adaptation, and building resilience to climate change while reducing and/or eliminating greenhouse gas emissions (GHGs). This definition centers productivity and incomes, but also adaptation, resilience—the ability to respond to shocks and stresses—and mitigation.

Attention to resilience in agriculture began over 50 years ago, with Holling’s 1973 examination of socioecological systems’ resilience, which pointed to the complexity of adaptive systems which exhibit nonlinear change. The nested nature of socioecological systems was identified by Holling, building on Ostrom (2009, 420). Adaptation pathways were compared with existing development trajectories (Folke et al. 2010). Shifts occur when existing conditions lead to new states after the crossing of thresholds, with issues of *lock-in* preventing returns to earlier states and acting as barriers to sustainability transformation (Olsson et al. 2014). The value of disruptive processes for enhanced sustainability and well-being to enhance environmental sustainability and human well-being were identified by Walker et al. (2004). Shocks of sociopolitical change have potential to catalyze transformations in natural-resource governance, depending upon capacities (cognitive, structural and agency) (Herrfahrdt-Pähle et al. 2020). Some transformative adaptation literatures address the structural roots of inequalities and the political ecology dimensions of changes, distinguishing between resilience, transitions and transformations (Pelling 2010), but few CRA definitions recognize power relations in this way. Critical perspectives on resilience (Miller et al. 2010; Dornelles et al. 2020) suggest that promoting the status quo and can be a barrier to transformation.

FAO outlined *green and climate-resilient agriculture* (2021), detailing the broad features of such an approach without providing a specific definition (Box 1). It foregrounds the wider environmental agenda beyond climate resilience, but it is somewhat unclear exactly what the terms *green* and *CRA* are, except for specific nods to agro-ecology and green productivity, or how this is different to CSA approaches (which already cover resilience, mitigation and adaptation). There is specific mention of small-scale producers, innovative technologies, early warning systems, and local and Indigenous People’s knowledge.

Box 1. Green and climate-resilient agriculture

FAO's paper on green and climate-resilient agriculture (2021, 2–3) provides the following description of green and climate-resilient agriculture:

- “Brings together the climate, resilience, environment and agriculture agendas, triggering action in agri-food systems to respond to the climate crisis.”
- “Ensures that agri-food systems are adapted to, halt or significantly lower their GHG emissions and other environmental impacts while maintaining or increasing their benefits.”
- “Employs agricultural practices, technologies and innovations that enhance productivity in a sustainable manner, increase resilience and food security, reduce GHG emissions and ensure higher incomes for small-scale producers. These include practices such as CSA, biotechnology and agroecological approaches, sustainable forest, fisheries and soil management, disaster risk management, and others.”
- “Practices support countries in the design, enhancement and implementation of their national policies and strategies including their Nationally Determined Contributions, National Adaptation Plans and Disaster Risk Reduction (DRR) Plans. Green and climate-resilient agriculture includes deploying methodological tools and strengthening countries' capacity to collect and analyze data, Furthermore, innovative technologies and early warning systems can provide farmers with information and advice to help enhance green productivity and build resilience. Local and indigenous knowledge, practices and technologies are also valuable for building resilience and ensuring inclusion.”

Source: <https://www.fao.org/3/cb6978en/cb6978en.pdf>

For the purposes of this study, the authors followed Reddy (2015), FAO (2021) and wider work on socioecological resilience as a pragmatic guide to CRA to identify and assess practical resources for researchers on gender and CRA, while recognizing the value of feminist scholarship that would focus on deeper transformations in sociopolitical and environmental struggles.

1.1.3 Gender-relevant concepts and definitions

Diverse approaches exist for conceptualizing and addressing gender inequality in applied development research and practice, including in food and agriculture. Often these approaches are described as existing along a continuum and, although the categories vary, generally involves moving from a gender-neutral approach to gender-transformative approaches (GTAs) (e.g., IGWG 2017; IDRC 2019). There is increasing emphasis on the latter end of the continuum—to move beyond instrumental approaches focused upon gender roles and gender ‘gaps’ in assets or resources, toward approaches that focus on changing gender norms, the diverse constraints and priorities of women and men (gender responsiveness) and the root causes of gender injustice (gender transformative) (e.g., Gumucio et al. 2020; IDRC 2019; Wong et al. 2019).

Employing this continuum is helpful to assess the gender approach implicitly or explicitly embedded in CRA practical resources, but there is controversy over what constitutes a GTA—so using other definitions might lead to a different outcome during an analysis of

available tools.¹ For example, the USAID Interagency Gender Working Group provides a gender continuum with different terms; namely: *exploitative* (reinforces or takes advantage of inequalities), *accommodating* (works around inequalities) and *transformative* (critically examines gender norms, creates systems that support gender inequality) (2017, 2). IDRC also offers a continuum (2019), employing the additional categories of *sensitive* and *responsive* (Box 2). In practice, this would describe some approaches as *gender responsive* or *gender sensitive*, whereas USAID would classify them as a GTA. A concrete example is where Wong et al. (2019) referred to a CGIAR program as *responsive* (both women and men benefited from roots, tubers and banana technologies, with neither harmed), which would likely be considered as *gender aware* on IDRC's continuum.

Box 2. Gender continuum in Transforming gender relations: lessons from IDRC research (IDCR 2019)

IDRC's gender continuum, used to assess how gender was integrated into IDRC-funded research, includes four categories:

- *gender aware*—gender considered in rationale; not yet operative in methodology
- *gender sensitive*—same as previous, plus operative in methodology; not yet rigorous analysis
- *gender responsive*—same as previous, plus rigorous analysis of how gender intersects with other aspects of identity; not about root causes or process
- *gender transformative*—same as previous, plus explicit analysis of root causes of inequality; aims for structural changes in power, norms and policy

The term GTA has been increasingly employed over the past 15 years with varying definitions; this concept is rooted in feminist and postcolonial scholarship, and critical race theory (Wong et al. 2019). In applied development research and practice, it broadly refers to addressing the root causes of inequalities—including punitive practices and norms embedded within institutions. However, there are differences of conceptualization of GTA with respect to issues of the *scale* under consideration. For example, changes to gender norms at the family and community level would be considered GTA by some (Wong et al. 2019). However, relating the concept to literature on transformative change and sustainable development, GTA would require more broad, systemic, radical and structural change, including change within development actors and institutions themselves (IDRC 2019). This may lead some to the conclusion that GTA extends beyond gender and intersectional issues (at community levels, for example) toward deeper systems and policy change).

There are also differences in how GTA treats issues of *social difference*—a term that in this paper refers to a social differentiation between categories of women and men, in addition to deeper analysis of intersecting discriminations. Using IDRC's assessment of gendered-focused research projects again to illustrate divergences, they examine differences in how gender intersects with other relevant factors of social difference within a gender-responsive approach, whereas this would be included within a GTA by USAID (and continued in Wong et al. 2019). Social difference—and intersectionality—is a critical component of gender

¹ The CGIAR GENDER Impact Platform will imminently publish a working paper and series of tools/methods on GTA. The FAO definition of GTA is as follows: "Gender-transformative approaches refer to approaches in development or research for development that aim at examining and intentionally challenging and transforming the underlying causes of gender inequality rooted in inequitable social structures and institutions. As such the gender-transformative approach aims at addressing imbalanced power dynamics and relations, rigid gender norms and roles, harmful practices, unequal formal and informal rules as well as gender-blind or discriminatory legislative and policy frameworks that create and perpetuate gender inequality. By doing so, it seeks to eradicate the systemic forms of gender-based discrimination by creating or strengthening equitable gender norms, dynamics and systems that support gender equality." <https://www.fao.org/joint-programme-gender-transformative-approaches/overview/gender-transformative-approaches/en>

and CRA agricultural research for development, but it is less well addressed compared to gender. Part of the issue is the all-too-common use of male/female binaries that restrict a fuller understanding of social relations and power dynamics linked to gender, race, class, and so on, that an intersectional approach would allow (Djoudi et al. 2016; Mungai et al. 2017). A sophisticated understanding of intersectionality does not simply add multiple discriminations together (e.g., age plus gender, or gender plus ethnicity), but emphasizes the unique and varied lived experiences of social groups experiencing various discriminations (Perez et al. 2015), with implications for selecting research methods. For Colfer (2018), intersectionality focuses on the processes through which privilege and oppression are created, reinforced, perpetuated and—at times—overcome. This more politicized conceptualization of intersectionality, compared to other definitions of intersectionality and social difference, reflects a widespread turn in gender research more generally toward the causes of the (re)production of inequalities. Gonda (2019) observes a shift from a ‘linear, technocratic, and instrumental’ understanding of the relationships between gender and climate change, to a more nuanced understanding that engages more centrally with power, politics and relationality. However, this shift poses challenges of operationalization for policymakers and practitioners (Gonda 2019). For example, initiatives become instrumentalized and focus on “practical” responses to the potential negative impacts of climate change, rather than seeking to advance more strategic “social, political and environmental transformations” (Gonda 2019).

This review draws on the gender continuum and intersectionality to inform the selection of gender-relevant practical resources. We consider a resource relevant if it is *gender responsive* or *gender transformative* (see Table 1). We also highlight practical resources that are relevant to CRA and can be highly adaptable to become gender responsive or transformative. We use Colfer et al.’s definition (2018) of intersectionality, which emphasizes struggles between privilege and oppression.

Table 1. Definitions of assessment criteria for the gender approach of practical resources

| Gender approach | Definition |
|-----------------------|---|
| Gender responsive | Gender responsive (or gender sensitive) research takes into account ‘the different needs and demands, constraints and opportunities of both genders, men and women alike,’ at all stages of the research cycle (CGIAR–IEA 2017, ix). |
| Gender transformative | Gender transformative research focuses on understanding, with a view to changing, gender-based power relations, structures and discriminatory practices in households and communities, or wider institutions, that underpin gender differences. Participatory approaches may be used to engage communities in reflection about gender norms and behaviours and practices and encourage community members to initiate change, individually or collectively. (CGIAR 2017, ix) For this paper, we use this definition with additional emphasis on critical examination of the root causes of inequality, norms and dynamics; examining social differences; and the aim for structural changes in power, norms and policy—as iterated by IDRC (2019) and USAID (2017). |
| Intersectional | Intersectionality can be defined as “the interacting influences of multiple identities in a given person as they interact with marginalizing or empowering structures, norms and narratives” (Colfer et al. 2018, 2). This can be expanded on: The interaction of different social locations (e.g. ‘race’/ethnicity, indigeneity, gender, class, sexuality, geography, age, disability/ability, migration status, religion). These interactions occur within a context of connected systems and structures of power (e.g. laws, policies, state governments and other political and economic unions, religious institutions, media). Through such processes, interdependent forms of privilege and oppression shaped by colonialism, imperialism, racism, homophobia, ableism and patriarchy are created. (Hankivsky (2014, 2, cited in Colfer et al. 2018, 1) |

A relatively simple conceptual framework was developed to guide this study, drawing upon our literature review (Figure 1). Any societal context has **gender and intersectionality injustices**, including within their food and agricultural systems. Climate and multiple rural stressors are generated by **prevailing political-economic systems** which (re)produce such injustices. Drawing on the continuum for gender integration into research and interventions, three categories are employed for the framework, as defined in Table 1.

Socioecological systems are inherently complex—emergent properties lead to characteristics of uncertainty and unpredictability or continuously unfolding processes, flows and encounters, according to relational theory. Planned interventions of different kinds can have a range of equity ambitions—from doing no harm, to improvements, to more far-reaching systemic and political changes in structures, norms and practices—and we suggest this applies to gender equity as well. These then lead to outcomes ranging from deep unsustainability and inequalities, or improvements via gender-responsive green and climate-resilient agriculture, to far-reaching shifts in food and agricultural systems based on gender and intersectional equalities.

Various practical resources (tools, methods and guidance) can be mobilized by researchers to investigate different dimensions of the change process represented by the framework used for this review. These are divided into (see Figure 1):

1. anticipatory, foresight and scenarios
2. context and enabling environment²
3. spatial mapping and identification of causes and patterns of vulnerability and resilience (at national, landscape and community scales)
4. CRA agricultural innovation systems and services (e.g., how are gender and CRA issues being addressed within such institutions and organizations)
5. opportunities, barriers, preferences and decisions about CRA practices, technologies, innovations and services
6. appraisal of specific CRA practices
7. outcomes of CRA processes and interventions at different scales
8. aligned to and supporting transformative approaches (not to be confused with GTA, transformative change refers to systemic shifts in paradigms, perspectives and values, that may or may not include or align with GTA)³

² In this report, *context and enabling environment* refers to the scale considered by a practical resource beyond the local community level, especially national and subnational policymaking and services.

³ *Transformative change* here is not to be confused with GTA. Instead, it refers to systemic shifts in paradigms, perspectives and values that may or may not include or align with GTA.

