KIT Royal Tropical Institute

Typologies of Change:
Gender Integration in Agriculture & Food Security Research

A Gender Synthesis of Canadian International Food Security Research Fund Projects

Katrine Danielsen

Franz F. Wong

Dana McLachlin

Silvia Sarapura

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Mauritskade 64
1092 AD Amsterdam
Telefoon +31 (0)20 568 8711
www.kit.nl

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1. Introduction

In many respects, agriculture as a sector is ground zero for gender in development theory and practice: agriculture and rural development were Boserup's empirical base for her 1977 landmark book *Women's Role in Economic Development*. Her finding of the inconspicuous absence of the role of women in rural development policy and practice inspired an era of initiatives to integrate women in development. Subsequent critiques of these efforts swerved as an impetus to situate women's social positionings relative to that of men's within the wider contexts of development itself. What is remarkable in light of the trajectories of gender and development in theory and practice is the persistence of gender inequity across all social and economic spheres, including agriculture and food security. Today, the critical need to redress gender inequality in rural communities as well as the gender biases of the sector itself is as urgent as it was in 1977.

This gender synthesis of the Canadian International Food Security Research Fund (CIFSRF) aligns with these trajectories. This is both in terms of the program's efforts to address women's agriculture and food security needs, and also the shift in thinking about women and agriculture it represents. Currently, gender transformative approaches are seen as an opportunity to inter-relatedly improve nutrition sensitive agriculture and promote gender equality.

CIFSRF is a CAD$124.5 million research for development program implemented by Canada's International Development Research Centre (IDRC) and Global Affairs Canada since 2009. The program aims to improve food security and nutrition through applied, collaborative, results-oriented research that informs development practice. To date, CIFSRF has conducted six calls for proposals, over two phases, and funded 39 projects implemented in 24 countries by 20 Canadian organisations working in partnership with 40 southern organisations[1].

From the beginning of CIFSRF, gender integration was a key feature of the program where gender concerns have been mainstreamed throughout the research funding cycle. For example, with a gender strategy as guidance, CIFSRF included gender criteria in the funding of proposals, supported research partners with gender capacity strengthening to engender research design and implementation, and consistently collected and reported on gender data. The introduction of these gender integration features should be understood as an evolution of practice within the program: it was initially conceived with a strong commitment to targeting women that evolved to an ambition to both address current gender gaps while also addressing underlying causes of gender inequalities.

IDRC commissioned this synthesis of gender integration of CIFSRF projects[2] to categorise the different strategies that projects used to address and integrate gender and relate them to gender outcomes of the projects. As its empirical base, it draws from the eighteen agriculture and food security projects of Phase 2 of the program.

[1] Phase 1, completed in March, 2015, supported 21 large applied agriculture and nutrition research projects in 20 countries. Phase 2, launched in April 2013, focused on 18 projects in 17 countries, built on previously funded CIFSRF research and also supported new innovations to be taken to scale. They aimed to improve technology development and increase agricultural productivity; access to resources, markets and income; and nutrition.

[2] A complementary study, commissioned by IDRC, was also undertaken by KIT, Royal Tropical Institute that focuses on lessons learned from integrating gender into the CIFRSF program.

The following research questions are addressed in the synthesis:

a) What have been the different strategies applied by projects to integrate gender?
b) How can these strategies be broadly categorised? Where do the projects fit in the different categories?
c) What are the key gender outcomes from the projects?
d) What is the relationship between strategies and outcomes? Do projects with certain strategies lead to certain outcomes? What are some clear examples of this?
e) What factors have facilitated or constrained meaningful gender integration or delivering gender outcomes?
f) What can we learn from other similar projects?
g) What are the contributions of these results to the broader discourse on gender integration, and gender transformative approaches?

The paper is organised as five main sections. Section two describes the research context of gender in agricultural research for development (AR4D) while the third describes the research design including the analytical framework of the synthesis. Section four presents the main findings which is followed by the conclusion and recommendations in Section five. Annex 1 provides a list of second phase CIFSRF projects, Annex 2 presents illustrative examples of CIFSRF gender strategy application and Annex 3 of gender outcomes achieved. Box 1 below provides definitions of some key gender concepts used in the paper.

Box 1 Definitions of gender integration concepts

Gender mainstreaming: Integration of a gender perspective into the preparation, design, implementation, monitoring and evaluation of policies, regulatory measures and spending programs, with a view to promoting equality between women and men, and combating discrimination (EIGE 2018). Although often used interchangeably with gender integration, gender mainstreaming is often more encompassing and includes addressing organizational change and workplace gender issues (Plowman 2000)

Gender responsive research: Research responsive to the needs and demands, constraints and opportunities of men and women alike (CGIAR 2015)

Gender aware policies and programs: Deliberately examine and address anticipated gender related outcomes during both design and implementation (IGWG 1997)

Gender exploitative approaches: Intentionally or unintentionally reinforce or take advantage of gender inequalities and stereotypes in pursuit of project outcome, or whose approach exacerbates inequalities (IGWG 1997)

Gender accommodating approaches: Acknowledge but work around gender differences and inequalities to achieve project objectives. May result in the short term realize benefits and outcomes for women but does not attempt to reduce gender inequality or address the gender systems that contribute to differences and inequalities (IGWG 1997)

Gender transformative approaches (GTAs): Seek to transform gender relations to promote gender equality by: i) fostering critical examination of inequalities and gender roles, norms and dynamics, ii) recognizing and strengthening positive norms that support equality and an enabling environment, iii) promoting the relative position of women, girls and marginalized groups, and transforming the underlying social structures, policies and broadly held social norms that perpetuate gender inequalities (IGWG 1997).

2. Gender Integration in Agriculture Research for Development: Shifting approaches

In their introduction to the 2017 Agriculture for Development journal's special edition on women in agriculture, editors Okali and Bellwood-Howard (2017: 6) assert that "the policy and political context of the contemporary discourse on women in agriculture" is gender mainstreaming that "privileges women". This aptly characterizes CIFSRF efforts to promote gender equality through the integration of gender concerns in agriculture and food security (AFS) research.

This synthesis is an example of a shift in gender integration literature from "*why"* gender should be integrated or "*how"* to integrate to "*what"* works (Njuki, Parkins et al. 2016, Petesch, Badstue et al. 2017). Organisations struggle with identifying not only entry points but also how to make gender integration efforts more systematic (Njuki 2016) and impactful given the particular sticky-ness of gender inequity (IBRD/The World Bank 2011).

Integrating gender concerns in mainstream development policy and practice, which was popularised in the mid-1990s, represented an earlier shift in thinking as a response to the fallacy of integrating women in development (Moser 1989, Rathgeber 1990), the dominant policy response informed by previously mentioned insights by Boserup. Still, gender mainstreaming has generally failed to live up to expectations of feminist aspirations for social transformation (Cornwall, Harrison et al. 2004). And while calls for more systemic analysis of and structural approaches to addressing gender inequity pre-date the popularization of gender mainstreaming (for example, see Benería and Sen 1981), interest in addressing these through agriculture development is relatively recent.

In particular, gender transformative approaches (GTAs) in AR4D is indicative of this interest in systemic approaches and the shift from why and how to what works and addresses "second generation challenges" (Nazneen et al. 2011, cited by Kantor 2013) of gender integration. Tackling these challenges requires approaches that go beyond instrumentalist interventions to deal with social structures of power, which are directly related to the relative social positionings of women and men. For proponents of GTAs and those interested in the "*how*", GTAs are a source of inspiration and promise (Farnworth, Sundell et al. 2013: 122). They raise new and different types of questions, which indicate a shift in understanding the epistemological basis for how women in agriculture has been researched.

This interest is in part due to the limits of gender integration approaches to address the basis of gender inequity (Kantor 2013, McDougall, Cole et al. 2015) and a questioning of what gender is being integrated into. Is it about integrating gender in ways of thinking about and undertaking AR4D currently being practiced? Agriculture research, since the 1990s, has primarily been concerned with specific interventions to fill identified gaps, often described in terms of men and women's differences in access of resources (Okali and Bellwood-Howard 2017) where gender is narrowly understood as a variable (Alsos, Hytti et al. 2013). This emphasis lends itself well to the dominant approach that focuses on reducing what are often the most visible gaps, but ignore and therefore leave intact, the foundations of gender disparities (Njuki 2016).

The sector's "technical" nature is also a limiting factor of gender integration in AR4D for they alone will not improve the sector's outcomes (Kantor 2013). For example, improving productivity by focusing on access to inputs ignores the "additional gender barriers that must be overcome to maximize effective use of these inputs to achieve equal productivity" (Taukobong et al. 2016: 1505). Moreover, the technical and linear approach inherent of such strategies also overlook how gender is constructed, such as through dominant norms, and how gender inequity is reproduced through implicit bias (Alsos, Hytti et al. 2013).

GTAs attempt to address not just symptoms of gender inequality, as manifested in attempts to reduce gaps, but also their causes (Kantor 2013, Kantor and Apgar 2013, Njuki 2016). When thinking about underlying causes, a more holistic, relational and systemic analysis is needed. For the CGIAR Research Program on Aquatic Agricultural Systems (AAS) program, one of the pioneers to adopt GTAs to agriculture research, they frame the "problem" differently by focusing on social institutions and the formal and informal rules of the game, which produce and reproduce these rules as norms and attitudes (Douthwaite et. al 2015).

The implications for such framing are clear, "there is a need to embrace the complexity and diversity involved in gender relations, to avoid emerging with overly simplistic conclusions" (Okali and Bellwood-Howard 2017: 2). And this is where GTAs speak to what has been known for years (Taukobong et. al 2017): the need to situate analysis within particular contexts in order to account of a "complex and nuanced" view of social relations of gender (Okali and Bellwood-Howard, 2017: 6). Moreover, there is a need to acknowledge the dynamic nature of specific contexts where the only constant is change (Taukobong et. al 2017). As a result, programming should recognise the critical importance of context rather than looking for universally generalisable gender prescriptions.

This requires recognizing not only different pathways to change (Njuki 2016, Pathways to Empowerment 2011), but that the pathways themselves can change. So rather than focus on positivist paradigms of change, where paths of change are seen as map-able and cause and effect relations clear, those understanding change processes as contextual, relational and multi-faceted, and therefore change itself as heterogeneous and dynamic, focus on facilitating factors or conditions, drawing in part on positive deviance (Wong 2013), which itself represents an epistemological shift.

And this is where GTAs and particular understandings of women's empowerment can converge. Both can be concerned with transforming social relations of gender, as relations of power, to not only be more equitable but to also change their essence by adopting different notions of power, which lend themselves to inclusiveness and equity.

Both GTAs and women's empowerment approaches privilege processes that facilitate critical reflection of and engagement with social structures and social institutions that maintain dominant power relations. For example, participatory research can encourage critical self-reflection as well as acknowledge and value different ways of knowing and forms of knowledge, both as a validating experience as well as a way to dismantle dominant epistemologies. In this sense, GTAs and approaches to promote women's empowerment can both be enabling processes of individual and collective agency, where the latter puts more emphasis on enhancing capacity for intentional action, expression of voice and influencing and making decisions. By extension women's empowerment is often concerned with expanding choice - women's and girls' abilities to make and influence choices that impact their lives - and voice, which is the ability to speak up and be heard (Kabeer 1999).

Where they diverge is their emphasis of who benefits from these processes. Women's empowerment clearly focuses on women whereas GTAs are meant to benefit all members of society. Still, many women's empowerment approaches recognise the importance of working with men, particularly those that understand gender as a social relation and recognize the need to engage power brokers in the transformation of power and power relations.

GTAs and women's empowerment approaches can also differ in how they are understood. Conceptualizing women's empowerment purely in terms of enhancing women's agency, without paying attention of the structural and relational aspects of gender inequity and women's

subordination, is akin to solely focusing on increasing women's access to resources. In this sense, such understanding is the antithesis of GTAs.

Still, there is a likely argument to be made that women's empowerment is critical to GTAs; given relative power imbalances, GTAs cannot start with the assumption of a level playing field. Some GTAs proponents, however, reject notions of women's empowerment (Kantor and Apgar 2013), but more for what they have come to be known for and how they have been practiced in the mainstream rather than the actual notion itself.

Where GTAs and women's empowerment also converge is in their attempts to qualify how change happens when change itself is unpredictable and contextual. This sets up an ontological paradox of understanding complex social processes such as gender transformative change and women's empowerment. On the one hand, such change defies categorization given its contextual specificity. For researchers and practitioners, however, it is not very helpful to learn that what was learned is unique to that context. On the other, attempting to generalize beyond the particularities of a specific situation risks smoothing out the specifics making generalization claims too vague.

This has led to efforts to understand and typologise change not as "road-maps" but as composite scenarios to better understand what works in a particular context. For example, in their research on norms, agency and adoption of innovations in agriculture and natural resource management, Petesch et al. (2017: v) identify three scenarios - tipping point communities, climbing cases, churning cases - where "norms and agency influence innovation processes" that allow for both opportunities and risks. Similarly, in exploring whether gender inequalities and empowering women and girls improve health and development outcomes, Taukobong et. al. (2016) identify "gender-related levers" associated with specific outcomes across six sectors, which are then grouped into different categories depending on their relative relevance to these sectors. Muralidharan, Fehringer et al. (2014), in their systematic review of how gender-integrated programming influences health outcomes, identified that gender-aware programs used one or more of five identified strategies whereas transformative programs went further to influence attitudes, decision making and women's self-confidence and self-efficacy.