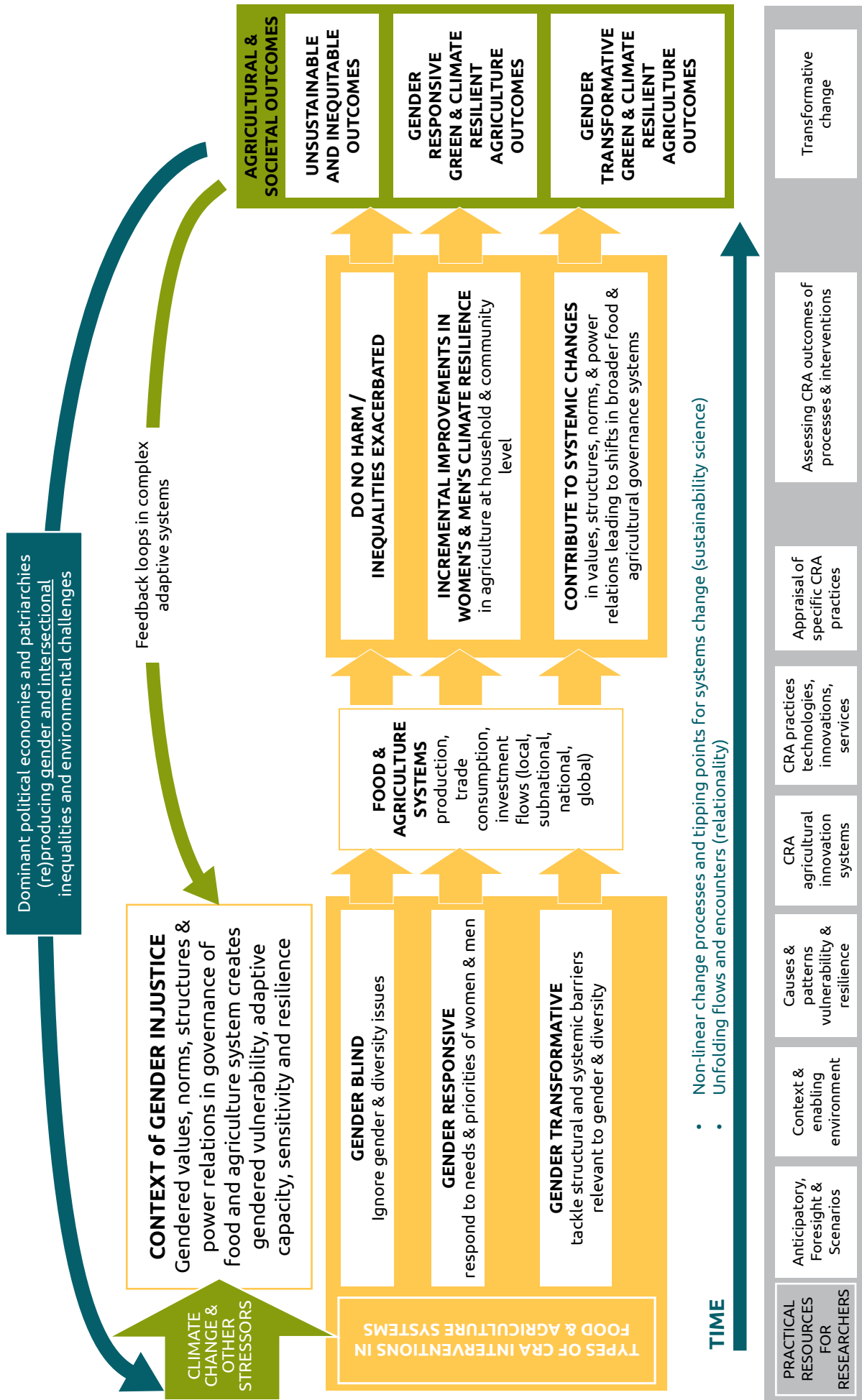


Figure 1. CRA and gender tools and methods

1.2 The need for tools, methods and guidance on gender and climate-resilient agriculture

Achieving climate resilience in agriculture is vital to making progress on food and nutrition security, and adaptation to and mitigation of climate change in an equitable manner is a challenging task, given prevailing inequalities. Therefore, there is a need to strengthen and facilitate high-quality gender research in CRA. An assessment of practical resources (the purpose of this study) that can support researchers and practitioners to contribute to gender-responsive and transformative CRA will aid in identifying useful and promising resources and gaps that need to be filled. However, agricultural systems are inherently complex; they are context specific, dynamic and unpredictable. Therefore, an openness of researchers to learn around and beyond the research tools is key to support adaptive capacity in such systems—including on social change processes.

1.3 Study purpose, objectives, methods and limitations

1.3.1 Purpose

The purpose of this study is to undertake a review of gender and CRA tools/methods (used by researchers) and guidance (to support gender integration in CRA policy or programming) to inform researchers and practitioners about the possible application, focus, gender approach, usability, accessibility, and scientific quality of those tools and guidance.

This review of practical resources related to gender and CRA is part of a series of studies to curate and synthesize a portfolio of tested gender methods and tools for gender research on key themes. It was conducted as part of the Methods Module of the CGIAR Generating Evidence and New Directions for Equitable Results (GENDER) Impact Platform. The identified practical resources will be shared on the CGIAR GENDER Impact Platform resource hub and thus represent an initial step in mapping and assessing available materials that can be built upon in future by the community of practice. It also has broader value to the community of researchers and development practitioners focused on rural areas, agriculture and food systems.

1.3.2 Objectives

This paper identifies and retrieves practical resources on gender and CRA, and assesses them using a systematic framework to inform researchers and practitioners (Appendix 1).

Specifically, the paper will:

- summarize and assess tools, methods and guidance in terms of purpose and relevance to gender and CRA, rigor, usability/ease of use, accessibility, and gender approach
- identify gaps in methods and tools, challenges in use, and promising areas or approaches for further analysis and testing
- explore potential ethical issues associated with the use of these methods and tools
- consider the extent to which the tools/methods have been used (or could be used) to examine intersectional identities (including, for example, age or vulnerable populations)

1.3.3 Method

This study focuses on practical resources—tools, methods and guidance specifically designed with the purpose of supporting researcher and practitioner learning and practice—that can support and inform researchers in gender and CRA, and more broadly in agriculture for development (Table 2). Guidance includes resources such as information notes and working papers that can inform practice and policy, but which are not intentionally developed as practical step-by-step tools/methods, so their utility may be more limited. There are a broad range of other resources, such as academic papers, which can also provide guidance to researchers on the topic. These will be cited where relevant, but are not part of the core analysis because although they aim to highlight conceptual and methodological insights, they are not designed as practical resources per se.

Table 2. Definitions of practical resources and inclusion criteria

| Coverage in this study | Type | Definition |
|---------------------------------|-----------------|--|
| Core | Tools | Resources used to conduct research; can be adapted and applied (e.g., questionnaire, topic guide, observation technique) |
| | Methods | Strategies, processes or techniques used in research |
| | Guidance | Informative and user friendly, but more generic (e.g., working papers, case studies, info notes) |
| Covered only as promising areas | Academic papers | Conceptual and methodological insights, but are not designed as practical resources |

The scope of the study also relates to the topic focus. In this case, the study considers practical resources which focus on or partially focus on gender, climate resilience and agriculture (Figure 2). Practical resources that do not cover all three are out of scope of the core analysis for this document.

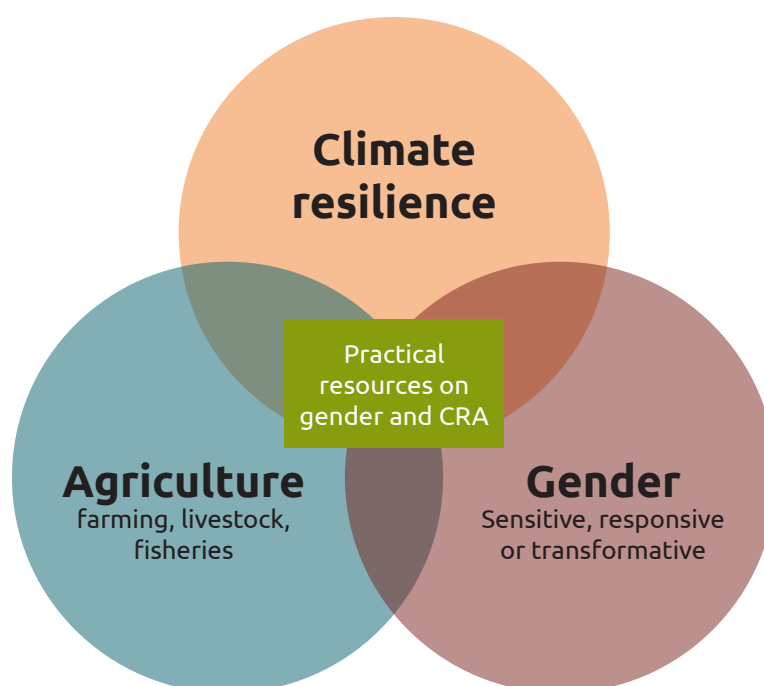


Figure 2. Core concepts and scope of study

The assessment criteria for the practical resources built upon a conceptual framing that evolved during the study of how gender was integrated in CRA processes, and the types of practical resources which could be created. Specific study questions were developed about the content and quality of the identified resources. Descriptive information about the resources were collected in a Microsoft Excel file that detailed various basic attributes and quality criteria after screening for relevance (relating to climate, agriculture and gender); type of resource, CRA and gender theme, method, audience. *High, medium* and *low* categories were used to distinguish the quality of the practical resource based on: rigor (adhering to high-quality research and development principles/goals)⁴, usability/ease of use (including clear definitions, format and practical orientation), accessibility (plain language, published online, whether gender expertise required), innovation (new or for use in a new context) and gender approach (gender responsive, gender transformative). The authors used their expert judgement to separately assess each practical tool, then discussed tools where there was a difference in their assessment results. Other aspects of the resources were reviewed as part of the methodology, such as challenges and ethical issues, intersectionality, and use of digital technology (see Appendix 1).

The study team used their existing networks among international research and development organizations, and those of the CGIAR GENDER Impact Platform, to identify and retrieve a wide range of resources (114 identified and reviewed; 38 assessed as within scope). As per a snowball approach (literature identified through literature), the team followed up web links (which themselves are portals to diverse types of potentially relevant resources) and reached out to new possible sources of information that were referred to in previous research and tools reviewed. Our methodology did not constrain the search by using specific search terms or publication dates due to the limited number of relevant resources.

1.3.4 Limitations

As broad-ranging, cross-cutting concepts, and with limited clarity over precise definitions in academic, policy or practitioner circles, CRA and its relationship to gender can be associated with a potentially wide variety of search terms. It was not possible to conduct this study as a systematic or fully comprehensive review, so the list of tools/methods included in this review may not be exhaustive.

⁴ Guided by the CGIAR definition of *scientific quality*. "Scientific credibility requires that research findings be robust and that sources of knowledge be dependable and sound. It includes a clear demonstration that data used are accurate, that the methods used to procure the data are fit for purpose, and that findings are clearly presented and logically interpreted. It recognizes the importance of good scientific practice, such as peer review" (Science-Metrix & CGIAR Advisory Services Secretariat Evaluation Function, 2022).

2. Gender and CRA practical resources

In this section we provide an overview of the practical resources identified as tools, methods or guidance, followed by separate sections on the different types of tools, methods and guidance.

The review identified 44 practical resources that addressed the three core issues of gender, climate resilience and agriculture in sufficient depth. Of these, 64 percent were guidance documents (including info notes and working papers) and 36 percent were a tool/method.

The largest proportion of identified resources are aimed at mapping vulnerability and resilience from a gender perspective (25 percent). This is followed by gender resources which identify opportunities and barriers for CRA innovation (20 percent), appraise specific CRA practices (19 percent), and assess CRA outcomes (14 percent). A smaller proportion are focused on gender analysis in CRA innovation systems and the enabling environment for CRA (12 percent and 10 percent, respectively). There were no gender resources addressing anticipatory/foresight or transformative change (not to be confused with gender-transformative change; this refers to transformative change at a systems level that may or may not include GTA) (Figure 3). Note that a resource often covers more than one theme. There were more resources in the form of guidance for each theme compared to tools/methods, except for on enabling environments.

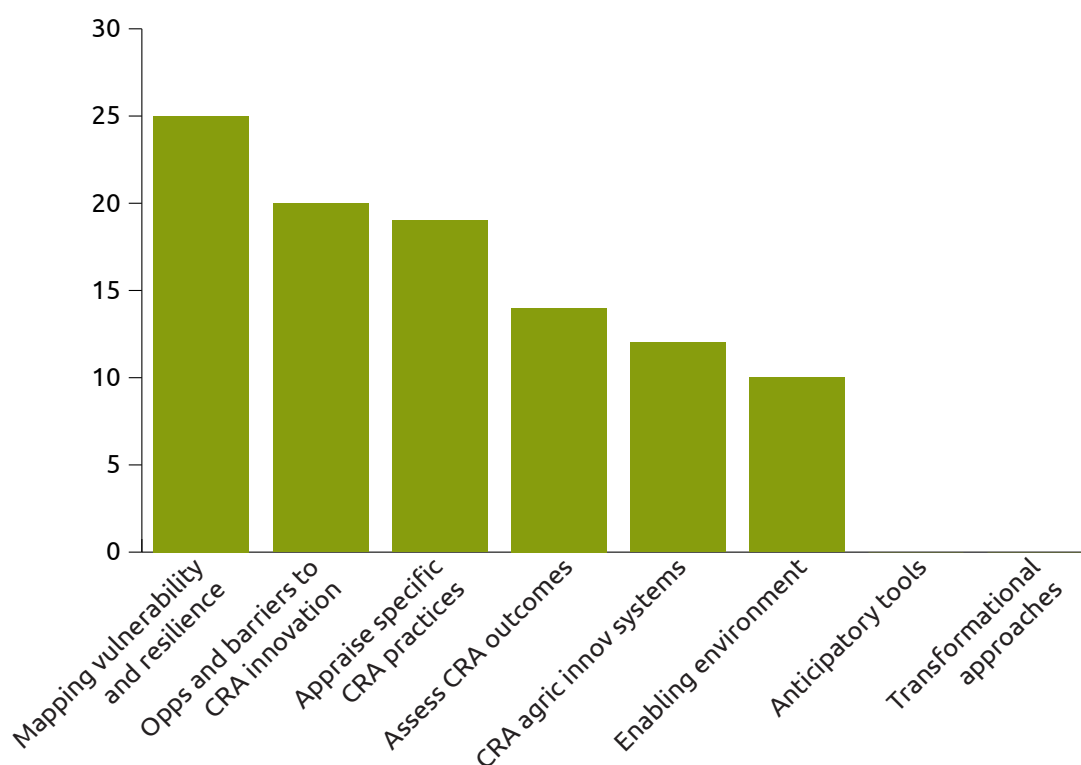


Figure 3. Focus of practical resources (n = 44)

Note: The chart shows the results from a multiple-response query, as a resource can cover more than one theme. Resources for anticipatory tools and transformational approaches were not found, so are not shown in the chart.

Quantitative methods are more dominant in the practical resources, plus some mixed methods, qualitative and participatory approaches. The largest proportion of resources were quantitative only (11 in total; three tools/methods), closely followed by mixed method

with participatory resources (10 total; three tools/methods). The remaining resources were participatory (five total; four tools/methods), mixed method (five total; three tools/methods) and qualitative (four total; one tool/method).

The quality of the practical resources overall is high in terms of rigor, but their usability and accessibility could be improved. Quality was assessed on a three-point evaluative scale: *high*, *medium*, or *low* according to the level of rigor, usability and accessibility (Appendix 1). Seventy percent of the tools were considered *high* rigor, showing adherence to high-quality research practices and responsiveness to the SDGs (Figure 4). However, usability of tools could be improved—just over half the resources (55 percent) were assessed as *medium*. Some of the guidance documents contain useful information for researchers and practitioners—such as conceptual frameworks, scoping of the key issues and case studies—but do not include practical step-by-step guidance, so may be harder for users to apply in practice. Some of the working papers reviewed also sit at the more academic end of the spectrum in terms of language and style. There is also room for improvement in accessibility (defined according to their ease of access, such as online accessibility, but also the sophistication of gender-related knowledge and skills required to use the resource): over 68 percent were considered *high* accessibility, but with a similar portion of resources ranked *medium* and *low* (14 percent and 18 percent, respectively).

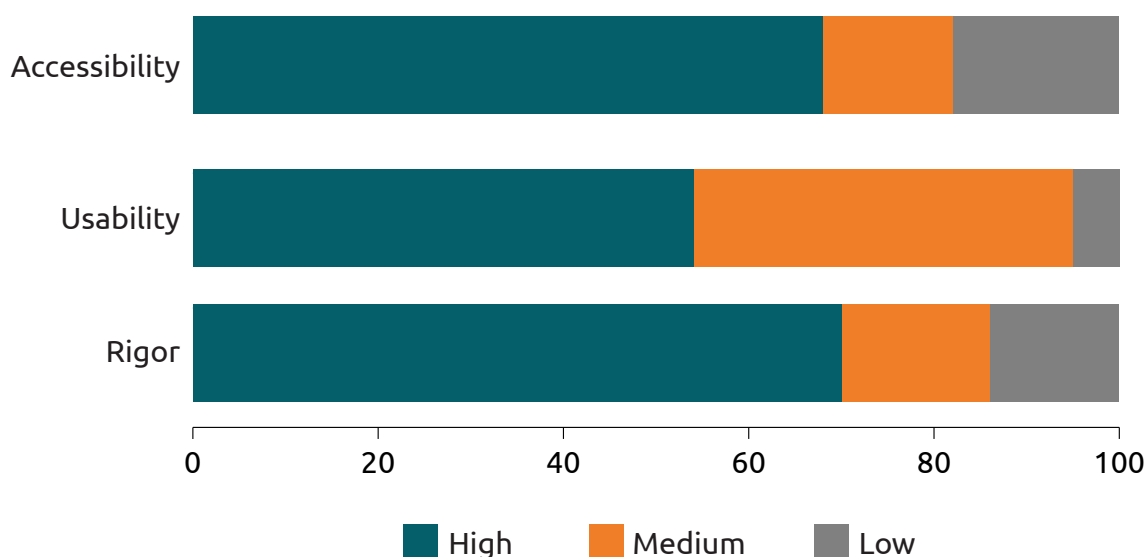


Figure 4. Assessment of rigor, usability and accessibility (n = 44)

The majority (89 percent) of all gender and CRA practical resources were assessed as gender responsive; that is, resources that aimed to identify the differential needs and demands, constraints and opportunities of women and men. The remaining resources (nine percent) were on the border between gender responsive and gender transformative, and one resource was found to be gender transformative (Sriram 2018). Resources that were assessed as on the border between gender responsive and gender transformative demonstrated some elements of a GTA, but not all. For example, many of the resources addressed issues related to gender norms and practices at the household and community level; however, these practical resources were not judged to fully support a detailed and critical examination of the root causes of inequality, norms and dynamics with the aim for structural change, nor of the social differences between and among women (see Simelton et al. 2021; Theis et al. 2019; Dharmistha 2021). The one resource found to use a GTA regarding gender and climate change adaptation is a how-to note about designing gender-transformative smallholder agriculture adaptation programs, created by International Fund for Agricultural Development (IFAD), CCAFS and CARE (Sriram 2018). This resource emphasized, for example, addressing underlying social norms and gendered workload imbalances; and promoting equal voice and representation of women, youth and marginalized groups within decision-making at household to national levels.

The outreach by and impact of the practical resources is difficult to assess; the authors tend to provide limited information about the process by which resources were commissioned, the extent to which they are demand driven, and their onward use. Accessibility of the practical resources is high because the majority are available as open-access and online resources, but more evidence is needed on their use. Some resources are accompanied by metrics to shed light on usage (e.g., [CCAFS Gender and Climate Change Survey data](#)), but these give limited insight into impact.

Few resources are presented in interactive digital formats. The review found that the resources were largely available online, mainly as PDFs, but few exist as online databases or learning platforms. The number of spatial- and GIS⁵-type tools are expanding, particularly with the [‘hotspots’ work of CCAFS and the CGIAR GENDER Impact Platform](#).

2.1 Using anticipatory tools/methods for foresight and scenarios

Anticipatory and foresight approaches are an emerging field in climate-related work, but none were identified that focused on gender and CRA. Anticipation refers to thinking about the future and taking actions based on assumptions about the future (Kienegger et al. 2015). Foresight is described variously as “systematic”, “participatory”, “future-intelligence gathering”, involving “medium- to long-term vision-building processes” which seek to facilitate “present-day decisions and mobilizing joint actions” (Kienegger et al. 2015).

The review found no practical resources that specifically address the gender dimensions of anticipatory and foresight CRA resources. However, there are some interesting tools that could be adapted to strengthen gender analysis for CRA, such as:

- Oborns et al.’s (2017) book *Sustainable Intensification in Smallholder Agriculture* is a comprehensive resource on a systems approach to Sustainable Agriculture Intensification (SAI), using an ecological, economic and social lens to sustainable intensification. Two themes are of particular note for practical resources: one, SAI in practice, and two, gender and equity research for improved livelihoods; the conceptual background is also useful. A similar resource for gender and CRA would be useful.
- Hebinck et al.’s (2018) paper explores the use of foresight in food-systems transformative change through four case studies. The approach could be used to identify pathways that contribute to transformative change in relation to gender and CRA. It describes four exercises that produced rich data from different contexts, and methodological lessons from scenario foresight studies.
- Transformative scenario planning in the Adaptation at Scale in Semi-Arid Regions project: While not specific to gender, the tool provides an effective method for collaborative scenario planning with diverse stakeholders to learn about current issues and uncover dynamics that help or hinder progress toward a more equitable and climate-resilient future. Slight modification to the method and focus on gender in planning events and as the focus of discussion would be needed.

⁵ geographic information systems

2.2 Analyzing context and enabling environments for gender and CRA

An opportunity for enhancing gender-transformative potential in CRA approaches is to address issues of gender inequality within the enabling environment, which affects lower scale processes (e.g., at landscape and community levels). All complex, adaptive systems are nested in higher living systems. While individuals have agency, their ability to exert this agency and their relative power is shaped by broader narratives, formal policies and laws, and social norms. Practical resources in this area of the enabling environment would therefore focus on such elements and/or patriarchal norms and power struggles embedded across all these scales, with reference to CRA, GTA or both. Understanding how social change occurs (shifts in consciousness, social norms and behaviors) involves analyzing how the agency of specific individuals or collectives interact with the layers of conditions and structures mediating their choices. GTAs related to such interactions can support achievement of progressive outcomes in terms of gender justice. Practical resources are needed to support such engagements (including struggles and resistance), collaborations and multistakeholder participation.

Few practical resources were identified that support researchers and practitioners to better understand and change the enabling environment for gender and CRA. Six resources were identified as covering the enabling environment and that focus on or include elements of analysis of global and national scales (e.g., Quisumbing and Kumar 2014). The majority were rigorous (5 *high*; 1 *low*), user friendly (4 *high*; 2 *medium*) and accessible (4 *high*; 2 *medium*). However, the enabling environment resources' analysis of gender/CRA was limited in their exploration of the root causes and punitive norms associated with inequalities at different scales—five were assessed as gender responsive and one as potentially gender transformative. The majority of the resources were developed within CGIAR and CGIAR–civil society partnerships; one resource is from Arrow and UN Women (Dharmistha 2021) (Box 3).

Box 3. Gender in Climate-Smart Agriculture: Module 18 for the Gender in Agriculture Sourcebook

The World Bank Group, Food and Agriculture Organization of the United Nations, and IFAD have developed *Gender in Climate-Smart Agriculture: Module 18 of the Gender in Agriculture Sourcebook*.

The document (available online) provides guidance and a range of practical resources for integrating gender into CSA activities—from planning to evaluation—to ensure women and men benefit equally from CSA interventions.

Five thematic notes are provided:

1. the role of innovative technologies for gender-responsive CSA
2. gender-responsive, climate-smart landscape approaches
3. monitoring and evaluating gender through the CSA project cycle
4. household and community-driven development
5. the role of institutions for gender-responsive CSA

Source: <https://www.ifad.org/en/web/knowledge/-/publication/gender-in-climate-smart-agriculture-module-18-for-the-gender-in-agriculture-sourcebook-2015-with-world-bank-and-fao->

The *Research guide for gender-disaggregated analysis of climate change impacts and adaptation toolkit*, while not focused on the enabling environment and thus not included in the count for this section, includes reference to the Net-Map method⁶ that uses social network analysis, stakeholder mapping and power mapping to identify different actors (and the links between actors) to identify how they could be influenced (Bryan et al. 2015).

One resource provides guidance on gender analysis in a climate-smart investment context that could be adapted to analyze the enabling environment. A practical resource for analyzing the enabling environment for CRA is a three-step methodology to facilitate climate-smart investment to address gender inequalities—developed by UN Women (Glemarec 2017). This method draws on risk-analysis methodology to enable policymakers to prioritize specific climate-smart investments for their potential to address gender inequalities.

Table 3. Practical resources for understanding/changing the enabling environment for gendered CRA

| Resource | Rigor | Usability | Accessibility | Gender approach |
|---|-------|-----------|---------------|-------------------------------|
| Climate-Smart Agriculture Rapid Appraisal (CSA-RA) (subtool of CSA guide) (CCAFS 2015) | High | High | High | Responsive |
| Guide to Participatory Scenario Planning (PSP): Experiences from the Agro-Climate Information Services for women and ethnic minority farmers in South-East Asia (ACIS) project in Ha Tinh and Dien Bien province, Vietnam (Tam et al. 2018) | High | High | High | Responsive |
| Enhancing Women’s Assets to Manage Risk under Climate Change. Potential for group-based approaches (IFPRI) (Ringler et al. 2014) | High | Medium | Medium | Responsive |
| Land rights knowledge and conservation in rural Ethiopia: Mind the gender gap (IFPRI) (Quisumbing and Kumar 2014) | High | Medium | Medium | Responsive |
| Training manual on gender and climate change resilience (Arrow, UN women) (Dharmistha 2021) | High | High | High | Responsive/ transformative |
| Guide to UNFCCC Negotiations with agriculture—Toolkit (CCAFS, CTA, Farming First 2013) | Low | High | High | Responsive |

⁶ <https://mspguide.org/2022/03/18/netmapping/>

2.3 Mapping causes and patterns of gendered vulnerability and resilience to climate shocks and stressors

There is a wide variety of practical resources for mapping gendered vulnerability and resilience to climate shocks and stressors in agriculture. This was the largest category of practical resources reviewed, with a total of 21—eight are classified as tools/methods and 13 as guidance. They use different types of data and methods: for example, quantitative data and econometric analysis on gender and climate change (CCAFS Gender and Climate Change Survey data), spatial and socioeconomic data to identify gender and climate change ‘hotspots’ (Koo et al. 2022; Box 5), and participatory analyses at community level (Oxfam’s Vulnerability and Risk Assessment Methodology (Kelsey and Morchain 2018), Box 4). The resources cover multiple scales of analysis—mainly intrahousehold and community, but some examine district and national scales (e.g., Nelson et al. 2015a, b).

Box 4. Finding Ways Together to Build Resilience: The Vulnerability and Risk Assessment Methodology

This methodology resource provides practical guidance on how to facilitate a process that: is based on joint analysis, engages diverse social groups, focuses on root causes of vulnerabilities for different social groups to inform program designs, and pays attention to historical and evolving power dynamics. The approach is sophisticated, tested in 12 countries by Oxfam, its partners and other aid and research organizations.

This approach complements but moves beyond local participatory rural-appraisal processes, avoids a predetermined agenda, recognizes a multihazard understanding of risk, establishes a group of individuals (the ‘knowledge group’) to drive the process for a truly participatory approach, and understands that vulnerability is largely determined by structural inequalities and governance shortcomings. It also explicitly encourages the articulation of transformation pathways for societies toward risk reduction and resilience.

Collaboration between different levels of governance is seen as key, as is providing a space for marginalized groups to voice their concerns to and work side by side with decision-makers during the process. The key principles of the vulnerability and risk assessment (VRA) enable practitioners to appreciate the essence and motivating forces for conducting this type of participatory exercise. This method could be used for information that would inform the many adaptation actions needed by organizations, practitioners and communities.

The fact that the authors have emphasized the methodology can evolve through learning will enable wider application and greater acceptability of this method. Strong facilitation skills and familiarity with the VRA methodology are essential for facilitators, not only to successfully navigate through the somewhat-elaborate steps of the methodology with a diverse group, but also to ensure that potentially marginalized voices within the knowledge group are heard and the expected transformation of power dynamics—not least with respect to gender relations—can begin to be catalyzed and sustained. Relationships of trust will support the ongoing implementation of the decisions made during the VRA and can contribute to longer-term transformational change, such as the valuing of marginalized voices by decision-makers and appreciation by marginalized groups of how power is distributed across different government levels and agencies.