As stated previously, GTAs in development more generally but in agriculture in particular, are relatively new and not many AR4D projects are using them. They, however, have not emerged from a vacuum but rather a disenchantment with gender integration strategies and the overall disappointment with what gender mainstreaming has produced: mainly how gender, as a radical idea, has been subsumed by mainstream development discourse rendering it a technical exercise (Mukhopadhyay 2007). GTAs are more ambitious by aiming to tackle the very roots of social inequities by questioning the epistemological basis of development more generally and AR4D in particular.

The CIFSRF program offers a rich case of experience with translating the theory of GTAs into project practice. Over its nine year existence, the program's official gender approach evolved from targeting women and mainstreaming gender concerns in program implementation to explicitly pursuing a gender transformative agenda. While this shift gave direction to CIFSRF project design and implementation, and advances were made beyond gender mainstreaming, projects did not explicitly adopt GTAs.

Projects' 'gender journeys' - in the space between mainstreaming and GTAs - were influenced by many factors notably how staff, partners and project participants understood gender integration, women's empowerment and gender transformation.

Therefore to understand gender integration in this 'in-between space', between gender mainstreaming and gender transformative approaches, a new typological analytical frame is needed that captures the (potential for) transition between these approaches. And in attempting to analyse this change, this paper developed a typologies of change framework that relates the '*how*' (strategies) to the '*what*' works (outcomes), as discussed in the next section.

3. Research Design

3.1 Methodological approach

The present synthesis draws from the CIFSRF experience with gender integration to identify different strategies and relate them to different gender outcomes using a typological analytical frame. The previous section made a case for a particular analytical framing of gender integration in AR4D. On the one hand it needs to allow for understanding how different approaches to gender integration can be generalizable beyond the specificities of a particular context while, on the other, it should allow for specificities to emerge and be retained. This paradox is also present in the analytical framing of this synthesis (as elsewhere, see van Eerdewijk and Pyburn, forthcoming) given the diversity of CIFSRF research projects and their contexts.

There are numerous frameworks for categorising gender integration efforts, the most popular probably being the Interagency Gender Working Group's Gender Equality Continuum (IGWG 1997) which has been reproduced or adjusted by many development and research organizations, including those working in agriculture and food security. It is similar to Kabeer (1994) making an overall distinction between 'gender unaware' and 'gender aware', which was later elaborated upon in Kabeer and Subrahmanian (1996). What distinguishes these is that the IGWG framework is conceived as a continuum, suggesting the possibility of moving between different dimensions of gender awareness.

Frameworks differ in terms of their methodological basis of the categorization, what they categorize, and the terminologies and concepts used. While each of them has particular strengths, they are not always conducive to the heterogeneity of approaches and contexts, such as present among CIFSRF projects. For example, those frameworks with clearly delineated and mutually exclusive categories defy approaches that transcend these. A conceptual clustering approach, such as developed by Petesch et al. (2017), allows for flexibility and variation but requires detailed data-sets. This is also related to the basis of categorization and whether it is quantitative or qualitative. Other typologies, that also use delineated categories, categorize progression in level of engagement with gender issues within particular intervention themes or areas. For example there are typologies concerned with the planning and design of types of gender training and staff gender skills and capacities (UN Women 2016, EIGE 2016, Njuki 2016).

Different frameworks also differ in what they categorise. Some categorise different entities (policies, approaches or interventions), other emphasize different dimensions such as the problem being addressed (such as women's disempowerment by USAID, 2013 or different understandings of gender by Danielsen and Wong 2014) or program design and approach to gender integration (for example, see Kabeer and Subrahmanian 1996 or IGWG 1997).

There are a number of challenges in using existing categorizations for the CIFSRF gender synthesis. One concerns comparability of categories. Many frameworks speak to one dimension – such as programming, budgeting or organisational status – without allowing for these to be inter-related. Recognising gender mainstreaming more generally and GTAs in particular as multi-dimensional has long been acknowledged (Batliwala, 2007; Kantor & Apgar, 2013; Malhotra et al., 2002; VeneKlasen & Miller, 2002). It is particularly critical to include an understanding of the complexity of social relations, the role of external research and development organisations and their "discourses about their appropriate [gender] roles and responsibilities" that such organisations (re)-produce (Okali and Bellwood-Howard 2017: 6).

Another challenge is the suitability of existing typologies. A number have been developed in contexts of previous eras of gender mainstreaming when addressing gender issues was less accepted or not always intentionally included, such as the case of Kabeer (1994) and IGWG (1997). Generally speaking, given that CIFSRF was implemented in the period of "second generation challenges", naming projects as "gender unaware" (for example, see Kabeer and Subrahmanian 1996 or IGWG 1997) is not the most informative or useful. In fact, it was the recognition of the persistence of gender unaware programming that served as the impetus for CIFSRF to integrate gender concerns from its inception and all CIFSRF projects can be considered gender aware.

Hence we approached this synthesis by developing typologies from a contextualized perspective where the data itself was used to develop a framework of understanding of typologies (see Taukobong et. al., 2016 for similar approach). These are not roadmaps or fixed categories but building blocks of analysis to understand what routes CIFSRF projects have undertaken and why, and to understand, as possible, the results achieved and the inter-relationships between strategies and outcomes.

The synthesis draws from 'grounded theory methodology', so categories of CIFSRF gender integration strategies and gender outcomes and their interrelations were not predefined, but were built up inductively from the data set. An initial literature review provided key insights to conceptually structure the synthesis[3]. Rather than defining categories, the review assisted the researchers in "the formulation of questions addressed to" the data set (Flick 2009: 307). Which categories were applicable was based on the data, and the same counted for the relations between strategies, outcomes and factors.

3.2 Analytical framework

To allow for a nuanced analysis of the links between applied strategy and change achieved in CIFSRF projects, the analytical framework of the paper has two distinct dimensions, (1) a gender integration strategy typology and (2) a gender outcomes typology.

Gender integration strategy typology

A ***gender integration strategy*** is defined as a set of actions implemented to address identified gender inequalities and to accomplish defined goals. It usually involves a number of sub-strategies or approaches through which the strategy is operationalized. Strategies can take the form of a formal document or, in its absence, can be gleaned from actual undertaken actions, referred to as gender strategic practice.

The gender strategy typology, presented in Table 1, is based on a conceptual clustering structure and consists of eight broad categories of gender integration strategies, which are further divided into sub-categories. The first four categories cover '*research content strategies'* that directly engage with gender roles and relations and address gender concerns in the households, communities, and systems targeted by projects. The last four categories of the typology include '*research process strategies'* to enable and urge projects and their staff to work with gender in the research content.

[3] For the gender strategy typology, literature on existing typologies was reviewed including Kabeer and Subrahmanian 1996; IGWG 1997, Cornwall 2003; OECD-DAC 2004; Kabeer 2004; ILO 2007; Greene and Levack 2010; Tolhurst 2011; Meinzen-Dick et al 2011; Doss 2013; Cole et al 2014; Danielsen and Wong 2014; Land O'Lakes 2015; EIGE 2016; UN Women 2016; Njuki 2016; OECD 2016; IFAD 2017). The gender outcomes typology drew from Alkire et al 2012; USAID 2013; Cole et al 2014; IDRC 2015; Eerdewijk et al 2017; IFAD 2017; Johnson et al 2017; Meinzen-Dick 2017.

Table 1: Main and sub-categories of gender integration strategy typology

Content strategies	Process strategies
1. Recognition strategies 1.1 Gender sensitization 1.2 Male engagement 1.3 Visibilizing women's contribution	**5. Project and staff capacity strengthening strategies** 5.1 Gender training 5.2 Gender expertise 5.3 Partnering 5.4 Professional development opportunities for women
2. Redistribution strategies 2.1 Reducing labour and time 2.2 Increasing access to tangible resources 2.3 Increasing access to intangible resources	**6. Gender responsive research practice strategies** 6.1 Gender responsive design and planning 6.2 Using gender analysis as research methodology 6.3 Budgets for gender activities 6.4 Gender responsive data collection 6.5 Gender responsive monitoring 6.6 Gender responsive communication and dissemination
3. Agency strategies 3.1 Promoting women's leadership 3.2 Supporting collective action 3.3 Increasing women's decision-making	**7. Accountability strategies** 7.1 Project gender strategies 7.2 Gender responsive targets
4. Social inclusion strategies 4.1 Participatory research and priority setting 4.2 Recognizing intersectionality	**8. Evidence generation strategies** 8.1 Addressing knowledge gaps 8.2 Investigating gender strategic research questions

As indicated in Table 2, each gender integration strategy has its own understandings about

- 'the problem' in that they recognise and explain gender inequalities in different ways
- 'the approach' to address this understanding of the problem
- how change happens; 'assumptions' about the identified approaches

Table 2: Gender integration strategies: Problems addressed, solutions operationalized and underlying assumptions

Strategy category	Problems	Approaches	Assumptions
1. Recognition strategies	Women's roles and responsibilities are unrecognized and their contribution and capacities undervalued in farming house-holds and communities as well as AR4D	Making visible and valuing the different needs and responsibilities of women and men and engaging with broader context of gender norms and unequal gender relations in which needs and roles are played out. Addressing undesired effects of development activities on women's roles and status. Sensitizing communities, engaging men, and making visible negative effects of gender inequality for individuals/communitie	Awareness raising and exposure to more egalitarian models will motivate participants to change norms and behavior
2. Redistribution strategies	Women's access to tangible and intangible resources are being informed by unequal gender relations which leads to drudgery and reduced productive capacity	Improving the access and control of women to resources through extension and training, financial products and new agricultural technology. Providing opportunities for women to test, adapt and/or attain agricultural tools and technologies that improve their productivity and/or reduce their labour burden	Increased access to resources will improve productivity, food security and also the status of women
3. Agency strategies	Unequal gender power relations shape dis-empowerment and the disadvantages experienced by women, as well as their opportunities and well-being	Improving the agency of women, i.e., ability to influence and make decisions to pursue goals. Promoting women's leadership, collective action, and decision-making	Increasing women's agency increases their decision-making and improves their social status relative to men
4. Social inclusion strategies	Women face social exclusion and other barriers to meaningful participation. Their exclusion is related to intersecting inequalities of gender, class, caste and other social dimensions	Participatory research approaches allow for formally excluded women, due to inter-secting inequalities, to meaningfully participate in AR4D and priority setting.	Diverse women directly engaging with and directing knowledge generation processes translates into their being able to know and voice their interests and needs and that these are taken into account in research agendas.
5. Project and staff capacity strengthening strategies	Research projects face difficulties in moving from gender theory to practice due to inadequate gender integration knowledge, skills and attitudes of staff	Providing knowledge, expertise and skills to projects and staff to enable them to carry out gender analysis and gender responsive research, and in addition focus on promoting equal opportunities for women	Gender expertise in projects and with part-ners, and women staff will result in better gender integration and gender outcomes
6. Gender responsive research practice strategies	Mainstream research practice tends to be gender blind that leads to exclusion of gender content and ultimately poor quality of research results and outcomes	Accounting for gender equality at different stages of the research project cycle with a focus on design, planning, gender analysis, adequate funding, data collection, as well as gender responsive M&E, communication, and dissemination of research outcomes	Formal systems and procedures can promote gender equality in practice
7. Accountability strategies	Lack of accountability of projects to program level gender strategy is a serious obstacle to gender equitable benefits of development research	Developing project gender strategies with goals, accompanied by indicators for measuring progress and holding vprojects and staff to account	Gender strategies enhance staff account-ability producing gendered outcomes from gender aware research design
8. Evidence generation strategies	Insufficient evidence on gender dynamics in agriculture and inadequate evidence showing strategic benefits of gender responsive research	Closing gaps in knowledge and undertaking gender research to orient technology and market development, improve understanding of gender implications of food insecurity, including gender-based food discrimination within the household, and to enable the development of informed, people-centred solutions	Produced evidence will automatically inform project implementation and future research priority setting

Gender outcomes typology

Gender outcomes are defined as outcomes of projects that women experience as positive contributions to their well-being and empowerment, and critical stepping stones to gender transformation. The outcomes included are broad ranging from women's participation in project activities, to their access to or control over resources and benefits, to changes in gender roles, gender relations and gender norms. To capture this breath, the paper's gender outcome typology (Table 3) makes a conceptual distinction between three categories of gender outcomes: "Women Reached', "Women Accessing Resources and Benefits" and "Women's Empowerment":[4]

"Women Reached" outcomes: Gender outcomes under "Women Reached" include number of women involved in project activities as participants with a focus on women in different roles (Table 3). For example, agricultural training and extension reaches women as smallholder farmers, while nutrition education and cooking shows involve women in their roles as mothers and food-preparers. Similarly, various management trainings include women as entrepreneurs, retailers and business owners, and women consumers are targeted with particular products such as fortified foods. When projects report numbers of women reached as gender outcomes, there may be an explicit assumption that women have benefitted as a result of having participated in project activities, even if the exact benefits are not specified.