Source: Kelsey and Morchain 2018

Box 5. Effectively targeting climate investments: A methodology for mapping climate–agriculture–gender inequality hotspots

Climate–agriculture–gender inequality hotspots mapping, as detailed in Koo et al. (2022), is a method that aims to identify subnational and national geographical areas where “climate hazards, women’s exposure to climate hazards affecting food systems, and gender inequalities converge to impact women’s vulnerability to climate change” (Koo et al. 2022, v). Data for this approach includes geospatial information, secondary data and principal component analysis, areas of high risk and vulnerability of women.

The paper by Koo et al. (2022) is a result from an initiative funded by IDRC and carried out by the CGIAR GENDER Impact Platform that built on the earlier work of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), captured in Khatri-Chhetri et al. (2017) and Chanana-Nag and Aggarwal (2018). Work to date has involved doing a situation analysis of gender equality and agri-food system transformations, testing interventions in Zambia and Bangladesh, followed by conducting impact assessments in Zambia and Bangladesh.

According to a recent evaluation of the Evidence Module of the CGIAR GENDER Impact Platform, the hotspots method has generated considerable interest from national governments (e.g., Rwanda, Uganda, Botswana, Kenya) and international/regional organizations (e.g., AGRA and the African Development Bank (AfDB), ADB, AGNES). The FAO also references the hotspots paper in their 2022 *The State of Food and Agriculture and Food* report.

Source: <https://gender.cgiar.org/publications/effectively-targeting-climate-investments-methodology-mapping-climate-agriculture>

The quality of the practical resources in this area is high. The majority of the resources were assessed as *high* rigor (18 of 21)—an area of considerable strength for gender and CRA research. Over two-thirds of the resources score *high* in terms of usability; those that scored *medium* or *low* mainly consisted of longer and more complex descriptions of research methods and research findings. Two resources are considered to have a sustainability-transformations focus (see Box 6): Kelsey and Morchain (2018) and Dharmistha (2021).

Box 6. Training manual on gender and climate change resilience

Produced by Arrow and UN Women, and available on the CGIAR GENDER Impact Platform, this training manual is an example of a high-quality practical resource that could inform research on the enabling environment—it includes several frameworks to examine gender at different scales, including national policy.

The resource also includes guidance on GTAs (but not solely), including their definition; exercises on the assessment of GTAs as opposed to other approaches; and examinations of research tools that explore strategic interests, gendered decision-making and structural issues relating to gender inequality.

The manual covers topics such as:

- gender and human rights
- climate situation and vulnerability/disaster profiling (including differentiated vulnerability of women and girls)
- policy frameworks and action plans on climate resilience/disaster risk reduction at regional and national levels

- selected climate finance instruments and investment opportunities at the global and national levels
- approaches to community-based adaptation and resilience planning/action
- data-collection and monitoring mechanisms for climate action

Source: <https://gender.cgiar.org/publications/training-manual-gender-and-climate-change-resilience>

The search found a predominance of practical resources developed by CGIAR Centers; while this result could be influenced by the search strategy (in terms of Google algorithms and the contacts who supplied resources) there is a strong indication that CGIAR Centers—particularly CCAFS—produce a large proportion of the resources for gender and CRA research. Of the 21 identified:

- 15 are developed by CGIAR
- four are developed in partnership between CGIAR and others
- the remaining few are developed by Arrow and UN Women; Oxfam (Kelsey and Morchain 2018); World Bank, IFAD and FAO (2015); and IFAD (2022)

Table 4. Agriculture-related practical resources for mapping causes and patterns of gendered vulnerability and resilience to climate shocks and stressors

| Resource | Rigor | Usability | Accessibility | Gender approach |
|---|-------|-----------|---------------|-------------------------------|
| Climate-Smart Agriculture Rapid Appraisal (CSA-RA) (subtool of CSA guide) (CCAFS 2015) | High | High | High | Responsive |
| Enhancing Women’s Assets to Manage Risk under Climate Change. Potential for group-based approaches (IFPRI) (Ringler et al. 2021) | High | Medium | Medium | Responsive |
| Training manual on gender and climate change resilience (Arrow, UN women) (Dharmistha 2021) | High | High | High | Responsive/ transformative |
| Gender Household Survey, CCAFS Dataverse (harvard.edu) (CCAFS, IFPRI, ILRI 2016) | High | High | Medium | Responsive |
| Climate Change and Food Security Vulnerability Assessment Toolkit (Bioversity and IDS) (Ulrichs et al. 2015) | High | High | High | Responsive |
| Mainstreaming gender and social differentiation into CCAFS research activities in West Africa: lessons learned and perspectives (CCAFS) (Ouédraogo et al. 2018) | Low | High | High | Responsive |
| Aflatoxins in food and feed (GCAN, IFPRI) (Brown 2018) | High | Medium | Low | Responsive |
| Using natural areas and empowering women to buffer food security and nutrition from climate shocks: Evidence from Ghana, Zambia, and Bangladesh (GCAN, IFPRI) (Cooper 2018) | High | Medium | Low | Responsive |

| Resource | Rigor | Usability | Accessibility | Gender approach |
|--|--------|-----------|---------------|-------------------------------|
| Policy note on the interlinkages of Climate Change, Gender and Nutrition in Nigeria (GCAN, IFPRI) (Thomas et al. 2018) | High | High | High | Responsive |
| A user guide to the CCAFS Gender and Climate Change Survey data (CCAFS) (Bryan et al. 2018) | High | High | High | Responsive |
| Women's Empowerment and Crop Diversification in Bangladesh a Possible Pathway to Climate Change Adaptation and Better Nutrition (IFPRI) (De Pinto et al. 2019) | High | Medium | Low | Responsive |
| Can Women's Empowerment Increase Animal Source Food Consumption in Flood Prone Areas of Bangladesh? (IFPRI, University of Southern California) (Theys 2018) | High | Medium | Medium | Responsive |
| Agriculture and Youth in Nigeria: Aspirations, Challenges, Constraints, and Resilience (IFPRI) (El Didi et al. 2020) | High | Medium | Medium | Responsive |
| Gender differences in Agro-Climate Information Services (Findings from ACIS baseline survey in Ha Tinh and Dien Bien provinces, Vietnam) (CCAFS) (Duong et al. 2017) | High | High | High | Responsive |
| Integration of gender considerations in Climate-Smart Agriculture R4D in South Asia and SSA—useful research questions (GENNOVATE) (Farnworth et al. 2017) | Medium | High | High | Responsive |
| The Vulnerability and Risk Assessment Methodology (Oxfam) (Kelsey and Morchain 2018) | High | High | High | Responsive/ transformative |
| Making agricultural and climate risk insurance gender inclusive: How to improve access to insurance for rural women (IFAD 2022) | Medium | High | High | Responsive |
| Effectively targeting climate investments: A methodology for mapping climate–agriculture–gender inequality hotspots (Koo, J., et al. 2022). | High | Medium | Medium | Responsive |
| Thematic note 4: Household and Community-Driven Development, in Gender in Climate Smart Agriculture Sourcebook, Module 18 (World Bank, FAO and IFAD 2015) | High | High | High | Responsive |
| Module 1, in Step-by-step process to mainstream gender in climate-smart agricultural initiatives in Guatemala (Acosta et al. 2020) | High | High | High | Responsive |

2.4 Analyzing gender and climate dimensions of agricultural research and extension innovation systems

Few practical resources exist to support researchers and practitioners to better understand agricultural research and extension systems from a gender and CRA perspective. Agricultural research and extension systems are a key interface between the broader agri-food system and rural farmers. Gender issues in agricultural research and extension have been well noted in the literature, namely involving the difficult of mainstreaming gender in research and in the provision of extension services to women and marginalized social groups (FAO 2021; Jafry and Sulaiman 2013; Padmaja and Duche 2017). The lack of women extension workers has been identified in such research as limiting outreach, but less attention has been paid to organizational barriers to women’s advancement and diversity in terms of research employment and leadership (that are considerable barriers to women’s employment in agricultural research and advisory services).

Seven practical resources were identified which can support the analysis of the gender dimensions of CRA research and extension: four guidance resources were identified and three were classified as tools/methods. The available resources cover a range of different methods: two were purely quantitative, and two included participatory methods and different scales of analysis. Three resources relate to levels from district to landscape, while four resources emphasize the household/community level.

The resources were mostly developed within CGIAR, with a few exceptions. One of the resources was produced by IFAD. Two CGIAR resources were developed in partnership with CARE and the FAO.

In terms of quality, the resources under this theme tended to be of slightly lower quality compared to the practical resources covering other themes. For rigor, only four out of seven were scored as *high*, which is a lower proportion than the rigor of other areas’ resources. Resources were considered *low* in this area because of a lack of references or inclusion of evidence, and often simplistic men/women comparisons. For usability, four out of the seven were considered *high*; limitations of one tool related to explanation of key concepts, and another due to its more academic format. Accessibility was also good overall, with five out of seven considered highly accessible. All resources were gender responsive. Two resources scored highly in each category: Duong et al. 2017 and Jost et al. 2014.

Table 5. Practical resources for analyzing the gender dimensions of CRA in institutional systems of agricultural research and extension

| Resource | Rigor | Usability | Accessibility | Gender approach |
|--|-------|-----------|---------------|-----------------|
| Enhancing Women’s Assets to Manage Risk under Climate Change. Potential for group-based approaches (IFPRI) (Ringler et al. 2021) | High | Medium | Medium | Responsive |
| Mainstreaming gender and social differentiation into CCAFS research activities in West Africa: lessons learned and perspectives (CCAFS) (Ouédraogo et al. 2018) | Low | High | High | Responsive |
| Gender differences in Agro-Climate Information Services (Findings from ACIS baseline survey in Ha Tinh and Dien Bien provinces, Vietnam) (CCAFS) (Duong et al. 2017) | High | High | High | Responsive |

| Resource | Rigor | Usability | Accessibility | Gender approach |
|---|--------|-----------|---------------|-----------------|
| Making agricultural and climate risk insurance gender inclusive: How to improve access to insurance for rural women (IFAD 2022) | Medium | High | High | Responsive |
| Gender and Inclusion Toolbox- Participatory Research in Climate Change and Agriculture (CARE, ICRAF) (Jost et al. 2014) | High | High | High | Responsive |
| Checklist: Gender-inclusive actionable agro-advisories (ICRAF) (Simelton and Le 2020) | Low | Low | High | Responsive |
| Gendered targeting of agricultural extension and weather variability in Africa south of the Sahara (IFPRI, FAO) (Azzarri and Nico 2021) | High | Medium | Low | Responsive |

2.5 Analyzing opportunities, barriers, preferences and decisions about CRA practices, technologies, innovations and services

A range of tools exist that enable analysis of opportunities, barriers, preferences and decision-making in relation to CRA, which tend to be locally focused. Fifteen resources were identified which support analysis of gender-related CRA opportunities and barriers. These resources focus primarily on intrahousehold-, household- and community-level analysis and many are based upon participatory methods. The collection of notes about enhancing women’s assets to manage risk under climate change explores the connections among climate change, gender, assets and collective action and specifically connects the micro to the macro. Most resources in this category were in the form of guidance (14); one resource is classified as a tool or method. The largest proportion are quantitative (6), five are participatory and mixed method, and five are participatory.

Most of the practical resources identified for opportunities and barriers analysis were developed by CGIAR and its partners, with a few involving partnerships with CARE, FAO, the World Bank, IFAD and FAO. Six were developed by CCAFS.

In terms of quality, they are generally scored as being rigorous in nature, but their usability and accessibility is quite low. All but two had *high* rigor. However, only seven were scored *medium* for usability and five scored *low* for accessibility—lower compared to other areas. This is related to the high level of skills required to employ some of the methods used in the resources, and that they took the form of guidance rather than practically oriented tools/methods.

Examples of high-quality resources for analyzing opportunities and barriers are: Jost et al. 2014; Bryan et al. 2015; WB, IFAD and FAO 2015, and modules 1–3 in Acosta et al. 2020.

One resource was considered to have gender-transformative potential, and another resource was focused solely on gender transformation in relation to adaptation programs. These are Simelton et al. 2021 and Sriram 2018, respectively.

Table 6. Practical resources for analyzing opportunities, barriers, preferences and decision-making for CRA innovations and interventions in households, communities and landscapes

| Resource | Rigor | Usability | Accessibility | Gender approach |
|--|--------|-----------|---------------|---------------------------|
| Enhancing Women’s Assets to Manage Risk under Climate Change. Potential for group- based approaches (IFPRI) (Ringler et al. 2021) | High | Medium | Medium | Responsive |
| Mainstreaming gender and social differentiation into CCAFS research activities in West Africa: lessons learned and perspectives (CAAFS) (Ouedraogo et al. 2018) | Low | High | High | Responsive |
| Gendered targeting of agricultural extension and weather variability in Africa south of the Sahara (IFPRI, FAO) (Azzarri and Nico 2021) | High | Medium | Low | Responsive |
| Using natural areas and empowering women to buffer food security and nutrition from climate shocks: Evidence from Ghana, Zambia, and Bangladesh (GCAN, IFPRI) (Cooper 2018) | High | Medium | Low | Responsive |
| Land rights knowledge and conservation in rural Ethiopia: Mind the gender gap (Quisumbing and Kumar 2014) | High | Medium | Medium | Responsive |
| A Gender-responsive Approach to Climate-Smart Agriculture: Evidence and guidance for practitioners (Nelson and Huyer 2016) | Medium | High | High | Responsive |
| Gender profile of climate-smart agriculture in Ghana (CAAFS, ICRISAT, ILRI, CSIR) (CAAFS 2021) | High | High | High | Responsive |
| Women’s involvement in coffee agroforestry value chains: Financial training, Village Savings and Loans Associations, and Decision power in Northwest Vietnam (CAAFS) (Simelton et al. 2021b) | High | Medium | Low | Responsive/transformative |
| Gender differences in access to information and adoption of climate-smart agriculture practices in Uganda: The role of women’s empowerment (IFPRI, University of Hohenheim) (Khan et al. 2021) | High | Medium | Low | Responsive |
| Gender and Institutional Aspects of Climate-Smart Agricultural Practices: Evidence from Kenya (CAAFS) (Bernier et al. 2015) | High | Medium | Low | Responsive |
| Gender and Inclusion Toolbox- Participatory Research in Climate Change and Agriculture (CAAFS, ICRAF, CARE, FAO) (Jost et al. 2014) | High | High | High | Responsive |

| Resource | Rigor | Usability | Accessibility | Gender approach |
|---|-------|-----------|---------------|-----------------|
| How to do note: Design of gender-transformative smallholder agriculture adaptation programmes (Sriram 2018) | High | High | High | Transformative |
| Project Toolkit: Research Guide for Gender-Disaggregated Analysis of Climate Change Impacts and Adaptation (Bryan et al. 2015) | High | High | High | Responsive |
| Thematic Note 3: Monitoring and Evaluating Gender Through the CSA Project Cycle, in Gender in Climate Smart Agriculture Sourcebook, Module 18 (WB, IFAD and FAO 2015) | High | High | High | Responsive |
| Modules 1-3, Step-by-step process to mainstream gender in climate-smart agricultural initiatives in Guatemala (Acosta et al. 2020) | High | High | High | Responsive |

2.6 Appraising specific CRA practices

Fifteen practical resources reviewed support the assessment of gendered CRA outcomes.

The majority are guidance (12), with relatively few tools/methods (3). Four resources are quantitative, three are mixed methods, two were participatory, two were participatory and mixed method, and one was qualitative. The resources focus on the household level. Three resources cover multiple levels (e.g., household, community, society) (Ringler et al. 2021; Farnworth et al. 2017; WB, IFAD and FAO 2015)—the latter two provide useful research questions that can be shaped and applied in different contexts.

Most the resources are developed by CGIAR Centers, except for two. The exceptions are: Dharmistha 2021, Chanana et al. 2018 and WB, IFAD and FAO (2015).

This group of resources has mixed results for quality. There was relatively good representation of resource that were *high* in rigor (11), three *medium* and one *low*. Similarly, 10 resources scored *high* for usability, with five *medium*. For accessibility, 11 scored *high*, 3 scored *medium*, and one assessed as *low*.

Table 7. Practical resources for appraising specific CRA practices

| Resource | Rigor | Usability | Accessibility | Gender approach |
|--|-------|-----------|---------------|-----------------|
| Enhancing Women’s Assets to Manage Risk under Climate Change. Potential for group-based approaches (IFPRI) (Ringler et al. 2021) | High | Medium | Medium | Responsive |
| Mainstreaming gender and social differentiation into CCAFS research activities in West Africa: lessons learned and perspectives (CAFS) (Ouedraogo et al. 2018) | Low | High | High | Responsive |
| Land rights knowledge and conservation in rural Ethiopia: Mind the gender gap (Quisumbing and Kumar 2014) | High | Medium | Medium | Responsive |

| Resource | Rigor | Usability | Accessibility | Gender approach |
|---|--------|-----------|---------------|-------------------------------|
| A Gender-responsive Approach to Climate-Smart Agriculture: Evidence and guidance for practitioners (Nelson and Huyer 2016) | Medium | High | High | Responsive |
| Gender profile of climate-smart agriculture in Ghana (CAAFS, ICRISAT, ILRI, CSIR) (CAAFS 2021) | High | High | High | Responsive |
| Training manual on gender and climate change resilience (Arrow, UN women) (Dharmistha 2021) | High | High | High | Responsive/ transformative |
| Women's Empowerment and Crop Diversification in Bangladesh a Possible Pathway to Climate Change Adaptation and Better Nutrition (IFPRI) (De Pinto et al. 2019) | High | Medium | Low | Responsive |
| Integration of gender considerations in Climate-Smart Agriculture R4D in South Asia and SSA—useful research questions (GENNOVATE) (Farnworth et al. 2017) | Medium | High | High | Responsive |
| Gender Household Survey, CCAFS Dataverse (CAAFS) (/harvard.edu) (CAAFS, IFPRI, ILRI 2013) | High | High | Medium | Responsive |
| A user guide to the CCAFS Gender and Climate Change Survey data (CAAFS) (Bryan et al. 2018) | High | High | High | Responsive |
| Gender Equality, monitoring and evaluation (M&E) and evaluation of climate services (CAAFS) (Gumucio et al. 2018) | High | Medium | High | Responsive |
| The Gender and Social Inclusion 5Q approach for gender data on empowerment in climate adaptation projects: Case study in Ghana (Eitzinger et al. 2022) | High | High | High | Responsive |
| Integrating Gender into the Climate Smart Village Approach of Scaling of Adaptation Options in Agriculture (CAAFS and Future Earth) (Chanana et al. 2018) | Medium | Medium | High | Responsive |
| Thematic Note 3: Monitoring and Evaluating Gender Through the CSA Project Cycle, in Gender in Climate Smart Agriculture Sourcebook, Module 18 (WB, IFAD and FAO 2015) | High | High | High | Responsive |
| Module 3, Step-by-step process to mainstream gender in climate-smart agricultural initiatives in Guatemala (Acosta et al. 2020) | High | High | High | Responsive |

2.7 Assessing gendered CRA outcomes of processes and interventions at different scales

Practical resources to assess the outcomes of CRA initiatives (e.g., CRA adoption and adaptation; immediate outcomes—capacity, practice and institutional changes and longer-term achievement of multiple goals vs trade-offs) **in terms of practices, decision-making, women’s empowerment, intrahousehold food security, and equity in ownership is a key area to understand the gender and equity.** But resources are limited in number, especially practical tools/methods. The review found 10 practical resources that could be applicable to this theme: eight in the form of guidance and two were tools/methods. Three of the resources were quantitative, three mixed methods, three mixed and participatory methods, and one qualitative.

Rigor is relatively high among the limited number of available practical resources, but usability and accessibility are relatively limited. Nine of 10 resources were assessed as having *high* rigor, and one *low*. Five resources had *high* usability; five were assessed as *medium*. The accessibility of some tools was lacking, with two scoring *low* and three *medium*.

For the gender approach, two were identified as potentially transformative, which were discussed in previous sections (Dharmistha 2021 [Box 3]; Simelton et al. 2021).

Table 8. Practical resources for assessing gendered CRA outcomes at different scales

| Resource | Rigor | Usability | Accessibility | Gender approach |
|---|-------|-----------|---------------|-------------------------------|
| Enhancing Women’s Assets to Manage Risk under Climate Change. Potential for group-based approaches (IFPRI) (Ringler et al. 2021) | High | Medium | Medium | Responsive |
| Mainstreaming gender and social differentiation into CCAFS research activities in West Africa: lessons learned and perspectives (CCAFS) (Ouédraogo et a. 2018) | Low | High | High | Responsive |
| Training manual on gender and climate change resilience (Arrow, UN women) (Dharmistha 2021) | High | High | High | Responsive/ transformative |
| A user guide to the CCAFS Gender and Climate Change Survey data (CCAFS) (Bryan et al. 2018) | High | High | High | Responsive |
| Gender Equality, M&E and and evaluation of climate services (Gumucio et al. 2018) | High | Medium | High | Responsive |
| Using natural areas and empowering women to buffer food security and nutrition from climate shocks: Evidence from Ghana, Zambia, and Bangladesh (GCAN, IFPRI) (Cooper 2018) | High | Medium | Low | Responsive |

| Resource | Rigor | Usability | Accessibility | Gender approach |
|--|-------|-----------|---------------|-------------------------------|
| Women's involvement in coffee agroforestry value chains: Financial training, Village Savings and Loans Associations, and Decision power in Northwest Vietnam (CCAFS) (Simelton et al. 2021b) | High | Medium | Low | Responsive/ transformative |
| The Gender and Social Inclusion 5Q approach for gender data on empowerment in climate adaptation projects: Case study in Ghana (Eitzinger et al. 2022) | High | High | High | Responsive |
| Thematic Note 3: Monitoring and Evaluating Gender Through the CSA Project Cycle, in Gender in Climate Smart Agriculture Sourcebook, Module 18 (World Bank, FAO and IFAD 2015) | High | High | High | Responsive |
| Module 3, Step-by-step process to mainstream gender in climate-smart agricultural initiatives in Guatemala (Acosta et al. 2020) | High | High | High | Responsive |

2.8 Analyzing the transformative potential of CRA policies and programming, or that encourage transformative CRA

No specific practical resources were found which fully focus upon transformative change in CRA and gender (note: 'transformative change' here is not to be confused with GTA). Theories are still being developed about what constitutes transformative change for sustainability. Definitions vary, but generally it refers to deep, expansive shifts in societal systems. The Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem services (IPBES) definition of transformative change, for example, is of “a fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values” (IPBES 2019, XVIII).

Practical resources are not well suited to such inherently political questions, but while more technical assessments of future pathways are covered under anticipatory and foresight work, in this section the search was more for resources which explore future, radical imaginings for rural communities relating to climate, resilience and agriculture—which would inherently address intersectionalities, but not as the entry point. The review did not find any practical resources which clearly facilitate users to understand or engage in such a transformative change approach.

Further, the increasing calls for action research (Bartels and Wittmayer 2020) and co-production approaches (Turnhout et al. 2019) from transformative change literature that purport that researchers are part of the world, rather than separated observers of facts, so there is an emphasis on 'situated knowledge' production that is of utility to participants. Hence, transformative change materials would overlap with those that promote the processes of exploring futures, imagining transformative change and creating plural values, and are less likely to be linked to specific concepts (such as CRA) or to be associated with specific tools.

3. Challenges and ethical issues

Various quality challenges and ethical issues arose in the review:

- **Some of the practical resources support extractive research or have limited articulation of the audience—suggesting weak targeting and little attention to utility.**
- **There are relatively limited online and digital resources specifically on gender and CRA.**

The ethical issues mostly pertain to gaps—for example, in tackling sensitive issues such as gender-based violence and issues of extractive research placing a burden on local communities, especially women.

Quality challenges arose in some of the practical resources:

- Some resources are very short/lacking in detail, clarity and overall quality.
- Participatory tools/methods are meant to be embedded in participatory processes, but this depends on the governance of the process. Whether a process is participatory is a broader question than the tools per se, and instead relates to who drives the research process and makes decisions within it.
- Other resources are more aimed at researchers using them in collecting data and analyzing it; these resources risk possibly being more extractive in nature. Some tools do not generate qualitative information; more mixed methods with the direct lived experiences of key actors could thus be valuable in this regard to inform the research, and without the constraints of a structured survey questionnaire designed for quantitative purposes.
- Audiences are rarely clearly articulated in the different practical resources.
- Online resources, such as the CSA guide, have broken links despite being easily accessible and presented well.
- Lack of explanation of methods and definitions or assessment categories is a gap in some resources.
- Some resources are strong on CRA content, and while they cover gender, this is done in a very limited manner (e.g., sex-disaggregated data collection only).

Possible ethical issues also arose:

- There is limited guidance in relation to specifically sensitive issues (e.g., violence against women and girls in CRA processes).
- Many of the practical resources identified appear to support more extractive research modalities; however, recognition of the value of participatory action research, co-production and transdisciplinarity in policy and applied research is growing (Bartels and Wittmayer 2018) and needs attention in terms of how to facilitate such processes, avoid failure and avoid processes of instrumentalization (Turnhout et al. 2019). As advocates of participatory research have long indicated, there are also ethical concerns about research that does not directly benefit participants in development processes.

4. Gaps and promising practical resources for adaptation

There are gaps in practical resources on gender and CRA themes and types of tools, and a general lack of information on the uptake, impact and governance of practical resources. In this section, we discuss possible resources for adaptation and gap-filling.

4.1 General gaps and opportunities

Examples of topics where few resources exist are:

- enabling environment
- anticipatory and foresight methods
- transformative change
- advisory and extension services
- assessing CRA outcomes

Intersectionality is not well integrated in a majority of practical resources. This is especially the case if intersectionality is understood as unique lived experiences resulting from multiple identities interacting with marginalizing structures, norms and narratives. Youth is one category that is sometimes included in gender and CRA resources, but the analysis is not always linked to gender (e.g., young girls, older men, and so on). There is limited differentiation by age—for example, while youth has garnered some attention, the impacts of climate on elderly women and men are neglected. Ethnicity and race are not covered, nor is disability, nor sexuality. Tackling intersectionality may add costs and require additional skills to apply the methods (to avoid an arbitrary ‘tick-box’ approach).

Digital tools could be expanded, offering significant opportunities. For example, to combine spatial mapping with social-landscape mapping, and analyze gender-related issues such as land rights, conflicts, and gender-based violence (GBV) incidence. Few digital or online tools were identified (if we distinguish between online tools and online training courses). There is huge scope to build up spatial and GIS-based tools, especially those that are open for researchers to use and even for citizen engagement. Existing tools include hotspot tools, and color-coded maps with inputs on rainfall data collected by women’s groups. Some target CSA – but do not integrate gender and intersectionality issues. Some practical resources give online platforms for users; for example: the Violence Against Women and Girls e-learning course from the University of Portsmouth; the Rural Household Multi-Indicator Survey which provides household survey questions based on international standardized indicators and a data platform for inputting data; and the OECD toolkit (2015). Online training is becoming increasingly popular and is an important way of generating and disseminating resources.

Facilitating learning: Approaches to capacity strengthening range from training to allyship—the latter about recognizing privilege and finding supportive ways to work with those that are marginalized to recognize their rights and amplify their voice and capacities. A [how-to note about social learning approaches](#) is available that was co-produced by facilitators and participants on a land rights–related learning cycle process. An online training course which supports learning about food and agriculture emergency and resilience programming is available from the FAO’s eLearning Academy. Neither are focused specifically on gender or CRA, but they have relevance in terms of how to address equitable development, including within food and agriculture systems. They could be employed and adapted to enhance

exploration of learning in ways that tackle power and privilege, rather than reinforcing such patterns—which includes consideration of who designs or facilitates learning processes, or produces knowledge, and whether tools and guidance are the most appropriate form of support. To some extent, the focus on practical resources can risk becoming a form of social disciplining (see Foucault on governmentality), closing off more politicized responses which could address the root causes of gender and intersectionality challenges (Gonda 2019). While not strictly practical resources (as defined in this study), some online facilities could be deemed part of a capacity-strengthening approach by offering space for dialogues and deliberations, as a complement to face-to-face encounters.⁷ Various guidance documents on facilitating multistakeholder learning processes are available, although those we found do not focus on gender and CRA.⁸ Transformative-change practical resources are not widely available, except for [Transformation-Lab \(T-Lab\)](#) which has provided practical guidance on innovation in socio-ecological systems.⁹

Practical resources abound in international development, and some can be adapted to support capacity strengthening for gender and CRA researchers. Many resources are not focused on gender and CRA, but we identify adaptations which could be made to the tools, methods and guidance which could render them relevant to gender and CRA researchers. It is not possible to review all the practical resources available to researchers, but drawing on the authors' own knowledge of gender and intersectionality theories and practice (e.g., researching masculinities and GBV), of international development and environment themes and intervention approaches (e.g., value chains, landscapes, extension), it was possible to identify illustrative resources and to suggest potential adaptations to expand their utility and enhance the capacity of researchers.