"Women Accessing Resources and Benefits" outcomes: These gender outcomes refer to women's increased opportunities and/or abilities to use resources. The typology also makes a distinction between accessing resources and accessing the benefits derived from these resources (March, Smyth et al. 1999). Seven specific gender outcomes are included that respond to different needs of women, and, in diverse contexts, related to their particular roles (Table 3). The set of resources considered is broad and includes intangible resources such as knowledge and skills (agriculture, business, nutrition) and time as well as tangible productive resources (credit, inputs, markets, technologies such as equipment, management practices, improved crop varieties, and membership in groups and organisations). Derived benefits include food, health, reduced drudgery, and income.

"Women's Empowerment" outcomes: Gender outcomes under "Women's Empowerment" involve women's strengthened capacities to make choices on their own and voice concerns that are listened to and acted on. Here unequal gender relations can be challenged as they are seen to be the basis for constraints of women. In this respect, "Women's Empowerment" outcomes are captured for their "transformatory potential" (Young, 1993: 157) to highlight entry points for GTAs.

Four specific outcomes are included (Table 3): increased control over decisions (production, nutrition, income), increased voice and leadership, enhanced status of women in roles as 'knowers' and agents of change, and positive change in social and gender norms.

The typology reflects a continuum of outcomes from 'Reached' to 'Accessing Resources and Benefits' to 'Empowered'. As a continuum, these outcomes can be inter-related. However, these inter-relationships are not necessarily a given. Projects that reach women might not necessarily deliver women benefits. And even when women benefit from a project in one or several roles, it does not automatically result in "Women empowerment" outcomes.

[4] Inspired by Johnson et al. 2017.

Table 3: Main and sub-categories of gender outcomes typology

1. Women Reached

1.1 Numbers participating in project activities
- Women farmers
- Women food preparers
- Mothers
- Women entrepreneurs
- Women workers
- Women service providers
- Women consumers
- Women groups
- Intersecting social categories

2. Women Accessing Resources and Benefits

2.1 Increased access to knowledge and skills
- Agricultural practices
- Market and business
- Nutrition and health

2.2 Increased group membership

2.3 Increased access to productive resources
- Inputs
- Credit
- Market

2.4 Increased adoption and use of new technologies
- Equipment
- Management practices
- Crop

2.5 Reduced drudgery

2.6 Increased consumption of nutritious food

2.7 Increased access to income
- Women farmers
- Women entrepreneurs
- Women workers

3. Women's Empowerment

3.1 Increased control over decisions
- Production
- Nutrition
- Income

3.2 Increased voice & leadership

3.3 Enhanced recognition and status of
- Women as knowledge-holders
- Women as farmers
- Women as entrepreneurs
- Women's care work

3.4 Change in gender norms and behavior
- Improved intra-household division of labour
- More equitable intra-household relations between men and women

3.3 Data Management

Data collection

The synthesis covers 18 projects financed by the second phase of CIFSRF (see annex 1). It is based on review of more than 180 project related documents[5], interim reports from the CIFSRF contribution analysis[6] and nine key informant interviews (KII) with 14 project staff; eight men and six women. We used a purposeful sampling approach for the KIIs where Phase 2 projects were identified using two criteria: i) projects with a gender strategy or with demonstrated strategic gender practice (i.e., elements of strategic thinking on what to achieve and how), and ii) projects with documented gender outcomes. The interviews were generally conducted with the Principle Investigators and focused on understanding the strategic thinking behind gender strategies and gender practice of projects, what gender outcomes were achieved and why, and what factors made projects successful or limited the scope of what could be done or achieved.

Data analysis

We analysed CIFSRF data in two-phases. The first included: i) reviewing project documentation using open and axial coding to document data on project gender strategies, and ii) an initial cross-project analysis, using selective coding by looking for similarities and commonalities in gender strategy approaches across projects, resulting in a typology report organised around research questions (a) and (b) (see section 1). The second phase included further in-depth review of project documentation and KII transcripts and coding data in key findings sheets for each project, and a cross-project analysis. In this phase, all data was coded using NVivo qualitative data analysis software that enabled the development of a coding tree. The first level of codes were identical with key research questions (a), (c) and (e). For question (a), second and third level codes, as a starting point, corresponded with the typology categories and sub-categories, while open coding was the starting point for (c) and (e). Synthesis findings were developed from themes under each research question by building up possible responses to research questions derived from the empirical data. Research questions were initially addressed as separate units of analysis and then re-sequenced during the final drafting of this paper, which went through several internal reviews and revisions before the final draft report was completed and submitted to IDRC for comments and revisions.

3.4 Limitations

The paper drew on available CIFSRF project documentation, including project proposals, inception workshop reports, baseline studies, gender strategies, 6-month project updates, AFS questionnaires, technical reports, promotional materials, and publications. As gender concerns were not systematically part of project reporting, robust data, especially with regard to gender outcomes achieved by CIFSRF, was scarce. Gender specific project documentation, beyond gender strategies and sex-disaggregated data on participation in CIFSRF projects and related trainings, was limited. Given these limitations in documentation, the paper drew on insights and experiences shared by interviewees. The authors are cautious about passing judgment about the impact of CIFSRF on women's lives. Without having collected data directly from women participating in CIFSRF projects, it is difficult to assess how they experienced the results of CIFSRF such as in terms of changes in access to resources and benefits, and empowerment. Moreover, without primary data collecting, claims in project reports and by informants were generally taken for face value, except in cases when no evidence was provided. In other words, the conceptual basis for such claims was not interrogated.

[5] A comprehensive list of relevant project links and documents for the gender synthesis was provided by IDRC.
[6] In 2017, IDRC also commissioned ODI to prepare a contribution analysis.

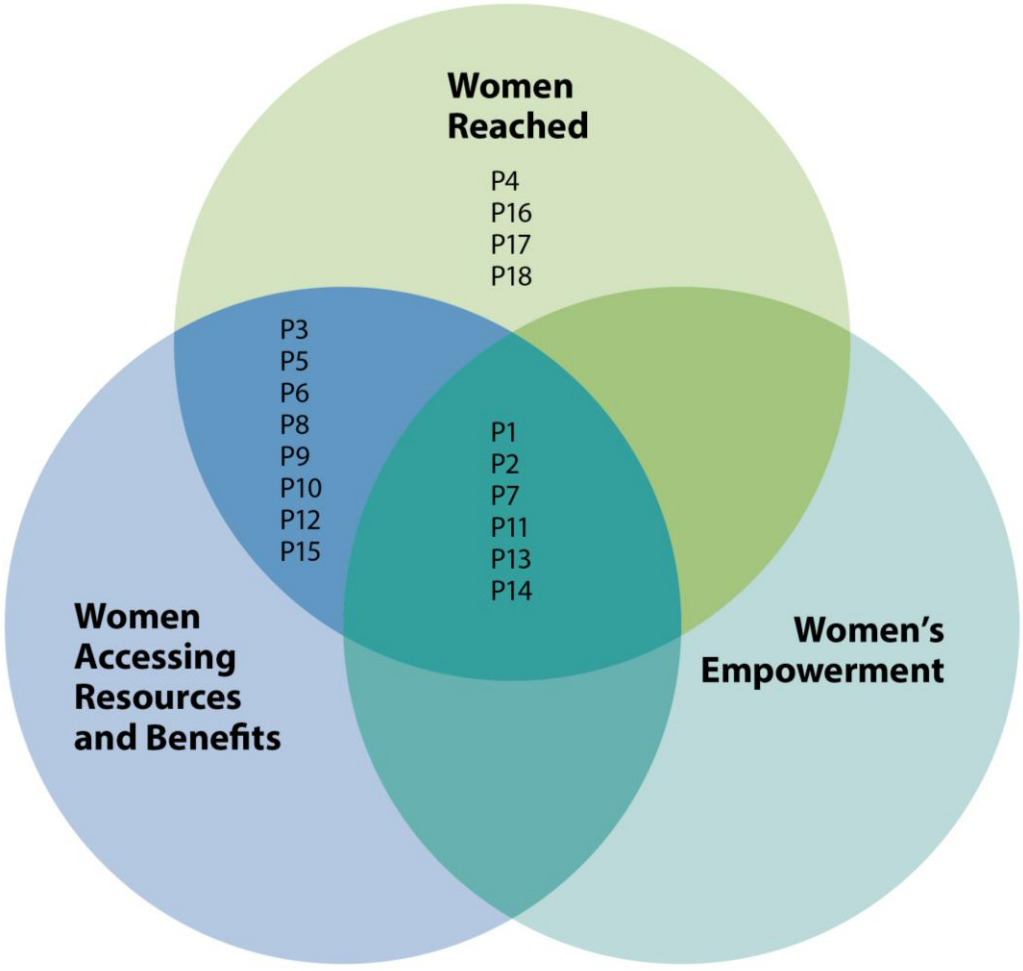
4. Main Findings

In this section we focus on how 18 CIFSRF projects have combined gender strategies and gender strategic practice to achieve particular gender outcomes.

Figure 1 illustrates which **projects** achieved which **gender outcomes**

- All projects achieved "Women Reached" outcomes[7]
- Four projects achieved "Women Reached" outcomes only (P4, P16, P17, P18)
- Eight projects achieved "Women Reached" outcomes and "Women Accessing Resources and Benefits" outcomes only (P3, P5, P6, P8, P9, P10, P12, P15)
- Six projects achieved all three categories of outcomes including "Women's Empowerment" outcomes (P1, P2, P7, P11, P13, P14)

Figure 1 Gender outcomes of CIFSRF projects



How have these gender outcomes been achieved? Our further analysis is structured by projects' achieved gender outcomes and applied gender strategies as well as interrelationships between strategies and outcomes. What gender outcomes were achieved by which strategy category is illustrated in Table 4, the same is illustrated at sub-strategy level in Table 5, and Table 6 shows project achievement of sub-outcomes.[8]

[7] Numbers refer to projects listed randomly in Annex 1, i.e., P1 means project number 1, etc.

[8] These tables draw on illustrative examples from CIFSRF projects of strategy and sub-strategy application (Annex 2) and of sub-outcomes achieved (Annex 3).

Table 4: Gender outcomes achieved and strategies applied by CIFSRF projects

No.	Project name	Women Reached	Women Accessing Resources and Benefits	Women's Empowerment
P4	Fortified Foods	2		
P17	Multipurpose Vaccine	2		
P16	Livestock Vaccine	6		
P18	Food Processing	1 2 5 6 8		
P12	Preserving Fruits		1 2 5 6 8	
P5	Agricultural Inputs		1 2 5 6 8	
P6	Fermented Food		1 2 3 5 6	
P15	Fortified Oil		1 2 5 6 7 8	
P10	Vegetable Production		1 2 3 5 6 7 8	
P3	Healthy Plants		1 2 3 5 6 7 8	
P9	Legume Technologies		1 2 3 5 6 7 8	
P8	Extension services		1 2 3 4 5 6 7 8	
P14	Crop innovations			1 2 3 5 6 7
P11	Post-harvest processing			1 2 3 5 6 7 8
P1	Agricultural Kits			1 2 3 4 5 6 7 8
P2	Homestead production			1 2 3 4 5 6 7 8
P7	Nutritious Fish			1 2 3 4 5 6 7 8
P13	Healthy Potatoes			1 2 3 4 5 6 7 8

1) Recognition strategies, 2) Redistribution strategies, 3) Agency strategies, 4) Social inclusion strategies, 5) Project and staff capacity strengthening strategies, 6) Gender responsive research practice strategies, 7) Accountability strategies, and 8) Evidence generation strategies.

Table 5: Gender outcomes achieved and sub-strategies applied by CIFSRF projects

	No.	Project name	1 Recognition strategies			2 Redistribution strategies			3 Agency strategies			4 Social inclusion		5 Capacity strategies				6 Research practice strategies						7 Account-ability		8 Evi-dence	
Women Reached	P4	Fortified Foods						2.3																			
	P17	Multipurpose Vaccine						2.3																			
	P16	Livestock Vaccine																6.2		6.4							
	P18	Food Processing	1.1				2.2	2.3						5.1	5.2			6.2								8.1	
Women Accessing Resources and Benefits	P12	Preserving Fruits			1.3	2.1	2.2	2.3						5.1	5.2		5.4	6.1	6.2							8.1	8.2
	P5	Agricultural Inputs			1.3	2.1	2.2	2.3						5.1	5.2	5.3		6.1	6.2						7.2	8.1	
	P6	Fermented Food		1.2	1.3		2.2	2.3	3.1	3.2				5.1	5.2		5.4	6.1	6.2		6.4		6.6				
	P15	Fortified Oil		1.2	1.3		2.2	2.3						5.1		5.3	5.4	6.1	6.2		6.4	6.5		7.1		8.1	
	P10	Vegetable Production	1.1		1.3	2.1	2.2	2.3		3.2				5.1	5.2				6.2		6.4	6.5		7.1	7.2	8.1	
	P3	Healthy Plants			1.3		2.2	2.3	3.1	3.2							5.4	6.1	6.2		6.4			7.1		8.1	
	P9	Legume Technologies	1.1					2.3		3.2				5.1			5.4	6.1	6.2		6.4		6.6	7.1		8.1	8.2
	P8	Extension services	1.1		1.3			2.3		3.2		4.1		5.1	5.2			6.1	6.2		6.4	6.5	6.6		7.2	8.1	8.2
Women's Empowerment	P14	Crop innovations	1.1	1.2	1.3		2.2	2.3		3.2				5.1	5.2		5.4		6.2			6.5		7.1	7.2	8.1	
	P11	Post-harvest processing			1.3	2.1	2.2	2.3		3.2				5.1	5.2				6.2		6.4	6.5		7.1		8.1	
	P1	Agricultural Kits		1.2		2.1	2.2	2.3			3.3	4.1		5.1	5.2		5.4	6.1	6.2	6.3	6.4	6.5	6.6	7.1	7.2	8.1	8.2
	P2	Homestead production	1.1	1.2	1.3	2.1	2.2	2.3			3.3	4.1	4.2	5.1	5.2	5.3	5.4	6.1	6.2	6.3	6.4	6.5		7.1		8.1	8.2
	P7	Nutritious Fish		1.2	1.3		2.2	2.3	3.1	3.2		4.1		5.1	5.2	5.3	5.4	6.1	6.2			6.5	6.6	7.1		8.1	
	P13	Healthy Potatoes	1.1	1.2	1.3		2.2	2.3	3.1	3.2	3.3	4.1	4.2	5.1	5.2	5.3		6.1	6.2	6.3	6.4	6.5		7.1		8.1	

1) Recognition strategies
2) Redistribution strategies
3) Agency strategies
4) Social inclusion strategies
5) Project and staff capacity strengthening strategies
6) Gender responsive research practice strategies
7) Accountability strategies
8) Evidence generation strategies

1.1 Gender sensitization
1.2 Engaging men
1.3 Visibilising women's contribution
2.1 Reducing labour and time
2.2 Increasing access to tangible resources
2.3 Increasing access to intangible resources
3.1 Promoting women's leadership
3.2 Supporting collective action
3.3 Increasing women's decision-making
4.1 Participatory research and priority setting
4.2 Recognizing intersectionality
5.1 Gender training
5.2 Gender expertise
5.3 Partnering
5.4 Professional development for women
6.1 GR design and planning
6.2 Gender analysis as methodology
6.3 Budgets for gender activities
6.4 GR data collection
6.5 GR monitoring
6.6 GR communication and dissemination
7.1 Project gender Strategies
7.2 Gender responsive targets
8.1 Addressing knowledge gaps
8.2 Gender strategic research questions

Table 6: Achievement of "Women Accessing Resources and Benefits" and "Women's Empowerment "sub-outcomes by project

		Women Accessing Resources and Benefits							Women's Empowerment			
		Resources				Benefits						
Project		2.1 Access to knowledge	2.2 Group membership	2.3 Access to productive resources	2.4 Adoption and use of technologies	2.5 Reduced drudgery	2.6 Nutritious food	2.7 Access to income	3.1 Control over decisions	3.2 Voice and leadership	3.3 Enhanced recognition and status	3.4 Change in gender norms
P12	Preserving fruits	X			X			X				
P5	Agricultural inputs	X		X		X		X				
P6	Fermented food	X	X		X		X	X				
P15	Fortified oil	X					X	X				
P10	Vegetable prod.	X	X	X	X							
P3	Healthy plants	X	X	X				X				
P9	Legume tech.	X	X									
P8	Extension services	X	X									
P14	Crop innovations	X	X	X	X		X	X	X		X	
P11	Post-harvest	X	X		X	X	X	X			X	
P1	Agricultural kits	X			X	X		X			X	
P2	Homestead prod.	X		X	X		X	X	X		X	X
P7	Nutritious fish	X	X	X	X		X	X	X	X	X	
P13	Healthy potatoes	X	X	X	X		X	X	X	X	X	X

4.1 Projects with "Women Reached" outcomes

Outcomes achieved by "Women Reached" projects

All CIFSRF projects achieved "Women Reached" outcomes (Figure 1). They reached women in different and multiple roles determined by the project's focus. For example, projects highlighting nutrition were more likely to reach women in their roles as consumers, mothers and/or food-preparers. Projects focusing on improved access to resources, markets and inputs were more likely to reach women as farmers, entrepreneurs, business-owners, and/or workers.

The targeted roles of women, and thus the specific "Women Reached" outcomes achieved, reflect a particular understanding of women's roles underlying the projects' gender practice. Some projects, focusing on developing women's capacity for food production, distribution, and consumption, reached women in commonly-accepted social reproduction gender roles with, for example, nutrition education and recipe demonstrations (P4, P15, P18). Others explicitly recognised women as farmers and knowledge holders, and involved them in the testing of agricultural innovations as legitimate research partners (P1, P2, P7, P13). Additionally, two projects worked with how the disadvantages women face depend on how gender intersects with other social identities such as class, ethnicity and age and developed specific project interventions to these take into account (P7, P13).

These differences illustrate how the potential for contributing to social change processes and outcomes was influenced by the ways in which women were framed or perceived as objects of change or change-agents, or as a homogenous group or heterogeneous individuals. They also point to working with women based on different understandings of their gender needs that arise from women's common experiences as a gender (Molyneux 1985). Projects focusing on social reproduction were concerned with needs emerging from an understanding of "practical gender needs" and dominant gender division of labour in food security. Those projects recognising women as farmers in their own right spoke to "strategic gender interests" and addressed the overall invisibility of women in agriculture production and AR4D.

Nevertheless, a deliberate effort to target and involve women overall in project activities can be a major step forward for women farmers in local contexts, although this represents a modest ambition. As a project field report from the CIFSRF contribution analysis noted: "respondents felt that the inclusion and deliberate selection and singling out of women to participate was a big positive change from previous agricultural extension projects […] where women were expected to *pick up* information from their husbands who were *expected to attend training*" (ODI, 2017: 23. Our emphasis).

Strategies used by "Women Reached" projects

Four projects achieved "Women Reached" outcomes only (Figure 1). What is common to these projects is that they developed or provided products for the market (animal health products, fortified food) but without substantive strategies beyond market availability to address gender dimensions of product use or technology adoption and distribution. The projects applied redistribution or gender responsive research practice strategies, or a limited combination of strategy categories (Table 4). Three projects used only one sub-strategy (Table 5): two provided training and while there is no sex-disaggregated data available women are likely to have participated (P4, P17). P16 conducted a base-line gender analysis but with little evidence of how gained gender related insights informed project implementation. P18 used similar sub-strategies in combination with efforts to develop gender capacity of project staff, and it furthermore had the strategic intent of linking women farmers to the market and produce gender knowledge. Other projects also used

these strategies, but often applied a greater variety of strategies and produced greater documentation regarding women's benefits; see next section for a full discussion. In the case of projects that achieved “Women Reached” outcomes, however, they employed a very narrow range of gender strategies.

Main take-aways from “Women Reached” projects

“Women Reached” projects:

- understood the purpose of integrating gender as ensuring a better gender balance and counting men and women.
- focused narrowly on women as recipients of information and technologies without acknowledging their roles as legitimate knowledge holders and brokers, and made assumptions that reaching women by involving them in project activities would be sufficient for women to benefit.
- developed and made products available in the market, and assumed women would automatically benefit without prior investigation of gender based barriers to product use, adoption and distribution that are in part a result of how the market works.
- worked within the status quo of social relations of gender and, as a consequence, likely reinforced the dominant gender relations with men being privileged as heads of households and the main and only recognised knowledge brokers (Danielsen and Wong, 2014).

4.2 Projects with "Women Accessing Resources and Benefits" outcomes

Outcomes achieved by "Women Accessing Resources and Benefits" projects

Fourteen CIFSRF projects achieved "Women Accessing Resources and Benefits" outcomes (Figure 1). Within this outcome category, seven sub-outcomes were achieved (Table 6), and we distinguish between women accessing resources (knowledge, groups, productive resources, technology) and women accruing benefits from such access (income, food consumption, reduced drudgery).

All projects in this category increased women's access to **knowledge and skills**. For example, P1 published a comprehensive picture book of best agriculture management practices for subsistence farmers, created and tested with female farmers and published to assist illiterate women farmers in particular (150 lessons, about 190 pages). In P10 women gained seed production skills, and P11 reported improved business management skills for women-run micro- and small enterprises. Also nutrition knowledge increased due to CIFSRF projects. P14's education and training programs reached more than 23,000 women and final results showed significant changes: "two sample t-test showed significant increase ($p<0.001$) in knowledge, attitude and practice in mean scores of school age children about pulse preparation and consumption" (P14 2018). And, P15 increased consumer awareness about health benefits of fortified-oil's for women.

Seven projects improved women's access to **productive resources** such as P5 that increased women's access to agricultural inputs by introducing a 'cascade agriculture finance model', which enabled women to purchase on credit. Access to **group membership** was also increased; for example, P3 registered 300 women in women's groups, and P6 supported women's group-operated kitchens. Also, P7 supported the establishment of 14 fishing associations and 12 aquaculture associations with women in leadership positions, and P14 the establishment of three women farmer's primary cooperatives. P8 and P9 increased the uptake of women's concern's in agricultural extension by organising and working together with women radio listening groups, as explained by an informant: "*women listen as a group and they share feed-back with the radio stations afterwards […] we will call on them to integrate what they have to say on the radio programs, for example a topic that will need to be addressed for them to implement a special practice or technology or some specific concerns they have*"[9]. With new knowledge, skills and resources, women were able to adopt and use **new agricultural technologies** especially when the technology designs took women's needs into account or involved women in their development, such as P11 which worked with women farmers to develop and test a de-hulling prototype.

By improving women's access to resources projects contributed to women being able to derive different benefits from their project participation, the first and foremost being increased **income**. For example, P2 reported an increase in income earned by women farmers because of home-gardening introduced and supported by the project, and P7 improved income from aquaculture with a reported increase in yearly earnings from 7,705 USD/year to 19,079 USD/year for participating families (P7 2018). Also P11 vendors realized an increase in monthly income from 30 to 45 USD (P11 2018), and P12 reported 12-17 days of additional employment for women during the cropping season as well as an increased income by approximately 385 USD per acre due to project participation (P12 2018). Women entrepreneurs and business-owners participating in CIFSRF projects also increased their income, such as the women-owned yogurt production units in P6 and women sunflower oil retailers in P15. And P5 increased women's access to income from employment (i.e. 54% of assistants working in project-supported shops were women).

[9] All quotations are from KIIs with CIFSRF project staff unless otherwise noted.

Increased **consumption of nutritious food** was the second most common benefit from CIFSRF projects, particularly for women and children. For example, P2 achieved positive changes in child feeding practices and improved consumption of vegetables and fish by women in particular. Similarly, other projects reported that women and children increased their consumption of yogurt (P6), millet (P11) and potatoes (P13). P7 reported a significant increase in fish consumption of 12 kg of more fish per family per year (P7 2018). For P14 an analysis of anthropometric measurements showed that the mean Diet Diversity Score (DDS) for children was significantly ($P<0.001$) improved from 2.78 (0.96) to 3.60 (1.10) (P14 2018). Also P15 contributed to reducing women's vitamin A deficiency, as "between baseline and end-line household surveys, there was statistically significant increase in retinol binding protein level in blood samples from both mothers and children … (i.e. a reduction in vitamin A deficiency). The intervention areas overall had a significant increase, which did not occur in the control regions for either mothers or children" (P15 2017).

And thirdly, three projects **reduced time-burden and drudgery** of women. To that end, P5 introduced small stores in rural areas close to and accessible by women smallholder farmers, reducing women's shopping and travel time. P1 developed various equipment, where hand-held corn shellers saved each farmer 36 hours of labour per season, and millet threshers reduced the time needed to thresh millet by 50 %, equivalent to about 55 hours saved a year (P1 2018). And P11 introduced de-hulling machines, which reduced women's drudgery in processing operations ranging from 75 to 120 minutes per session (P11 2018). The introduction in P1 and P11 of this new equipment, and in the case of P10 of fertilizer applicators, also increased men's involvement in laborious tasks usually done by women. As a study informant shared: "*men who are there in the villages are interested in machines so if it was done by women in the past, when there is a machine, men are sharing hands*". While this relieved women, it is also possibly an example of capture of technology by men (VeneKlasen and Miller 2002, Batliwala and Pittman 2010), and suggests that strategies are needed to monitor and safeguard that women benefit equitably from new technologies.

Strategies used by "Women Accessing Resources and Benefits" projects

Eight projects achieved "Women Accessing Resources and Benefits" outcomes but not "Women's Empowerment" outcomes (Figure 1). In terms of strategy use, a common feature was their inclusion of redistribution strategies to address gender inequalities in resource access (Table 4 and 5). All included sub-strategies to increase access to intangible resources whereas six also worked to increase access to tangible resources (i.e., provision of services, inputs and technologies, as well as trainings and demonstrations). Another commonality was that they applied recognition strategies to address the lack of recognition of women as farmers and entrepreneurs where almost all visibilised women's contribution in food and nutrition security with some project combining this with gender sensitization (i.e., P8, P9 and P10) or engaging men (i.e., P6 and P15).