4.2 Value chain resources and sustainable economies

Resources were identified which, for example, explore the gender issues in value chain development programming, but do not address climate issues (e.g., FAO 2016; WEMAN et al. 2014). Updating such a practical resource is likely to be valuable for practitioners. Practical resources focused on sustainable economies overall are also needed, including feminist economic analyses, including addressing the root causes of gender/intersectional inequalities. This is because current political–economic systems (re)produce such inequalities and such neo-liberal economic systems rely upon hierarchies and patterns of exploitation which lead to unpaid care work, for example, and pools of cheap labor in poorer countries (Robinson 2006).

The [FAO elearning Academy](#) offers a free introductory, online course on developing gender-sensitive value chains: why gender is relevant to sustainable value chains, how to conduct a gender-sensitive value chain analysis, and how to address gender-based constraints.

4.3 Sustainable territories, landscape and environmental management

All landscapes involve dynamic processes of change; many landscapes are being negatively affected by increasing pressures on land resources for food, fuel, and fiber—resulting in biodiversity losses and deforestation in the humid tropics, for example. In some instances,

⁷ The value of face-to-face meetings is illustrated in the following Land Portal event post: [Post COP27: Reflecting on Donor Promises to Forest Guardians](#)

⁸ A multistakeholder social-learning approach has been facilitated in five African countries, supporting a collaborative approach to informing policies (Lamboll et al. 2021). A briefing note and academic article exist, and these could be adapted (Brouwer, Woodhill, et al. 2019).

⁹ Pathways Network. 2018. *T-Labs: A Practical Guide – Using Transformation Labs (T-Labs) for innovation in social-ecological systems*. Brighton, UK: STEPS Centre.

sustainable landscape approaches are being implemented that seek to engage multiple stakeholders to resolve land-use conflicts and produce public good (e.g., reduced biodiversity losses and restoration). However, gender and intersectionality issues are rarely considered in any significant depth—and while there are some resources which support social mapping for example, these do not address climate nor gender specifically (e.g., World Resources Institute 2018).

The Landscape Academy of the [Global Landscapes Forum](#) offers a range of free, online training courses on resilient landscapes, including: landscape ecologies, resilient and sustainable food systems for a food secure future, and gender (such as governing land for women and men). The latter course explores gender-equitable governance of land tenure, gender-equitable participation in land policymaking, legal issues for gender-equitable governance of land tenure, building gender-equitable land institutions, technical issues in land administration and management, and strategies for awareness raising and gender sensitization. The FAO elearning Academy offers free, online training courses, including some on climate-related issues such as managing climate risks through social protection, climate-smart forestry, and climate-smart crop production. No specific courses are offered about CRA, but some of the abovementioned courses have relevant content.

The FAO elearning Academy offers various gender-focused courses (e.g., on migration and gender) that do not cover CRA, and others which focus on relevant themes, but not specifically on gender or CRA (e.g., ‘Small and Medium-Sized enterprises—upgrading business models’ and ‘Sustainable food value chains for nutrition’). Broader approaches to environmental land management include FAO elearning Academy courses on forest and landscape restoration, and many of those available on Global Landscapes Forum provide useful background but do not specifically address gender and intersectionality issues.

4.4 Agricultural research and extension systems

Few practical resources were identified that support analysis and understanding of research and extension systems in agricultural development using a gender and intersectionality lens, and/or with attention to climate change and CRA. It is important that such analyses reflect upon research and agricultural advisory systems, in terms of women scientists’ representation in these systems and diversity issues. Such issues are rarely discussed in international development, but they need to be addressed as part of a gender-transformative approach to research and extension.

The FAO elearning Academy has a course on developing gender-sensitive value chains. It also provides a free, introductory course on farmer field schools—one of the most common participatory extension approaches employed in the global South—that is valuable for those seeking an introduction to farmer field schools, but it does not specifically cover gender, climate and extension issues.

4.5 Anticipatory and foresight research and development practice

This is a growth area, but practical resources on gender aspects appear to be missing as a whole—and there are even fewer that specifically consider gender and CRA. The practical resources identified vary in their approach, with some offering more conventional approaches, while others aim to support more ambitious participatory, transformative-change approaches.

The FAO elearning Academy offers a course on anticipatory action systems. In the face of growing complexities and uncertainties, anticipatory action to better prepare for, respond to and manage disasters can improve outcomes. This course explains: anticipatory action and its role in risk-management systems, ranking disaster risks and prioritization for anticipatory

action, assessing early warning information, setting up an early warning system, using a crisis timeline, prioritizing actions, creating a plan, and analyzing the impact of anticipatory action projects. The course is valuable for building climate resilience in humanitarian responses, but does not specifically address gender and intersectionality questions.

4.6 Land rights

Land rights are central for equitable development processes, particularly where pressure on resources is increasing. Toolkits exist on systemic issues such as securing land rights for women, but do not specifically include a climate (or resilient agriculture) focus (Liversage and Jonckheere 2021). There are many valuable existing resources which focus on strengthening Indigenous Peoples' and local communities' land rights, including customary and communal land rights.

The FAO elearning Academy, for example, offers multiple land rights courses (including on women's land rights, for example), but these do not cover climate and land rights issues per se, or CRA and gender—similarly for the Global Landscapes Forum. A [guidance document and diagnostic toolkit](#) is available from the International Land Coalition—the product of a collaborative, social learning process in which multistakeholder platforms and the Natural Resources Institute co-created practical resources to support engagement with and influencing of the private sector through direct and indirect pathways and actions for responsible agricultural investment. These resources are not specifically focused on gender and intersectionality, but they could be adapted.

4.7 Gender-based violence, climate security and conflict

No practical resources were found which cover security and conflict with a gender and CRA agriculture focus. Recognizing people's different (*differentiated*) experiences can help minimize risks across the security spectrum and identify opportunities for building and sustaining a more inclusive peace (UNEP et al. 2020). A scoping study providing empirical cases of "sustainable inclusive peace on the frontlines of climate change" (UNEP et al. 2020) could provide a basis from which to develop practical resources. Climate change will interact with other stressors in fragile and conflict-affected regions to exacerbate tensions which can escalate into violence. Violence is increasing against women environmental activists and defenders of environmental rights. Recognizing differentiated experiences can help minimize risks across the security spectrum and identify opportunities for building and sustaining a more inclusive peace (UNEP et al. 2020).

One resource (UNEP et al. 2020) represents a detailed scoping study that could be used as the basis for creating more practical resources. An IFPRI blog on economic security linked to violence against women and children identifies the latest research presented at the global Sexual Violence Research Initiative Forum that can provide insights into how practical resources could be developed in relation to GBV and CRA (Peterman and Ranganathan 2022). PeaceWomen (2008) offer a paid online course on gender and conflict transformation, exploring participants' experiences, rethinking conflict from a gender perspective, strategizing women as agents of change and transformation and building a constructive alternative. A paid course is also available from the University of London's School of Oriental and African Studies exploring conflict-related sexual violence. While such resources are not specifically focused on CRA, they provide an important grounding in key issues that are relevant for all contexts in which CRA interventions are promoted.

4.8 Indigenous Peoples' rights

A [free, online training course](#) is available from United Nations Human Rights Office (OHCHR) on the rights of Indigenous Peoples. The online course has two modules: understanding and applying the United Nations Declaration on the Rights of Indigenous Peoples, and

promoting and defending the rights of Indigenous Peoples. Other courses exist that focus upon Indigenous Peoples' right to free, prior and informed consent for Indigenous Peoples, guiding learners through free, prior and informed consent, regulatory frameworks, skills, and how to appropriately implement during project development and delivery (*rollout*).

4.9 Gender, CRA and migration

Climate change is anticipated to exacerbate migration pressures in combination with other stressors. CRA programming and policies may lessen migration. Outmigration processes are known to affect agriculture and gender relations, often with increased pressures on those left behind who have fewer resources to travel. The complex interactions involved require attention through more in-depth research, and practical tools/methods to support researchers and practitioners. Free, online training tools are available from the FAO eLearning Academy on various dimensions of gender, climate and migration; and although it is not specifically on gender, migration and CRA, migration as a climate adaptation strategy is clearly of relevance.

4.10 Governance and policies

GTAs often require engagement in broader governance and policy processes at territorial, national and global scales. There are multiple excellent practical resources for researchers and practitioners to diagnose policy contexts, for example, or guidance on engaging policymakers in active processes and how to facilitate multistakeholder processes (e.g., ODI ROMA 2022). However, some do not mention gender at all. An OECD toolkit (2015) is very valuable and focuses on gender mainstreaming, but could potentially be adapted even though it does not cover CRA specifically. There are clearly opportunities to create new resources in this regard. One key resource focuses specifically and quite uniquely on tackling gender norms including at national scales—the ODI ALIGN tool (2021)—and does not cover CRA, but could be adapted to do so.

4.11 Mapping vulnerability and resilience

The review did not find any practical resources which enables vulnerability and resilience mapping for CRA with a gender and intersectionality lens. One resource—Oxfam's Vulnerability and Risk Assessment methodology (Kelsey and Morchain 2018)—could potentially be adapted; it avoids preset agendas and encourages exploration of vulnerability and appropriate responses across scales. Careful thought is needed as to how to support exploration of CRA and gender in way that does not undermine locally owned participatory processes.

4.12 Challenging gender norms

Various practical resources which focus on gender norms and exploring masculinities were identified. The Gender Action Learning System (GALS) is one of the better known and is extremely relevant to any rural development interventions, including CRA ones. Other tools explore masculinities and engage men and boys for gender-transformative change—again, this could be linked more closely to CRA, or used by CRA researchers and practitioners. The resource from the United Nations Population Fund on engaging men and boys is not focused on agriculture or climate, but is an exciting manual for those working on gender-sensitive issues and seeking to change male attitudes/constructions of masculinity for progressing gender outcomes. Various resources exist to support GALS (see also section 4.2). GALS approaches can be applied at different scales to tackle gender relations, but it has often been used at the household level.

5. Conclusions

The study has found many rich practical resources to advance gender and CRA research and practice. Such resources are valuable given the complexities of building resilience to climate-related shocks and stressors in agriculture and food systems in equitable ways. There is variability in the quality of the practical resources, in terms of their scientific rigor, accessibility and usability; however, overall, the resources in this area are very good.

Most resources identified focused on household and community levels. They did not (or only minimally) engage with broader policy and/or the regulatory environment. There were fewer (but nevertheless valuable) resources available on the enabling environment and transformative change (in complex, adaptive systems).

The majority of practical resources used a gender-responsive approach. This is a positive finding that highlights that resources are moving beyond a focus on gender roles and sex-disaggregated analysis. Only a small number of practical resources were classified as *clearly* gender transformative that:

- critically examine of the root causes of inequality, norms and dynamics
- aim to achieve structural changes in power, norms and policy
- examine social differences within and between women

This may point to the primacy of instrumentalist approaches to gender in agriculture for development over and above more politicized approaches.

Intersectionality should be better integrated and given greater attention because it is neglected in the practical tools available, and it is critically important to create a full understanding of discrimination and processes of agricultural development in the context of climate. More resources are needed that focus on guiding researchers to address intersectionality properly—to draw out how different forms of inequalities, oppressions and privileges contribute to climate vulnerability, resilience and beyond, eventually bringing more sophisticated conceptualizations to the fore. Currently, many of the resources focus on specific categories, such as youth, without adequate attention to underlying gendered and intersectional social relations and processes which shape and construct experiences of, say, being young or being older. Given the importance of integrating intersectionality into practical resources, and the general tendency for gender research to overgeneralize complexities regarding identity, producing high-quality and impactful resources in this area should be a priority.

It is not easy to assess the uptake, impact and governance of practical resources. Few resources adequately explain how they were commissioned or used. The governance of practical resources (such as who produces such resources, and how much they are geared to local priorities and demand driven) requires more attention.

Promising areas which could be strengthened and gaps were identified within several themes useful for a gender and CRA perspective. This includes creating resources regarding security issues related to climate, land rights, value chain development, landscape approaches, global investment processes, national policy processes, foresight and anticipatory processes, and agricultural research and extension systems. New practical resources could be developed—including additions to existing toolkits.

There is potential for more digital tools and online learning. Most resources are presented as PDFs of reports rather than, for instance, more interactive learning tools. This is relatively basic in terms of format; however, they are relatively accessible, so these trade-offs need to be considered.

Going forward in the development of new practical resources, it will be important to prevent an overemphasis on the simplification of social complexity, particularly if the aim is usability by nongender researchers. Diversifying collaboration with civil society and social movements is one solution; however, other systemic changes may be required in research funding structures, cultures and processes to facilitate more transformative processes of inquiry (which could then be supported by practical resources).