Four projects also used agency strategies, particularly by creating or supporting women's groups/enterprises run by groups of women and improving access to knowledge and skills of members (P3, P6, P8, P9, P10). Of these, two also supported women to take leadership positions in project supported businesses (P6) or field schools and plant clinics (P3). This particular combination of collective action and increasing access to resources is particularly strategic when working with groups of women to strengthen their access to intangible resources such as solidarity, united strength and strength in numbers (Kabeer 1999, Klugman et al. 2014).

Projects that achieved "Women Accessing Resources and Benefits" outcomes also combined gender content strategies with gender process strategies. All employed capacity strengthening strategies

and many provided staff gender training, on topics such as gender analysis frameworks and approaches for working with women farmers. Projects employed gender experts (P6, P10, P12), while others provided professional development opportunities for women staff and scientists, by promoting women scientists on the research team (P3, P12) and supporting female researchers pursuing higher education as part of the project (P6, P12).

These projects also employed gender responsive research practice strategies, of which the most common was producing extensive gender analysis reports. While the extent to which these reports informed project design and implementation was not evident, most of these projects still demonstrated gender responsive research design and planning and collected gender disaggregated data, and some in addition applied gender responsive M&E (P8, P10, P15) and communication and dissemination (e.g., P6 produced a film and P8 and P9 created interactive radio to challenge gender stereotypes).

Half of these projects (P3, P9, P10 and P15) developed a gender strategy to guide gender work and hold staff accountable. These strategies shared a similar focus on understanding the gendered context of the project, and most focused on how and when women would be included, but often contained little practical detail of strategy operationalization. Also, a few projects defined gender targets to measure progress on gender outcomes, though most of these targets were limited in scope to the number of women involved (P5, P8, P10).

Overall, compared to the four projects that achieved "Women Reached" outcomes only, the eight projects that also achieved "Women Accessing Resources and Benefits" outcomes had a greater awareness of the social and gender dimensions of technology development and adoption. Several had specific strategies to ensure that women were involved in the design of innovations and that women could access them. For example, P10's fertilizer application technology included an applicator designed with feedback from women farmers and the project partnered with women's savings groups to distribute the technology and train women how to use it.

Projects under this outcome category realized the advantages for project implementation of taking women's needs into account and thus changed women's access to resources and benefits. They did not however, explicitly address additional, often social norm-based gender barriers that must be overcome for women to effective use resources and control accrued benefits (Taukobong 2016). Also, they did not seek to transform gender relations, which, was attempted by a number of other projects, as discussed in the next section.

Main take-aways from "Women Accessing Resources and Benefits" projects

- By targeting women with specific interventions that addressed women's needs - such as technology design that was sensitive to women's lives - "Women Accessing Resources and Benefits " projects increased women's access to various resources including knowledge, groups, productive resources and agricultural technologies.
- "Women Accessing Resources and Benefits" sub-outcomes were distinct and also contributed to each other in various ways. Some gender outcomes were about access to particular resources such as knowledge and productive resources. Achieving such outcomes were essential for accessing other resources, for example improved knowledge and access to credit were needed for women to adopt certain agricultural and nutritional innovations.
- Access to resources did not guarantee access to benefits, including income, food or reduced drudgery. While all projects improved women's agriculture knowledge and skills, as this was

relatively easy to achieve with training, and to various degrees access to other resources, not all projects achieved benefits for women.

4.3 Projects with "Women's Empowerment" outcomes

Outcomes achieved by "Women's Empowerment" projects

Six CIFSRF projects achieved "Women's Empowerment" outcomes in addition to "Women Reached" and "Women Accessing Resources and Benefits" outcomes (Figure 1). Within this outcome category, four sub-outcomes were achieved, i.e., increased recognition, control over decisions, and formal leadership as well as change in gender norms (Table 6).

All six projects enhanced how different actors **recognised women** in different roles and functions and contributed to an increase in women's self-esteem and social status, albeit to varying degrees in different contexts. Project staff and researchers recognised and valued women as agriculture *knowledge holders* and legitimate research partners, illustrated by P1 and P13 where staff and women farmers tested agricultural innovations together and women's insights informed project strategies for taking selected innovations to scale. Both projects also reported as an outcome of their participatory research, women recognising themselves of being farmers. Relatedly, an increase in the recognition of women's *productive roles* **-** by men and communities, and in organizations and government - was also brought about by the projects. For example, by visibilising the productive role of women in the fisheries value chain, P7 increased women's participation in fish farmer organizations and access to capacity building and management training, which in turn improved women's status in fish farming families and formal leadership in fish farmers organisations (P7 2017). P11 improved the performance of women entrepreneurs in the informal sector and ensured they met requirements for formal government registration, which the project then helped the women to obtain. This recognition contributed to greater bargaining power vis-a-vis customers and increased self-esteem. Projects also increased household and community recognition of women's reproductive roles including the critical role women play as food preparers and as mothers. In P2 and P13 this came with an increase in the recognition and understanding of the (monetary value) of *women's care work* by men. And this is where a project epitomized the conversion of understandings of gender transformative approaches and women's empowerment: P13 explicitly focused on the social context of production and the causes of gender inequality (Kantor 2013, Kantor and Apgar 2013, Njuki 2016). Men and women were encouraged to critically examine social structures and social institutions that maintained dominant gender relations, and what Okali and Bellwood- Howard (2017) refer to as the contradictions within the framing of women and men. A study informant described how eye-opening this experience had been for male participants and quoted one of them: "*what I make in a month would not be enough to pay for the work of my wife*". Such recognition from men could have substantial effects on women's and men's lives, and likely contributed to P13's success in challenging prevalent "macho" culture and improving relations between men and women participants with, according to study informants, less domestic violence by men observed, with benefits for all members of the involved communities.

Four projects also increased **women's control over resources and benefits, and participation in decision-making** (P2, P7, P13, P14). For example, P7 reported more equitable household level decision-making: "75% of households said that the matriarch was an equal contributor to the decision to start fish farming and 83% stated that women are involved as equals in decisions to build new ponds. Both activities are not simple tasks but evidence of key household decision-making" (P7 2017). P2 strengthened women's influence on food production-related decisions, with an explicit focus on women in homestead vegetable production, and learned that increased control over production positively influenced what food was consumed in the household. As explained by an informant: "*The project improved women's influence on what is produced and consumed because they are leading the production*". Women's influence on intra-household food decision-making was

also attributable to their increased contributions to household expenditure, with P13 reporting the "*redistribution of decision-making from men to women of what food to buy and consume*" due to women's increased access to income. This link was also observed in P2, as explained by a study informant: "*as [women] generate more income from excess produce it elevates their position in the household… and influences the overall participation in decision making and household expenditure*". This suggests, however, that a condition for women's strengthened control was not increased income alone, it also depended on the statues of the income, which in the P2 example, was derived for an unplanned additional resource.

From P14, and to a lesser extent P2, there is evidence of the context-specific conditions under which women derived control over resources or benefits (Taukobong 2017). While P14 reported women's increased decision-making regarding production, marketing and consumption of grown crops, this control was limited to produce from the homestead or on smaller plots of land that men farmers were not interested in. As shared by a study informant: "*women make the decision [because] it is only 2 kilos [of seed]. It is so small that the husband left it to the wives and they grew it around the homestead. That is their own and they decide what to do with it*". This reflects the importance of strengthening women's access to and control over land and other productive resources and acknowledging that there are different pathways to change (Njuki 2016). In particular contexts outcomes for women can be achieved by exploiting seemingly marginal, and lower status productive resources which might be a more feasible (first step on a) pathway to change than attempting to fundamentally change gendered control over land in a relatively short-lived research project.

Evidence suggests that projects contributed to women's increased participation in decision-making to varying degrees. In P2, the project observed that women who were in charge or jointly in charge of homestead food production also played a role in household decision-making but this had limitation; as an informant explained "*men go on and make important decisions for the household without consulting with the women so lack of consultation is one of the bigger issues* […] *we hope to see changes around more joint decision making*". Changes in decision-making are hard to capture, but, in P13 and, to a lesser extent, in P7, there was some evidence of an increase in women's autonomy in decision-making from survey end-line results and interview data.

P7 and P13 were also the two projects that achieved **increased representation of women in formal leadership** positions[10]. P7 reported: "Currently, 40% of the leaders of the organizations are women. This shows that when organizations of fish farmers are established, the role of women is much greater than in traditional organizational structures, such as those of local unions where women only make up 19%." (P7 2017)." In P13 women's leadership was observed at multiple levels, including as *individual leaders* of project supported producer groups and *collective leaders* of women's saving groups where women worked together to achieve shared objectives. Also, as explained by a study informant, the project supported rural women "*to gain confidence and skills to speak in public*" and to enter into dialogue with local government agencies to voice their concerns and talk about women's rights, including violence against women. As noticed by O'Neil and Domingo (2016), women's leadership can have symbolic power and contribute to social change, because it can challenge gender norms and behavior such as widespread belief that men are leaders and women's place is in the home responsible for domestic chores.

The symbolic power of women's leadership can have contributed to changes in **gender norms and behavior** in two CIFSRF projects where we found some evidence of a redistribution of responsibilities between women and men. For example, P2 reported increases in husbands' support

[10] Leadership also manifests itself in informal forms but concerned evidence is of a more anecdotal nature.

in cooking and taking care of animals, and grand-fathers taking on child-care, which allowed women more time for breastfeeding and own care. Also P13 reported a redistribution of tasks between husbands and wives, also partly attributable to their increased contributions to household income, and the improved recognition by men of women's roles and the value of their work, in particular care work, as previously mentioned with transformatory potential. What clearly emerges here is the linked and processual nature of achieving "Women's Empowerment" sub-outcomes, as stepping stone to gender transformation, which comes best to the fore in P2, P7 and P13 that achieved three or four sub-outcomes.

Strategies used by "Women's Empowerment" projects

"Women's Empowerment" outcomes were realized with a variety of strategies that addressed technical and material disparities as well as inequalities in gender power relations (Tables 4 and 5).

What was common to all six "Women's Empowerment" projects was that they adopted redistribution strategies (increasing access to tangible and intangible resources), recognition strategies (particularly engaging men combined with visibilising women's contribution in food and nutrition security) as well as agency strategies (primarily collective action to support women organising (P7, P11, P13, P14). Some additionally applied women leadership strategies (P7, P13) and strategies to address unequal gender relations and increase women decision-making power (P2, P13)).

The projects all combined content gender strategies with process gender strategies. All six employed capacity strategies (i.e., gender training and gender expertise) as well as sub-strategies of addressing knowledge gaps (considered publishing results of their gender work important) and gender responsive design and planning. Related to the latter, all projects practiced gender responsive monitoring and evaluation and collected sex disaggregated data with several recognising the importance of the sex of the enumerators and researchers to address barriers to women's participation and empowerment (P1, P2). All also addressed gender knowledge gaps.

The two projects that contributed to challenging gender norms systematically engaged women and men, strengthened women farmers' performance and recognition and did participatory action research with women. P2 targeted all men and women decision-makers of the household in its integrated agriculture, gender, and nutrition approach. The project offered capacity development for increased productivity, community conversations to discuss intra-household decision-making and resource allocation, and nutrition training. And P13 integrated technical, economic and social activities in its 'whole-family approach' and combined community-wide gender sensitization with economic and leadership opportunities for women.

Overall, compared to the eight projects that achieved "Women Accessing Resources and Benefits" outcomes, the six projects that also achieved "Women's Empowerment" outcomes applied a greater variety of strategies that, albeit to varying degrees, encompassed unequal gender power relations in different social institutions either within the household and/or at a formal levels. In other words, they intentionally embedded technology development and adoption within prevalent power structures in ways that contributed to more equitable distribution of resources and benefits, as well as increased power and leadership for women.

While "Women Accessing Resources and Benefits" projects also improved the recognition of women's roles and functions it appeared to be from the perspective of enhancing women's agency without paying sufficient attention to structural aspects of gender inequity. Understandably, there was little, if any, evidence of an increase in women's social status or self-esteem. Similarly, there

were examples of women's informal leadership reported from "Women Accessing Resources and Benefits" projects but evidence was of an anecdotal nature, for example about women voicing their concerns in women's groups or women considered as role models and source of inspiration to other women. In comparison, "Women's Empowerment" projects had greater documentation of leadership outcomes via survey end-line results, comparison of leadership composition, and data from interviews with project participants included in technical reports.

Main take-aways from "Women's Empowerment" projects

- Enhanced recognition of women's roles and functions in CIFSRF projects by project staff, communities, households, men and/or women themselves resulted in increased access by women to a range of resources and benefits. In projects that simultaneously encouraged critical reflection of social structures such as through participatory research processes and attention to the relational aspects of gender inequity, the enhanced recognition also contributed to "Women's Empowerment" outcomes demonstrated by improved status of women in households, communities, and organizations.
- Community gender sensitization and/or strategies to engage men in combination with strategies to support women's access to resources increased women's influence over production-related decisions, and control over income and food consumption. However, the link between women's increased contribution to household income and intra-household decision-making does not necessarily imply a causal relationship. Context-specific conditions defined and occasionally limited women's sphere of influence (i.e. location and size/quality of land women could access) and the kind of income women could control (i.e. excess income). In other words, the change that was achieved was within women's current socially ascribed sphere of influence, which was left intact. Still, what makes "Women's Empowerment" projects distinct is that they not only gained access to resources but also some element of control over them and derived benefits.
- Recognition by men of women's productive and reproductive roles constituted an important step in changing how roles and functions are divided between men and women. Men's acknowledgement of the monetary value of women's care work appeared to be a contributing factor for women's empowerment and the transformation of gender norms and relations.
- Women's increased access to and control over resources was contingent on the status of the resources and often it seemed of a lower status than other resources (e.g., income from excess produce, "small" amounts of seed, fish farmer organisations as opposed to unions).
- The synthesis found that "Women's Empowerment" sub-outcomes were linked and highly processual. They were not achieved in isolation from each other but were mutually reinforcing with outcomes contributing to other outcomes and vice versa (e.g. the symbolic power of women's leadership could affect the potential of challenging norms and values related to women's roles and functions).

4.4 Similarities and differences between projects

"Women's Empowerment" outcomes were not stand-alone achievements but the cumulative effect of other outcomes categories. At the same time, the progression between "Women Accessing Resources and Benefits" and "Women's Empowerment" outcomes was neither direct nor 'linear'. Increased access to resources did not guarantee control over resources and benefits, and thus did not necessarily lead to "Women's Empowered" outcomes. Why was that? While we previously argued that "Women's Empowerment" projects also achieved "Women Accessing Resources and Benefits" outcomes, there were clear differences between what strategies Women's Empowerment" projects and "Women Accessing Resources and Benefits" projects used and what sub-outcomes they achieved (Table 6).

Firstly, most "Women Accessing Resources and Benefits" projects increased access to women's groups and organisations (P3, P6, P8, P9, P10) while only four out of six "Women's Empowerment" projects also increased such access (P7, P11, P13, P14). Many projects that achieved increased access to groups (sub-outcome 2.2) used collective action sub-strategies to involve women in ongoing group activities with the shared purpose of promoting their different roles, depending on the group (i.e., farmers or entrepreneurs) (Kabeer 1999, Evans and Nambiar 2013). However, it emerges clearly that "Women Accessing Resources and Benefits" projects generally used the groups in an instrumentalist way as mechanisms for disseminating resources or as feed-back loops to attain women's views, while "Women's Empowerment" projects used collective action strategies to strengthen women's agency. The various group activities of P13, for example, facilitated women's groups to self-mobilize for resources.

Second, all "Women Accessing Resources and Benefits" and "Women's Empowerment" projects increased women's access to knowledge (sub-outcome 2.1), but there were differences in their achievement of other sub-outcomes. All "Women's Empowerment" projects increased women's adoption and use of technology (sub-outcome 2.4), but only three "Women Accessing Resources and Benefits" projects achieved this sub-outcome (P6, P10, P12). What appears to be different is that the "Women Accessing Resources and Benefits" projects generally contributed to women's adoption and use of new technologies in terms of more intangible techniques, whereas those projects that achieved "Women's Empowerment" outcomes focused on tangible innovations such as machinery (P1, P11) as well as new and improved crop varieties (P7, P11, P13, and P14). While welcome, the transformatory potential lies in the nature of the change in access to such resources and its relation to the social institutions that govern such access (Kabeer, 1999).

Turning to similarities and differences in use of key strategies, what is common to projects that achieved "Women Accessing Resources and Benefits" outcomes and "Women's Empowerment" outcomes is the adoption of five strategies (Table 4). They all mostly adopted recognition and redistribution content strategies as well as capacity strengthening and gender responsive research practices strategies. Still there are also differences especially at sub-strategy level (Table 5).

Recognition strategies: All fourteen projects that achieved "Women Accessing Resources and Benefits" and "Women's Empowerment" adopted recognition strategies (Table 4 and 5). Most common was visibilising women's contributions which nearly all of these projects used (except P1 and P9). Also common among the fourteen projects was gender sensitisation among project participants, although this sub-strategy could only be found in some of these projects, i.e., P8, P9, and P10 in the "Women Accessing Resources and Benefits" category and P2, P13, and P14 in the "Women's Empowerment" category.

There appears to be a correlation between projects which adopted the engaging men sub-strategy and achieved enhanced recognition and status of women, suggesting the critical need to engage men (Table 5)[11]. Sub-outcome 3.3 - enhanced recognition and status - was the most consistent "Women's Empowerment" sub-outcome. Concurrently, engaging men was one of the two most common sub-recognition strategies among "Women's Empowerment" projects (P1, P2, P7, P13 and P14) but was applied less in "Women Accessing Resources and Benefits" projects (P6 and P15).

Agency strategies: Agency strategies were adopted by all "Women's Empowerment" projects and by most "Women Accessing Resources and Benefits" projects (P3, P6, P8, P9, P10). What differentiates was the sub-strategy adoption. As indicated previously, those projects that used collective action strategies did not necessarily result in achievements of women empowerment outcomes. While not conclusive, those that adopted strategies to increase women's decision-making, even without supporting women's formal leadership or collective action, resulted in women empowerment outcomes (P1, P2). Conversely, most projects that supported collective action, and did not achieve "Women's Empowerment" outcomes, did not employ women's leadership strategies (P8, P9, P10).

Social Inclusion: Only one of the "Women Accessing Resources and Benefits" projects (P8) and four of the "Women's Empowerment" projects (P1, P2, P7, P13) used social inclusion strategies to engage with different groups of women and/or addressing social exclusion. Using these strategies, in combination with others, is likely to bring about "Women Empowerment" outcomes.

Capacity Strengthening: All projects that achieved "Women Accessing Resources and Benefits" and "Women's Empowerment" outcomes employed capacity strengthening strategies including at least two sub-strategies of gender training, engaging with gender expertise, partnering with organisations with gender knowledge, and creating professional development opportunities for women. Providing gender training and engaging with gender expertise were the two consistent sub-strategies for projects that achieved "Women's Empowerment" outcomes, which was not the case of those that achieved "Women Accessing Resources and Benefits" outcomes.

Main take aways from the comparison between project outcome categories

- Women Accessing Resources and Benefits" projects used groups in a more instrumentalistic way to disseminate information while "Women's Empowerment" projects used them to strengthen women's individual and collective agency.
- "Women Accessing Resources and Benefits" projects generally contributed to women's technology adoption with intangible techniques (such as new management practices) while "Women's Empowerment" projects focused on tangible innovations (such as equipment and crop varieties).
- Projects which adopted the engaging men sub-strategy correlated with projects achieving enhanced recognition and status of women, suggesting the critical need to engage men to improve women's status. Strategies to increase women's decision-making have high potential to contribute to women's empowerment, as projects that adopting these strategies, even without supporting women's formal leadership or collective action, resulted in "Women's Empowerment" outcomes. Similarly, the use of social inclusion strategies is likely to bring about "Women Empowerment" outcomes in combination with other strategies.

[11] See Gallina (2013) among others who make a similar point in her International Literature Review of gender aware approaches in agricultural programs.

4.5 Facilitating and constraining factors

As previously discussed, CIFSRF projects utilized a variety of gender integration strategies that produced different gender outcomes. Particular research process strategies and gender strategic practice facilitated gender integration and the achievement of gender outcomes. A limited use or not using or applying these strategies or practices, on the other hand, constrained or limited gender integration and outcomes, which is discussed next (see Table 7 for an overview of facilitating and constraining factors).

Project and staff capacity was key to the deployment of research content strategies and achievement of gender outcomes. In particular, the level of ***gender knowledge and skills of staff and partners*** was important, especially for field staff responsible for activity implementation and in projects addressing more complex gender dynamics. Projects that invested in gender capacity strengthening generally showed greater achievement of gender outcomes than projects that did not. Projects bolstered staff capacity mainly through training, engaging with gender expertise and focusing on the professional development of women staff. Gender training of staff was at times seen to take too much time and be less important than other trainings (for example technical trainings versus facilitation skills), suggesting a relative lower 'value' attached to gender integration. At the same time, gender capacity development of staff had limitations. An attempt to mainstream the responsibility for gender integration and developing needed capacity of technical staff had, according to a study informant from a "Women's Empowerment" project, "*reached too far*". Here a key lesson learned was the need for (sufficient) dedicated gender staff. A related but different issue brought up by some study informants concerned staff resistance to working with gender concerns. Making resistant staff responsible for gender related activities was not conducive for results.

Dedicated gender experts in projects were clearly significant to gender integration. Gender experts supported many projects and several informants acknowledged their direct contribution to gender outcomes achieved by their projects. Gender experts' ability to make a positive contribution to the project depended on a number of factors. Of importance was *when* gender staff became involved, with some projects having gender experts in the project team early on to support gender aware project design and planning. Another key factor was whether workload and staff availability had been planned carefully. Some project informants shared that having one gender expert was insufficient to manage the required amount of work. Also the experience and clout of the gender expert was significant for gender integration, with experienced experts with vast knowledge of gender and agriculture in theory and practice having more chance of success than junior experts. Still, lack of mandate constrained the work of experts, even for the more experienced ones. Projects seemed to appreciate locally-based gender experts given their availability as opposed to those not based in the project country. Finally, continuity of gender staff was also an important factor, highlighted by informants that faced difficulties in getting timely support due to gender experts leaving organisations and projects.

Project partnerships contributed or constrained gender integration depending on a number of factors. The focus of partners and background of staff seemed to matter. While most partners were from research/academia, informants pointed out that for gender work to succeed, development partners with applied/action research expertise were indispensable. Indeed, it appeared that when projects included development partners, they were able to tap into existing women in development

frameworks, materials and tools[12] that they re-designed for CIFSRF project purposes, such as a "Women's Empowerment" project's use of a previously tested agriculture, gender, and nutrition framework. Also, grantee organisations/partners with gender policies had a positive influence on gender integration in CIFSRF projects. There were, however, also cases of partnerships that had negative effect on gender integration such as when they had different, even conflicting, priorities, for example, in the case of a "Women Reached" project where unclear partnership expectations delayed developing and implementing a gender strategy.

Research practice strategies were key to projects achieving gender outcomes beyond reaching women, where gender responsive design and planning was critical. First and foremost, the extent to which gender concerns were taken into account in ***project design and planning*** influenced gender integration. According to study informants, incorporation of gender in project design depended on the gender integration commitment and capacity of project partners and key staff, such as PIs, and how they responded to gender requirements of the CIFSRF calls for proposals, where special attention to women or gender as a cross cutting concern (explicitly stated in the case of call 6) was required. Gender responsive proposals were often evidence-based (i.e. drawing on existing knowledge of gender concerns in the sub-sector and/or country) and often demonstrated investment in gender analysis for the proposal. Key features of gender responsive research design included gender specific objectives or outcomes, which provided the basis for introducing gender responsive research practice including sex-disaggregated data collection, gender indicators, and reporting on gender outcomes – all practices which contributed to gender integration but were not part of all projects.

In particular, gender responsive projects ***intentionally aligned technical and social strategies and objectives***: a gendered context analysis contributed to framing of problems to be addressed and anticipated results, which informed identified activities. Designs reflected an understanding that more complex, multi-faceted trajectories were more difficult to implement and required more resources and capacities. For example, the predominant focus on training to improve women's agriculture knowledge and skills enabled women to overcome some of the constraints they faced as women farmers, They however remained limited to certain "Women Accessing Resources" outcomes as long as women's access to and control over other key resources and benefits as well as gender norms were not addressed. Put another way, training alone was not sufficient for realizing "Women's Empowerment" outcomes. Projects that used a variety of different strategies and activities to address multiple problems, combined with the investment in sufficient resources and capacities, generally achieved more gender outcomes than projects that implemented fewer less complex activities with fewer resources.

The more projects engaged with ***context-specific needs*** the better they performed in achieving gender outcomes. This required time and resources to adapt approaches and innovations from one context to another, which according to informants at times turned out to be more challenging than expected. Engaging with context potentially meant engaging with intersecting inequalities; in general CIFSRF projects paid limited attention to other social categories (such as class, caste, ethnicity), which is likely to have limited the gender outcomes achieved.

[12] Examples of tools used by CIFSRF projects: Nurturing Connections (P2); WEAI measurement tools (P2, P10, P18); Gender equity assessment framework (P10).