References

- Acosta M., O. Bonilla-Findji, F. C. Howland, J. Twyman, T. Gumucio, D. Martínez-Barón, and J. F. Le Coq. 2020. *Step-by-step process to mainstream gender in climate-smart agricultural initiatives in Guatemala*. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). <https://hdl.handle.net/10568/108323>.
- Azzarri, C., and G. Nico. 2021. "Gendered Targeting of Agricultural Extension and Weather Variability in Africa South of the Sahara." *Presented at ICAE 2021*, August 30, 2021.
- Bartels., K. P. R. and J. M. Wittmayer. 2018. *Action Research in Policy Analysis: Critical and Relational Approaches to Sustainability Transitions*. Routledge.
- Bernier, Q., R. S. Meinzen-Dick, P. M. Kristjanson, E. Haglund, C. Kovarik, E. Bryan, and S. Silvestri. 2015. *Gender and Institutional Aspects of Climate-Smart Agricultural Practices: Evidence from Kenya*. CGIAR Research Program on Climate Change, Agriculture and Food Security.
- Beuchelt, T. D., and L. Badstue. 2013. "Gender, Nutrition- and Climate-Smart Food Production: Opportunities and Trade-Offs." *Food Security* 5: 709–21. <https://doi.org/10.1007/s12571-013-0290-8>.
- Brouwer, H., A. J. Woodhill, M. Hemmati, K. S. Verhoosel, and S. Vugt. 2015. *The MSP Guide: How to Design and Facilitate Multi-Stakeholder Partnerships; A Multi-Stakeholder Partnerships*. First edition. Wageningen UR, Centre for Development Innovation.
- Brown, L.R. 2018. "Aflatoxins in Food and Feed." *GCAN Policy Note 9*. IFPRI. https://gcan.ifpri.info/files/2018/07/GCAN-Aflatoxins_Note-9_web.pdf.
- Bryan, E. S., Theis, J. Choufani, A. De Pinto, R. Meinzen-Dick, and C. Ringler. 2016. "Chapter 9: Gender-Sensitive, Climate-Smart Agriculture for Improved Nutrition in Africa South of the Sahara." In: *ReSAKSS Annual Trends and Outlook Report, International Food Policy Research Institute*. Washington, D.C.: International Food Policy Research Institute (IFPRI). <https://www.resakss.org/node/6483?region=aw>.
- Bryan, Elizabeth, Chiara Kovarik, Simone Passarelli, and Katie Sproule. 2015. "Research Guide for Gender-Disaggregated Analysis of Climate Change Impacts and Adaptation." In *Food Policy Research Institute (IFPRI) and Federal Ministry for Economic Cooperation and Development (BMZ)*. Washington, D.C. and Berlin, Germany: International Food Policy Research Institute (IFPRI) and Federal Ministry for Economic Cooperation and Development (BMZ). <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/129046>.
- Buckingham, K., S. Ray, A. Gabriela Morales, R. Singh, D. Martin, S. Wicaksono, H. Chrysolite, A. Minnick, L. Johnston, and B. Arakwiye. 2018. *Mapping Social Landscapes: A Guide to Identifying the Networks, Priorities, and Values of Restoration Actors*. World Resources Institute.
- CCAFS, IFPRI, and ILRI. 2016. *Gender Household Survey*. Harvard Dataverse. <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/UJENX3>.
- CCAFS. 2015. *Climate Smart Agriculture Rapid Appraisal (CSA-RA) Prioritization Tool*. CCAFS. <https://ccafs.cgiar.org/resources/tools/climate-smart-agriculture-rapid-appraisal-csa-ra-prioritization-tool>.
- CGIAR Independent Science Council for Development. 2020. *Quality of Research in Development in the CGIAR context*. January 2020 Technical Note. CGIAR Independent Science Council for Development. https://iaes.cgiar.org/sites/default/files/pdf/ISDC_QoR4D%20Framework.pdf.
- CGIAR Research Program on Climate Change, Agriculture and Food Security, Technical Centre for Agricultural and Rural Cooperation, and Farming First. 2013. *Guide to the UNFCCC Negotiations on Agriculture*. <https://cgspace.cgiar.org/handle/10568/68845>.
- CGIAR–IEA. 2017. *Evaluation of Gender in CGIAR – Volume I, Evaluation of Gender in Research*. Rome, Italy: Independent Evaluation Arrangement (IEA) of CGIAR.
- Chanana, N., A. Khatri-Chhetri, K. Pande, and R. Joshi. 2018. *Integrating Gender into the Climate Smart Village Approach of Scaling Out Adaptation Options in Agriculture*. CCAFS Info Note. New Delhi, India: CGIAR Research Program on Climate Change.

- Colfer, C., B. S. Basnett, and M. Ihalainen. 2018. *Making Sense of 'Intersectionality': A Manual for Lovers of People and Forests. A Manual for Lovers of People and Forests*. Occasional Paper 184. Bogor, Indonesia: CIFOR. <https://doi.org/10.17528/cifor/006793>.
- Collins, A. 2018. "Saying all the right things? Gendered discourse in climate-smart agriculture." *The Journal of Peasant Studies* 45(1): 175-191. <https://doi.org/10.1080/03066150.2017.1377187>.
- Cooper, M. 2018. *Using Natural Areas and Empowering Women to Buffer Food Security and Nutrition from Climate Shocks: Evidence from Ghana, Zambia, and Bangladesh*. Washington, DC: International Food Policy Research Institute. <https://doi.org/10.2499/1032568631>.
- De Pinto, Alessandro, Gregory Seymour, Elizabeth Bryan, and Prapti Bhandary. 2019. *Women's Empowerment and Crop Diversification in Bangladesh: A Possible Pathway to Climate Change Adaptation and Better Nutrition*. International Food Policy Research Institute. <https://doi.org/10.2499/p15738coll2.133306>.
- De Lattre-Gasquet, M., B. Hubert, and J. Vervoort. 2017. "Foresight for Institutional Innovation and Change in Agricultural Systems: Three Examples." In *Sustainable Intensification in Smallholder Agriculture: An Integrated Systems Research Approach*, edited by Öborn IN, Vanlauwe I., Phillips B., Thomas M., Brooijmans R., W., and K. Atta-Krah, 130–42. London, UK: Routledge. <https://cgspace.cgiar.org/handle/10568/90278>.
- Djoudi, H., B. Locatelli, C. Vaast, K. Asher, M. Brockhaus and B. Basnett Sijapati. 2016. "Beyond Dichotomies: Gender and Intersecting Inequalities in Climate Change Studies." *Ambio* 45: 248–62. <https://doi.org/10.1007/s13280-016-0825-2>.
- Dornelles, A., E. Boyd, R. Nunes, M. Asquith, W. Boonstra, I. Delabre, ... and T. Oliver. 2020. "Towards a Bridging Concept for Undesirable Resilience in Social-Ecological Systems." *Global Sustainability* 3: 20. <https://doi.org/10.1017/sus.2020.15>.
- Duong, M. T., A. Smith, T. T. Le, E. Simelton, and M. Coulier. 2017. *Gender-Differences in Agro-Climate Information Services (Findings from ACIS Baseline Survey in Ha Tinh and Dien Bien Provinces, Vietnam)*. Wageningen, The Netherlands: CCAFS Info Note.
- Eitzinger, A., G. Nikoi, V. Slavchevska, and O. Bonilla-Findji. 2022. "The 5Q Approach for Gender Data on Empowerment in Climate Adaptation Projects: Case Study in Ghana." Wageningen, the Netherlands: CGIAR Research Program on Climate Change.
- El Didi, Hagar, Thomas Bidoli, and Claudia Ringler. 2020. *Agriculture and Youth in Nigeria: Aspirations, Challenges, Constraints, and Resilience*. Washington, D.C.: International Food Policy Research Institute. <https://doi.org/10.2499/p15738coll2.133798>.
- FAO. 2016. *Developing gender sensitive value chains – a guiding framework*. Rome: FAO. <https://www.fao.org/3/i6462e/i6462e.pdf>.
- FAO. 2021a. *Green and Climate-Resilient Agriculture*. Rome: FAO. <https://www.fao.org/3/cb6978en/cb6978en.pdf>.
- FAO. 2021b. *Making Extension and Advisory Services Work for Women*. Rome: FAO. <https://www.fao.org/3/cb8066en/cb8066en.pdf>.
- Farnworth, C.R., L. B. Badstue, M. L. Jat, M. Rai, and T. Agarwal. 2017. Integration of Gender Considerations in Climate-Smart Agriculture R4D in South Asia: Useful Research Questions. International Maize and Wheat Improvement Center (CIMMYT). <https://hdl.handle.net/10883/19183>.
- Folke, C., S. R. Carpenter, B. Walker, M. Scheffer, T. Chapin, and J. Rockström. 2010. "Resilience Thinking: Integrating Resilience, Adaptability and Transformability." *Ecology and Society* 15 (4). <https://doi.org/10.5751/ES-03610-150420>.
- Forsythe, L., J. Morton, V. Nelson, J. Quan, A. Martin, and M. Hartog. 2015. *Strengthening Dryland Women's Land Rights: Local Contexts, Global Change*. Greenwich: UNCCD, UNDP.
- Glemarec, Yannick. 2017. "Addressing the Gender Differentiated Investment Risks to Climate-Smart Agriculture." *AIMS Agriculture and Food* 2 (1): 56–74. <https://doi.org/10.3934/agrfood.2017.1.56>.
- Gonda, N. 2019. "Re-Politicizing the Gender and Climate Change Debate: The Potential of Feminist Political Ecology to Engage with Power in Action in Adaptation Policies and Projects in Nicaragua." *Geoforum* 106: 87–96. <https://doi.org/10.1016/j.geoforum.2019.07.020>.
- Hankivsky, O. 2014. *Intersectionality 101*. Vancouver, BC, Canada: The Institute for Intersectionality Research and Policy, Simon Fraser University.

- Hebinck, A., J. M. Vervoort, P. Hebinck, L. Rutting, and F. Galli. 2018. "Imagining Transformative Futures: Participatory Foresight for Food Systems Change." *Ecology and Society* 23 (2). <https://www.jstor.org/stable/26799086>.
- Herrfahrdt-Pahle, E., M. Schluter, P. Olsson, C. Folke, S. Gelcich, and C. Pahl-Wostl. 2020. "Sustainability transformations: socio-political shocks as opportunities for governance transitions." *Global Environmental Change* 63: 102097. <https://doi.org/10.1016/j.gloenvcha.2020.102097>.
- Holling, C.S. 1973. "Resilience and Stability of Ecological Systems." *Annual Review of Ecology and Systematics* 4: 1–23.
- Huyer, S., and S. Partey. 2020. "Weathering the Storm or Storming the Norms? Moving Gender Equality Forward in Climate-Resilient Agriculture." *Climatic Change* 158: 1–12. <https://doi.org/10.1007/s10584-019-02612-5>.
- Huyer, S., E. Simelton, N. Chanana, A. Abenyako Mulema, and E. Marty. 2021. *Info Note: Expanding Opportunities: Scaling Up Gender and Social Inclusion in Climate-Resilient Agriculture*. AICCRA. <https://cgspace.cgiar.org/bitstream/handle/10568/114223/AICCRA%20Info-Note-GSIScaling.pdf>.
- IDRC. 2019. *Transforming Gender Relations – Insights from IDRC Research*. International Development Research Centre. <http://hdl.handle.net/10625/57633>.
- IFAD. 2022. *Making Agricultural and Climate Risk Insurance Gender Inclusive: How to Improve Access to Insurance for Rural Women*. Knowledge Brief. IFAD. <https://www.ifad.org/en/web/knowledge/-/publication/making-agricultural-and-climate-risk-insurance-gender-inclusive-how-to-improve-access-to-insurance-for-rural-women>.
- Interagency Gender Working Group. 2017. *The Gender Integration Continuum: Training Sessions: User's Guide*. Washington, DC: Population Reference Bureau. https://www.igwg.org/wp-content/uploads/2017/12/17-418-GenderContTraining-2017-12-12-1633_FINAL.pdf.
- International Land Coalition (ILC) Learning Hub and the Natural Resources Institute. 2022. *Guide: Engaging the Private Sector in Responsible Agricultural Investments*. <https://learn.landcoalition.org/en/manuals-toolkits/guide-engaging-the-private-sector-in-responsible-agricultural-investments/>.
- IPBES. 2019. *Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Edited by E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo. Bonn, Germany: IPBES Secretariat. <https://doi.org/10.5281/zenodo.3831673>.
- Jafry, T., Sulaiman V, and R., eds. 2013. "Gender Inequality and Agricultural Extension." *The Journal of Agricultural Education and Extension* 19 (5): 433–436. <https://doi.org/10.1080/1389224X.2013.824166>.
- Jost, C., N. Ferdous, and T. D. Spicer. 2014. *Gender and Inclusion Toolbox: Participatory Research in Climate Change and Agriculture*. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), CARE International and the World Agroforestry Centre.
- Kassam, A., T. Friedrich, F. Shaxson, and J. Pretty. 2009. "The Spread of Conservation Agriculture: Justification, Sustainability and Uptake." *International Journal of Agricultural Sustainability* 7 (4): 292–320. <https://doi.org/10.3763/ijas.2009.0477>.
- Kelsey, D., and K. Morchain. 2018. *Finding Ways Together to Build Resilience: The Vulnerability and Risk Assessment Methodology*. Oxfam. <https://policy-practice.oxfam.org/resources/finding-ways-together-to-build-resilience-the-vulnerability-and-risk-assessment-593491/>.
- Kienegger, M., M. Hörlesberger, and S. Giesecke. 2015. "From Foresight to Anticipation" (PowerPoint presentation, From Foresight to Anticipation: First international conference on anticipation, Trento, November 5, 2015).
- Koo, J., C. Azzarri, A. Mishra, E. Lecoutere, R. Puskur, N. Chanana, N. Singaraju, G. Nico, and A. Khatri-Chhetri. 2022. *Effectively Targeting Climate Investments: A Methodology for Mapping Climate–Agriculture–Gender Inequality Hotspots*. CGIAR GENDER Platform Working Paper 005. Nairobi, Kenya: CGIAR GENDER Impact Platform.
- Kristjanson, P., Q. Bernier, E. Bryan, C. Ringler, R. Meinzen-Dick, and J. Mango. 2015. *Learning About Adaptation Possibilities by Talking to Kenyan Female and Male Farmers Separately*. IFPRI Publications. <https://ebrary.ifpri.org/digital/collection/p15738coll2/id/129755>.
- Lamboll, Richard, Valerie Nelson, Million Gebreyes, Daimon Kambewa, Blessings Chinsinga, Naaminong Karbo, Audax Rukonge, et al. 2021. "Strengthening Decision-Making on Sustainable Agricultural Intensification through Multi-Stakeholder Social Learning in Sub-Saharan Africa." *International Journal of Agricultural Sustainability* 19 (1): 1–27. <https://doi.org/10.1080/14735903.2021.1913898>.