Table 7: Facilitating and constraining factors for gender integration in CIFSRF projects

Theme	Facilitating Factors	Constraining Factors
Gender knowledge and skills of staff and partners	• Investing in gender capacity of staff • Gender knowledge and skills of staff and partners	• Insufficient gender knowledge and skills of staff • Staff resistance to working with gender concerns • Making resistant staff responsible for gender related activities • Lack of mandate for gender staff • Lack of continuity of gender staff
Gender Experts	• Dedicated, locally-based and sufficient numbers of gender experts, experienced in agricultural theory and practice • Gender experts in the project team early on to support gender aware project design and planning • Work-load and staff availability planned for gender integration • Experienced and senior gender experts	• Lack of (sufficient) dedicated gender staff • Gender staff externally based or removed from project operations • Gender experts joining the team later after project design • Too much work assigned one gender expert • Junior experts with less power in project team
Partnerships	• Development partners with applied/action research expertise • Partners with existing gender policies	• Partners with different priorities and expectations • Too many partners involved or unclear expectations of responsibilities
Design and planning	• Gender analysis at proposal stage • Gender concerns taken into account in design and planning • Gender specific objectives or outcomes • Intentionally aligning technical and social strategies and objectives • Project design acknowledging complexity of gender trajectories • Understanding change processes as contextual, relational and multifaceted and engaging with context-specific needs • Integrating qualitative research practices and practicing interdisciplinarity • Participatory research approaches	• Tensions between gender experts and bio-physical researchers • Reliance on training as a single strategy • Lack of engagement with intersectionality • Reliance on only bio-physical science and knowledge
Gender strategies	• Gender strategy developed and “owned” by staff	• Lack of gender strategy • Gender strategies lacking contextual specificity or link to core project activities
Resources	• Gender budget and sufficient resources allocated, particularly at the start of the project	• Unbudgeted gender-responsive interventions • Underestimating time and resources needed for gender activities
Program factors	• Gender requirements of CIFSRF calls • Program-wide support, including from IDRC officers and during inception workshops	• Lack of feedback on gender efforts • Reconciling results-based requirements with pace of social change • Lack of peer learning

Another alignment issue concerned the extent to which scaling-up innovation projects correctly estimated the ***extent of support women farmers needed to benefit*** from projects' technical interventions and how the project could ensure women's control over production, marketing and accrued benefits. Few projects managed to do this; those that did were based on gender-responsive design, used gender analysis to inform strategies and implementation and had sufficient resources set aside.

Epistemologically, gender responsive designs were methodologically distinct. Projects that included ***qualitative research*** seemed to successfully support gender outcomes compared to approaches that drew from bio-physical science only. For example, several projects that achieved "Women's Empowerment" outcomes used participatory approaches to work with women, and involved technical and social staff in extensive participatory trajectories that challenged gender stereotypes in food and nutrition security and/or promoted mutual respect between researchers and participants.

Relatedly, the extent to which projects featured interdisciplinarity appeared to be important, though its practice was not frictionless. Getting buy-in from represented disciplines to work with gender integration proved to be demanding and took time. Projects that had received funding in the Phase 1 of CIFSRF (i.e. "2nd generation projects"), had had more time to bridge disciplinary divides. Tensions between gender experts and bio-physical researchers surfaced due to divergent expectations. For example, bio-physical researchers at times expected from gender experts ready-made check-lists for gender integration while gender experts were reluctant to provide generic guidance but wanted qualitative research to understand the gender dynamics of, for example, the technology. When different expectations were managed, however, it seemed to contribute to gender outcomes.

A ***project gender strategy*** appeared to be a significant factor for gender integration in several ways. The first concerned how the strategy was developed and by whom. Most projects conducted a situational gender analysis, and some did it explicitly to inform their gender strategy. Among these, staff were involved in learning and reflection to ensure that the strategy was not only understood but also 'owned' by staff. For other projects, the development of a gender strategy was a separate activity which was at times undertaken by partners not based in the project country, which generally seemed less effective. Second, the contextual specificity of the strategy was important as was the extent to which is was practical and action-oriented, and linked to core project activities. Strategies mirroring the AFS gender strategy generally lacked context-specificity. A third aspect concerned when the strategy was ready, with delays affecting planning and direction of gender integration work. According to study informants, delays were caused by lack of staff continuity, conflicting expectations between gender experts and technical staff as well as by too many partners being involved, resulting in lack of coordination or ambiguity about who was in the end responsible for developing and implementing the strategy.

Strategies with ***ring-fenced gender budgets*** to resource needed activities also influenced the success of project gender integration and gender outcomes achieved. While few projects budgeted for gender related activities at the proposal stage, those that did so sufficiently all achieved gender empowerment outcomes (see Table 5), which is likely to be related to the project's initial importance placed on gender concerns and required staff capacity. For example, addressing gender norms though intensive gender campaigns required more resources (budget, capacity, time) than addressing access to skills. 2nd generation CIFSRF projects generally seemed to have a better understanding of these relationships. Conversely, projects with planned but unbudgeted gender-responsive interventions were likely to delay or cancel interventions, due to insufficient budget.

The CIFSRF program benefitted projects by providing mentoring and capacity strengthening support to partners on gender integration. This occurred as program-wide initiatives, such as inception workshops and a year-long gender support program, as well as individual support from IDRC program officers. In other words, being a CIFSRF grantee contributed to gender integration, but, as shared by study informants, there were constraining factors in this relationship as well as CIFSRF projects had to live up to a number of results-based requirements (such as proof of results of scaling-up innovations) that were at times difficult to reconcile with the deliberate slow-pace of gender sensitization and women empowerment trajectories. Also, greater peer learning among grantees and more structured feedback from IDRC, particularly on partners' annual reports, could have enhanced learning.

4.6 Gender integration in CIFSRF projects within the wider context of AR4D

As discussed in the introduction, current literature on gender and AR4D concerns not only establishing that gender matters, but learning from efforts to integrate gender and identifying what works and why. This section briefly situates the CIFSRF gender synthesis within the wider context of gender, agriculture and food security, particularly the gap between gender integration and gender transformative approaches (GTAs). The gender synthesis' typological analytical framework contributes to understanding the 'in-between space' between these approaches, and suggests change is possible from this space, albeit with limitations.

CIFSRF's journey to GTAs partially mirrors IFAD's historical trajectory of working with women in agriculture: moving from an early focus on women, as a target group, to the organisation's current emphasis on women's economic empowerment (Hartle 2017). Hartle acknowledges the latter as necessary but insufficient for improving the social positioning of women. Learning from this, IFAD's current emphasis on creating the conditions for addressing the root causes of inequality, particularly constraining social norms and discriminatory social systems, echoes the CIFSRF program's interest in GTAs.

These shifts – from targeting women, to women's economic empowerment, to GTAs - speak to an overall finding of this gender synthesis: the limitations of the exclusive focus on women's access to resources and benefits as a strategy to address household food insecurity. Intra-household relations are complex and food security strategies practiced by members are highly gendered and contextual, requiring nuanced understanding. Such an insight has not, however, been acknowledged by mainstream agricultural and food security research for it does not neatly fit into interventionist frame which require generalizable remedies.

Moreover, the current emphasis in AR4D on providing women a greater share of productive resources, such as credit, inputs, land and labour, is based on the premise of the inefficiency of gender inequality (O'Laughlin, 2007). The logic follows that with a greater share of such resources and control over household expenditures, household members, especially children, experience better nutrition and health. The problem is that such policy prescriptions are based on a de-contextualised and ahistorical analysis of food insecurity and gender inequity. They do not take into account the "broad structural and contested processes of individualization and commodification of productive resources" (O'Laughlin, 2007: 42). Rather, the focus on women and tinkering with their position in the market only serves to further insert women into a neo-liberal discourse where gender inequalities are "assumed to be the expression of market imperfections, not an outcome of the ways markets work" (Ibid: 26, our emphasis). In other words, the focus on women's economic empowerment works within existing institutional framing of the market and does not challenge, let along acknowledge, the "rules of the game" (Kabeer and Subrahmanian 1996) that maintain the status quo of gender inequality.

This points to the need for conceptual clarity of what constitutes women's empowerment, as both an outcome and process of change (van Eerdewijk, Wong et al. 2017). What is interesting about Hartle's account of IFAD's trajectory – from gender mainstreaming to women's empowerment to gender transformation – is the particular understanding of women's empowerment she implicitly gives. There are numerous understandings and dimensionalities of women's empowerment (Ibrahim and Alkire 2007), where the emphasis on "autonomous economic activities, resources and assets for women" (Kawarazuka, Locke et al. 2017: 36) currently is arguably most 'en vogue'. In this light and as implied by Hartle, women's empowerment is seen as separate from, not inter-twinned with, systemic changes of the social structural basis of gender inequity. While others have taken this

route, such as the World Bank (Klugman et al. 2014), others see these as being necessarily inter-twinned mutually reinforcing changes processes (Bill and Melinda Gates Foundation 2017).

The divergence between women's empowerment, particularly in the economic sphere, and GTAs, is highlighted by different trajectories within AR4D work. For example, the Women's Empowerment in Agriculture Index (WEAI) represents a view of empowerment that focuses on economic activities, resources and assets for women. The WEAI measures women's empowerment, agency and their inclusion in the agricultural sector using two indices. One covers five domains of empowerment while the other measures gender parity (Alkire, Meinzen-Dick et al. 2013). The most recent version of the framework, pro-WEAI, is exclusively focused on individual and collective women's agency.

Multiple understandings of women's empowerment is also present in CIFSRF projects, with various impact on project's multifaceted trajectories and outcomes. For example, "Women Accessing Resources and Benefit" projects often integrated gender by targeting women with project interventions that addressed women's knowledge, input and market based on the assumption that market gains were reflective of empowerment overall. In comparison, some, though not all, "Women's Empowerment" projects worked with multiple and interlinked dimensions of empowerment and understood the purpose of gender integration as relational and (potentially) prepared the way for the transformation of gender relations.

These various understandings may be because CIFSRF was initially conceived with an emphasis on targeting women, an emphasis which changed over time. The 2015 AFS gender strategy aims for "transformative approaches that address current gender gaps while also addressing underlying causes of gender inequalities".

The present gender synthesis indicates Phase 2 CIFSRF projects contributing to AFS' ambitions of its gender strategy and its particular aims, to varying degrees. This suggests that targeting women can lead to women's empowerment outcomes, and these may or may not be transformational in themselves. One in particular, positive changes in social and gender norms and relations, deserves special attention. The gender synthesis presented some but not extensive evidence of changes in gender norms and behaviour as an outcome of some CIFSRF projects. What clearly emerges is evident is the tenacity of the "rules of the game" that not only (re)produce gender inequity but limit "Women's Empowerment" outcomes. In many instances revealed by the synthesis, greater achievements in this outcome domain were mitigated by wider social institutions, particularly those governing the household. For example, while women experienced greater control over decision making, this concerned those decisions within their overall sphere of decision-making, whether related to allocated land or income generated from production over-and-above what was normally expected. Arguably, it is these social institutions that are at the basis of gender inequities and make them particularly sticky and resistant to change. Affecting norms are a start but without attending to the social structures of power that underlie these, reversal and back-tracks are possible (Batliwala 2010; Rai 2003).

Working at the level of social institutions is however daunting and challenging, particularly given a particular program's remit, extent of resources, and ultimately sphere of influence. For example, CGIAR Research Program on Aquatic Agricultural Systems (AAS) program attempted to take into account their gender impact on social institutions, which in the end seemed too far removed from what was already a fairly extensive initiative, particularly given the timeframe for such changes to be realized (personal communication). Relatedly, the CIFSRF gender synthesis identified factors that influenced the meaningful integration of gender and gender outcomes in CIFSRF research and

brought to the fore some of the contradictions between program-level gender integration ambitions and project resources, capacities, and epistemological and disciplinary divides.

What programs such as CIFSRF can focus on are the "technology and/or the institutional context[s]" (Mudege, Mwanga et al. 2018) in which it works and over which it has control. In particular, the AFS gender strategy four areas of gender in research: gender research, capacity and expertise, and gender at work, all of which are interrelated. As noted previously, organisations have their own particular gender discourses that are explicitly if not implicitly reproduced in their programs (Okali and Bellwood-Howard 2017).

While the acknowledgement of the inter-relationship between the gendered-ness of organisations and their programs is conventional wisdom within the development field (Goetz 1997, Milward, Mukhopadhyay et al. 2015), this insight is relatively recent to the gender and AR4D field. This is not to say that the issue of women researchers in agriculture research or more broadly in STEM[13] is new; far from it. Rather, organisational change is increasingly seen as a critical strategy for improving the representation of women more generally and women scientists in AR4D organisations in particular, rather than "fixing the women" (Wong and van Eerdewijk, forthcoming). And this, as well as organizational change itself, is understood as conducive for gender responsive AR4D programming: Not due to greater gender equitable representation but also from the needed changes in how organisations work, whose and what knowledge is valued and how knowledge is produced. For example, after years of successful leadership development of women scientists, the 2017-2020 strategy of the African Women in Agricultural Research and Development (AWARD) recognises women's underrepresentation as a main challenge to agricultural research and notes the need for increased gender responsiveness in the internal elements of the organization.

The gender synthesis of CIFSRF, located between gender integration and GTAs, sheds light on the possibilities for change in AR4D projects, which do not necessarily have the resources and capacities for GTAs, but do have the possibility to create tangible gains for women. Gender outcomes can be achieved from a targeting women approach although they are more limited than the outcomes achieved from approaches to promote women's economic empowerment. Future research can build on the insights from the synthesis to explore links between gender approaches and gender outcomes by further including what it takes for AR4D projects to effectively take on GTAs.

[13] Science, Technology, Engineering and Mathematics.

5. Conclusions

This synthesis reviewed in detail gender integration strategies and gender outcomes of 18 CIFSRF projects. The review was based on an analytical framework developed for the synthesis from a contextualized perspective with two distinct dimensions:

- a gender integration strategy typology with eight main categories of strategies covering '*research content strategies'* as well as '*research process strategies*', and
- a gender outcomes typology with three main outcome categories conceptually distinguishing between "Women Reached', "Women Accessing Resources and Benefits" and "Women's Empowerment" outcomes

The synthesis has revealed that CIFSRF projects achieved different outcomes for women. While all achieved "Women Reached" outcomes, most projects also realised some "Women Accessing Resources and Benefits" outcomes including access to resources (knowledge, groups, productive resources, technology) and access to benefits therefrom (income, food consumption, reduced drudgery). In addition, a third of the project achieved "Women's Empowerment" sub-outcomes including increased recognition, control over decisions, formal leadership as well as change in gender norms.