- Leach, M., I. Scoones, and A. Stirling. 2010. *Dynamic Sustainabilities: Technology, Environment, Social Justice*. Routledge.
- Liversage, H., and S. Jonckheere. 2021. *How to Note: Securing Women's Land Rights*. IFAD. https://www.ifad.org/nl/web/knowledge/-/how-to-do-note-securing-women-s-tenure-rights?p_l_back_url=%2Fnl-NL%2Fweb%2Fknowledge%2Fpublications.
- Loconto, A., and E. Fouillieux. 2019. "Defining Agroecology: Exploring the Circulation of Knowledge in FAO's Global Dialogue." *International Journal of Sociology of Agriculture and Food* 25 (2): 116–37. <https://doi.org/10.48416/ijraf.v25i2.27>.
- Miller, F., H. Osbahr, E. Boyd, F. Thomalla, S. Bharwani, G. Ziervogel, B. Walker, et al. 2010. "Resilience and Vulnerability: Complementary or Conflicting Concepts?" *Ecology and Society* 15 (3). <https://doi.org/10.5751/ES-03378-150311>.
- Mungai, C., M. Opondo, and G. Outa. 2017. "Uptake of Climate-Smart Agriculture Through a Gendered Intersectionality Lens: Experiences from Western Kenya." In *Climate Change Adaptation in Africa*, edited by Walter Leal Filho, Simane Belay, Jokasha Kalangu, Wuta Menas, Pantaleo Munishi, and Kumbirai Musiyiwa. 587–601. https://doi.org/10.1007/978-3-319-49520-0_36.
- Nelson, V., J. Morton, L. Forsythe, A. Martin, and M. Hartog. 2015. *Achieving Dryland Women's Empowerment: Environmental Resilience and Social Transformation*. Greenwich: UNCCD, UNDP.
- Nelson, V., K. Meadows, T. Cannon, J. Morton, and A. Martin. 2002. "Uncertain Predictions, Invisible Impacts, and the Need to Mainstream Gender in Climate Change Adaptations." *Gender and Development* 10 (2). <https://doi.org/10.1080/13552070215911>.
- Nelson, V., L. Forsythe, and J. Morton. 2015. *Synthesis of Thematic Papers from the Series Dryland Women*. Greenwich: UNCCD, UNDP.
- Oborn, I., B. Vanlauwe, M. Phillips, R. Thomas, W. Brooijmans, and K. Atta-Krah (eds). (2017). *Sustainable Intensification in Smallholder Agriculture*. London: Routledge.
- ODI ROMA. 2021. *A guide to policy engagement and policy influence*. ODI. <https://odi.org/en/about/features/roma-a-guide-to-policy-engagement-and-policy-influence/>.
- ODI. 2021. *Advancing Learning and Innovation on Gender Norms*. ODI. <https://www.alignplatform.org/>.
- OECD. 2015. *Mainstreaming and implementing gender equality*. Toolkit. OECD. <https://www.oecd.org/gov/toolkit-for-mainstreaming-and-implementing-gender-equality.pdf>.
- Olsson, P., V. Galaz, and W. J. Boonstra. 2014. "Sustainability Transformations: A Resilience Perspective." *Ecology and Society* 19 (4): 1. <https://doi.org/10.5751/ES-06799-190401>.
- Ostrom, E. 2009. "A General Framework for Analyzing Sustainability for Socio-Ecological Systems." *Science* 80 (325): 419–22.
- Ouédraogo, Mathieu, Samuel T. Partey, Robert B. Zougmore, Mavis Derigubah, Diaminatou Sanogo, and Moussa Boureima. 2018. *Mainstreaming Gender and Social Differentiation into CCAFS Research Activities in West Africa: Lessons Learned and Perspectives*. CCAFS Info Note. Wageningen, the Netherlands: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). <https://hdl.handle.net/10568/98394>.
- Padmaja, R. and V. D. Duche. 2017. *Small Holder Farmer's Access to Extension Services: Opportunities and Constraints from a Gender Perspective*. ICRISAT. <https://hdl.handle.net/20.500.11766/6696>.
- PeaceWomen. 2008. Gender and Conflict Transformation. Online Course. https://www.irenees.net/bdf_dossier-441_en.html.
- Pelling, M. 2010. *Adaptation to Climate Change From Resilience to Transformation*. London: Routledge.
- Perez, C., E. M. Jones, P. Kristjanson, L. Cramer, P. K. Thornton Förch, and C. Barahona. 2015. "How Resilient Are Farming Households and Communities to a Changing Climate in Africa? A Gender-Based Perspective." *Global Environmental Change* 34: 95–107.
- Peterman, A., and M. Ranganathan. 2022. "How Is Economic Security Linked to Violence against Women and Children? New Insights from the Sexual Violence Research Initiative Forum 2022" in the IFPRI Blog, November 11. <https://www.ifpri.org/blog/how-economic-security-linked-violence-against-women-and-children-new-insights-sexual-violence>.
- Quisumbing, A., and N. Kumar. 2014. *Land Rights Knowledge and Conservation in Rural Ethiopia: Mind the Gender Gap*. IFPRI. <https://ebrary.ifpri.org/digital/collection/p15738coll2/id/128480>.

- Reddy, P. 2015. *Climate Resilient Agriculture for Ensuring Food Security*. New Delhi: Springer.
- Ringler, C., A. Quisumbing, E. Bryan, and R. Meinzen-Dick. 2014. *Enhancing Women's Assets to Manage Risk under Climate Change. Potential for Group-Based Approaches*. IFPRI. <https://cdm15738.contentdm.oclc.org/digital/collection/p15738coll2/id/128599>.
- Robinson, F. 2006. "Care, Gender and Global Social Justice: Rethinking 'Ethical Globalization'." *Journal of Global Ethics* 2 (1): 5–25. <https://doi.org/10.1080/17449620600677213>.
- Simelton, Elisabeth, Rachmat Mulia, Toan T. Nguyen, Tuan M. Duong, Hieu X. Le, Ly H. Tran, and Lucia Halbherr. 2021. *Women's Involvement in Coffee Agroforestry Value-Chains: Financial Training, Village Savings and Loans Associations, and Decision Power in Northwest Vietnam*. Working Paper. CGIAR Research Program on Climate Change Agriculture and Food Security. <https://cgspace.cgiar.org/handle/10568/111055>.
- Sriram, V. 2018. *How to Do Note: Design of Gender-Transformative Smallholder Agriculture Adaptation Programmes*. IFAD. <https://www.ifad.org/en/web/knowledge/-/publication/how-to-do-note-design-of-gender-transformative-smallholder-agriculture-adaptation-programmes>.
- Tam, Le Thi, Thi Thu Giang Luu, Elisabeth Simelton, Anoushka Carter, Dinh Hoa Le, and Thi Huong Tong. 2018. *Guide to Participatory Scenario Planning (PSP): Experiences from the Agro-Climate Information Services for Women and Ethnic Minority Farmers in South-East Asia (ACIS) Project in Ha Tinh and Dien Bien Province, Vietnam*. Hanoi, Vietnam: CGIAR Research Program on Climate Change, Agriculture and Food Security Southeast Asia (CCAFS). <https://cgspace.cgiar.org/handle/10568/102326>.
- Theis, Sophie, Elizabeth Bryan, and Claudia Ringler. 2019. *Addressing Gender and Social Dynamics to Strengthen Resilience for All*. Washington, DC: International Food Policy Research Institute. https://doi.org/10.2499/9780896293649_09.
- Theys, Natalie. 2018. Can women's empowerment increase animal source food consumption in flood prone areas of Bangladesh?. IFPRI Discussion Paper 1736. Washington, DC: International Food Policy Research Institute (IFPRI). <https://doi.org/10.2499/1046080804>.
- Thomas, T., Elizabeth Bryan, Jewel Choufani, Carlo Azzarri, Prapti Bhandary, Moffatt Ngugi, and Robert Buzzard. 2018. *Policy Note on the Interlinkages of Climate Change, Gender and Nutrition in Nigeria*. IFPRI. <https://gcan.ifpri.info/policy-note-nigeria/>.
- Turnhout, E., T. Metzger, C. Wyborn, N. Klenk, and E. Louder. 2019. "The Politics of Co-Production: Participation, Power, and Transformation." *Current Opinion in Environmental Sustainability* 42: 15–21. <https://doi.org/10.1016/j.cosust.2019.11.009>.
- Ulrichs, M., T. Cannon, A. Newsham, L. Otto Naess, and M. Marshall. 2016. *Climate Change & Food Security Vulnerability Assessment Toolkit*. Working Paper 108. CCAFS. <https://ccafs.cgiar.org/resources/tools/climate-change-food-security-vulnerability-assessment-toolkit>.
- UNEP, UN Women, UNDP, and UNDP/PA/IBSO. 2020. "Gender, Climate and Security: Sustainable Inclusive Peace on the Frontlines of Climate Change." In *United Nations Environment Programme, UN Women, UNDP and UNDP/PA/IBSO*, edited by S. Halle and M. Kellogg. UNEP, UN Women, UNDP, and UNDP/PA/IBSO. <https://www.unwomen.org/en/digital-library/publications/2020/06/gender-climate-and-security>.
- UNFPA. 2013. *Engaging Men and Boys*. UNFPA. https://www.unfpa.org/sites/default/files/resource-pdf/UNFPA%20Engaging%20men%20and%20boys_web-2.pdf.
- Walker, B., C. S. Holling, S. R. Carpenter, and A. Kinzig. 2004. "Resilience, adaptability and transformability in social-ecological systems." *Ecology and Society* 9 (2): 5. <http://www.ecologyandsociety.org/vol9/iss2/art5/>.
- WEMAN, Oxfam, and BMZ GIZ. 2014. *Gender Action Learning System: Practical Guide for Transforming Gender and Unequal Power Relations in Value Chains*. Oxfam. <https://resourceequity.org/record/3123-gender-action-learning-system-practical-guide-for-transforming-gender-and-unequal-power-relations-in-value-chains/>.
- Wong, F., A. Vos, R. Pyburn, and J. Newton. 2019. *Implementing gender transformative approaches in agriculture: A Discussion Paper for the European Commission*. CGIAR Collaborative Platform for Gender Research. <https://www.kit.nl/publication/implementing-gender-transformative-approaches-in-agriculture/>.
- World Bank, FAO, and IFAD. 2015. *Gender in Climate-Smart Agriculture Module 18 for the Gender in Agriculture Sourcebook*. World Bank, Food and Agriculture Organization of the United Nations, and the International Fund for Agricultural Development. <http://hdl.handle.net/10986/22983.AgrifProfocus>.
- World Resources Institute. 2018. *Mapping Social Landscapes*. World Resources Institute. <https://www.wri.org/research/mapping-social-landscapes-guide-identifying-networks-priorities-and-values-restoration>.

Appendix 1. Detailed assessment framework

| Dimensions | Open/Closed (categories) |
|--|---|
| Purpose | Description of the purpose of the practical resource (taken from explicit statements and/or implicit intentions) |
| Summary | Summary of the content of the tool |
| Organization involved | The organization or initiative that produced the practical resource |
| Type | <ul style="list-style-type: none"> tools, toolkits, specific methods guidance (e.g., info notes, working papers) other: academic papers |
| CRA and gender theme | <ul style="list-style-type: none"> anticipatory tools – foresight and scenarios enabling environment mapping vulnerability and resilience CRA agriculture innovation systems opportunities for and barriers to CRA innovation appraise specific CRA practices assess CRA outcomes transformational approaches |
| Methodology | <ul style="list-style-type: none"> quantitative qualitative mixed methods spatial participatory other; specify |
| Audience | <ul style="list-style-type: none"> researchers policymakers practitioners private sector donors community/women's organizations students/academics other; specify |
| Scale | <ul style="list-style-type: none"> individual household community national other; specify global subregion, territory, landscape |
| Pilot countries | The locations where the practical resource was tested and developed |
| Results | The results of any pilots and tests of the practical resource |
| Wider uptake/use of the practical resource | Evidence of use of the practical resource beyond pilots, especially its independent uptake and adaptation |
| Outcome of wider uptake/use | Attitudinal, behavioral and institutional change resulting from the use of the practical resource, especially beyond pilots |

| Dimensions | | Open/Closed (categories) |
|-------------------------------|--------------------|--|
| Quality | Rigor | Adheres to high-quality research and development principles/goals: <ul style="list-style-type: none"> • low • medium • high |
| | Usability | Clear definitions, clear format, practical orientation: <ul style="list-style-type: none"> • low • medium • high |
| | Accessibility | Plain language, published online, level of gender expertise required: <ul style="list-style-type: none"> • low • medium • high |
| | Approach to gender | <ul style="list-style-type: none"> • gender responsive • gender transformative • gender responsive/transformational (See Table 1) |
| Challenges and ethical issues | | Challenges noted by the practical resource's authors/this study team relating to the applicability of the tool in practice, for example, or ethical issues pertaining to their use |
| Promising approaches | | Identification of promising practical resources which could be created or adapted to fill existing gaps |
| Intersectionality | | As per Colfer et al. (2018, 2) and expanded on by Hankivsky (2014, 2). (See Table 1) |
| Use of digital technology | | How the practical resource employs digital technologies as part of the proposed methodology and/or in the delivery of the resource to the user |



Generating Evidence and New Directions for Equitable Results (GENDER) is CGIAR's impact platform designed to put equality and inclusion at the forefront of global agricultural research for development. The Platform is transforming the way gender research is done, both within and beyond CGIAR, to kick-start a process of genuine change toward greater gender equality and better lives for smallholder farmers everywhere.

gender.cgiar.org



CGIAR is a global research partnership for a food-secure future dedicated to reducing poverty, enhancing food and nutrition security, and improving natural resources.

cgiar.org