Projects reached women in different and multiple roles, determined by the project's focus and the particular understanding of women's gender roles underlying the projects' gender practice. "Women Reached" projects focused narrowly on women as recipients of information and technologies, and made assumptions that reaching women would be sufficient for women to benefit from project activities, whereas "Women Accessing Resources and Benefits" invested in understanding particular problems and needs of women and used specific interventions strategies to ensure that women were involved in the innovation design process and could access them. "Women's Empowerment" projects focused more on the social context of production and the causes of gender inequality and privileged critical reflection with social structures by women and men.

That all projects, at a minimum, reached women indicates that women need to be reached in order for other outcomes to be achieved. However, reaching women does not ensure access to or control over resources. Similarly, attaining such access or even control does not necessarily result in women's empowerment outcomes. This finding is similar to those concluded by the WEAI initiative (Johnson, Balagamwala et al. 2017). On the other hand, for "Women's Empowerment" outcomes to be realized, "Women Accessing Resources and Benefits" outcomes are essential. Empowerment requires resources to which women can access and have control over, a finding that resonates with previous studies on realising women's empowerment (Kabeer, 1999).

For the most part, projects that limitedly achieved "Women Reached" outcomes employed a limited number and range of strategies. Those that achieved "Women Accessing Resources and Benefits" and "Women's Empowerment" outcomes adopted a greater range and number of content and process strategies with the latter demonstrating a slightly greater diversity of strategies. Key conclusions related to content strategy use are as follows:

- *Recognition strategies*: Projects which adopted the engaging men sub-strategy correlated with projects achieving enhanced recognition and status of women, suggesting the critical need to engage men to improve women's status.
- *Redistribution strategies*: These strategies did not automatically deliver on increasing women's control over resources or benefits even when they delivered on increasing women's access to resources. For that to happen, agency and/or social inclusion strategies were needed.

- *Agency strategies*: Collective action strategies did not always result in achievements of "Women's Empowerment" outcomes as "Women Accessing Resources and Benefits" projects used groups in a more instrumentalistic way to disseminate information or products. Projects that adopted strategies to increase women's decision-making, even without supporting women's formal leadership or collective action, generally resulted in "Women empowerment" outcomes.
- *Social inclusion strategies*: Not many projects used, but most that did – albeit in combination with other strategies **-** brought about "Women Empowerment" outcomes as they were conducive to working with intersectionality and participatory research processes.

To conclude, the synthesis explored the "in-between space" between gender integration and gender transformation approaches. A key take-way is that women's empowerment has specific outcomes but at the same time is a process of change. There is no one-to-one link between one particular strategy category and one particular outcome category. Projects that used a variety of different strategies and activities to address multiple, context-specific problems, combined with the investment in sufficient resources and capacities, generally achieved more and higher level categories of gender outcomes than projects that implemented fewer strategies with fewer resources. Projects that explicitly acknowledged relationships between gender outcomes, and explored and took into account the conditions under which women could access and control resources, were more likely to achieve benefits and empower women than projects that implicitly assumed that access to resources led to or guaranteed control.

5.1 Recommendations

Recommendations are provided at project as well as program level with the latter drawing on the complementary study, also undertaken by KIT, on lessons learned from integrating gender into the CIFRSF program (Wong et al. forthcoming).

Project-level recommendations

Project-level recommendations centre on how AFS projects can better engage with the broader social context within which project innovations are introduced and thus move from gender mainstreaming and women's economic empowerment to more gender transformative approaches and better outcomes for women.

AFS projects should:

- **carry out gender-responsive and context-specific project design** as this is one of the most important entry points for successful gender integration in AR4D. Projects that are designed to explicitly incorporate gender concerns, including gender objectives and strategies, are more likely to succeed than those that neglect them.
- **use gender analysis as a research methodology** to explore gender relations and identify the mechanisms and approaches to effectively reach and benefit women. Such analysis includes gender as a variable, as construction and as process (Alsos et al., 2013). Projects are more likely to succeed when they adapt products or service delivery to women's needs and take gender relations into account.
- **apply gender responsive research strategies to mainstream gender concerns, promote "Women's Empowerment" outcomes and transition to more GTAs.** For example, use gender analysis as research methodology to inform context-specific **gender strategy** development and implementation.

- **put in place a gender responsive M&E system** to detect gender inequalities in access to benefits and monitor progress in achieving gender outcomes. Qualitative indicators and impact studies should also be used to understand whether women's participation in project activities effectively translates into benefits.
- **use gender context analysis to align technical and social project objectives and strategies**. While training can be an appropriate mechanism to transfer improved agriculture management practices and other more technically oriented skills, it has its limitations for triggering social change for which strategies that support women's control over key resources and benefits and address gender norms are needed. Also be aware that quantitative research can answer certain questions (particularly regarding "what" is happening), yet gender responsive research needs qualitative research to explore why and how questions.
- **invest in gender knowledge and skills of staff**. In particular, involve technical and social staff in gender training trajectories that challenge gender stereotypes and promote mutual respect between project staff and participants, in particular women. Projects that strengthened the gender capacities of staff generally showed greater achievement of gender outcomes than projects that did not.
- **ensure adequate and sufficient dedicated gender staff**, preferably locally based, with senior experience and clout, and provided with a clear mandate and sufficient support and ring-fenced budgets and other relevant resources.
- **partner with organizations that complement gender capacities and skills of project staff**. In particular, partners with applied/action research expertise are indispensable for gender responsive research in general and gender transformative research in particular.
- **not underestimate the time and resources needed to adapt approaches and innovations** from one social context to another, including tools that have proven successful for gender integration. Similarly, and particularly relevant for scaling-up innovation projects, do not underestimate the extent of support women farmers need to benefit given an unequal playing field.
- **examine the causes of gender inequality.** Direct gender integration efforts beyond addressing gender gaps in agricultural production and towards the causes of gender inequality. Use different strategies to address the multiple factors that constrain women from accessing and controlling resources and benefits. Use social and gender analysis to understand intersecting inequalities.
- **use participatory approaches** to work with women, and to critically reflect on their needs and priorities and to inform project activities. Also, move away from normative to participatory approaches: overtly normative approaches regarding gender equality can assume a too narrow vision or predefine what gender equality can be. Institutional strengthening and participatory measures are more effective, as they do not assume to know what women want (Badstue et. al 2017). Relatedly, engaging men is essential to promote gender outcomes, "Women's Empowerment" outcomes in particular.

CIFSRF program-level recommendations

Program-level recommendations centre on how IDRC's AFS program can conceptualise and articulate a gender transformative strategy for future programming.

The AFS program should:

- **actively design a collaborative research and intentional learning agenda to conceptualise, articulate and implement a gender transformative strategy**. The existing AFS gender strategy recognizes that some CIFSRF projects could be moving towards gender transformative approaches, which is supported by the gender synthesis finding of achievement of select

women's empowerment outcomes. The AFS gender strategy also acknowledges that an intentional effort is needed for the program, as a whole, and its constituent projects to be combining practical approaches with efforts to address underlying gender norms. This could serve as a basis for IDRC's AFS program to more clearly conceptualise and articulate its gender transformative approach as well as establish its operational modalities. The timing, both in terms of the internal momentum of the program as well as the external policy context, seems to be ripe.

- **actively select partners to think along in the development of a CIFSRF gender transformative strategy.** Partners clearly welcome interaction of and support from CIFSRF. In shifting the gender strategy, it will be critical to engage partners. This will likely include a collective learning and reflection process combined with continued capacity strengthening, along the lines of a multi-faceted and continual-engagement approach used with the ALINe and SD Direct initiative.
- **identify key and promising projects and partners that would comprise an initial portfolio of CIFSRF initiatives to act as pilot cases to develop the strategy**. Financial and human resources would need to be dedicated to this as well as a medium term time frame to track learning and changes longitudinally. Clearly there are cost implications for investing in partner and IDRC capacity to co-create and co-learn. This would need to be justified with a Theory of Change that envisions wider social impact with a more systematic gender approach. As well, more effective use of virtual learning and communications will need to be developed.
- **establish a robust measurement framework to measure outcomes and impacts at project levels and over and above individual projects**. This could entail a common set of quantitative and qualitative indicators against which the program and projects minimally report and be used as a basis for project and program learning. For example, a (virtual) common platform could be established for sharing achievements against indicators including analysis of achievements and deviations. This rolling database could be used for annual reflection meetings and basis for additional research and publications. By making reporting integral to learning (along with mutually-encouraging dynamics inherent with a community of practice) and accountability, quality of reporting can be enhanced.

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Annexes

Annex 1: List of Phase 2 CIFSRF Projects[14]

Number	Name
P1	**Agricultural Kits**
	P1 developed low-cost technology solutions to increase yield and reduce women's labour burdens for cultivated crops on rain-fed terraces. The project also designed a picture book with farming techniques, based on community feedback.
P2	**Homestead Production**
	P2 worked with small farmers to increase production via aquaculture and home gardening. They partnered with a microfinance organisation and used a cost-sharing approach to build fish ponds and develop homestead farming infrastructure.
P3	**Healthy Plants**
	P3 aimed to breed disease-resistant plants, develop methods to manage outbreak, and build local research capacities for laboratory disease detection and control. It considered women the focal point of their field activities, and prioritized women in field schools and plant clinics.
P4	**Fortified Foods**
	P4 aimed to scale up the development and distribution of fortified minerals, with the goal of addressing anaemia and iron deficiency in women and children. They partnered with the public distribution system to reach consumers.
P5	**Agricultural Inputs**
	P5 partnered with a social enterprise to provide rural farmers with access to products, agricultural information, and trustworthy service providers. They chose store locations strategically to enable women to access them and enabled women to buy goods on credit.
P6	**Fermented Food**
	P6 developed fermented foods to increase nutritional health. They partnered with women's kitchen groups to distribute the product via a pro-poor business model.
P7	**Nutritious Fish**
	P7 aimed to increase production and consumption of nutritious fish. They provided women with access to credit and microfinance to encourage women-owned fish ponds and trained local female entrepreneurs on financial management.
P8	**Extension Services**
	P8 used ICT (notably phones, SMS, and radio campaigns) to connect farmers to trusted information and sources regarding agriculture. They explored if ICT-extension enables small-scale female farmers to adopt technology and improve productivity.

[14] Project names are pseudonyms and listed randomly.

P9	**Legume Technologies**
	P9 increased access to agricultural extension by creating an interactive radio series so that listeners could call to experts via social media with farming questions. They also designed extensions materials that de-stigmatized agricultural work.
P10	**Vegetable Production**
	P10 aimed to scale up fertilizer micro-dosing innovations for vegetables. They trained farmers on micro-dosing and designed micro-dosing technologies to meet women farmers' needs.
P11	**Post-harvest Processing**
	P11 aimed to facilitate adoption of post-harvest processing technology. They promoted a small de-hulling device to decrease women's drudgery and time use and worked with small-scale vendors to develop their business capacity.
P12	**Preserving Fruits**
	P12 aimed to reduce spoilage of perishable fruits for farmers who lack cold storage facilities and frequently face post-harvest losses. They worked with farmers to develop post-harvest fruit treatment, such as a packaging system and spray, to reduce losses.
P13	**Healthy Potatoes**
	P13 aimed to scale up adoption of improved potato varieties through community-based agricultural schools, partnerships with farmers' groups, and a national awareness campaigns.
P14	**Crop Innovations**
	P14 aimed to scale-up crop innovations. They provided women farmers with agricultural inputs, established women's cooperatives to sell products, and linked small-scale entrepreneurs with markets.
P15	**Fortified Oil**
	P15 developed local production of fortified oil and tested mechanisms for distributing it, such as electronic vouchers with temporary price incentives, and measured the effect of fortified oils on maternal health.
P16	**Livestock Vaccine**
	P16 aimed to test the production and application of an affordable livestock vaccine, and planned to analyse the social and economic conditions that influence vaccine adoption.
P17	**Multi-purpose Vaccine**
	P17 aimed to develop single-dose vaccines, not requiring refrigeration, to protect livestock from diseases for small livestock (e.g., goats, sheep, pigs) mostly owned by women and poor.
P18	**Food Processing**
	P18 aimed to scale-up the production of fortified food to provide nutritious food for undernourished children. They partnered with women's groups and worked with post-harvest food-processing technologies and institutions.

Annex 2: CIFSRF Gender Integration Strategy Application

CIFSRF project application of strategy categories	**Sub-strategies with illustrative examples from CIFSRF projects**
1.Recognition strategies Several projects addressed the undervaluing of women's reproductive and productive work and contributions and the lack of recognition of women as farmers due to underlying social and gender norms. Several projects engaged with promoting the visibility of women's role in food and nutrition security while others focused on gender sensitization and engaging men. Some more explicitly created spaces for women and men to reflect together and question underlying social norms and power relations that exist in communities.	*1.1 Gender sensitization* Examples include: Facilitating community discussion of gender-based violence as related to gender norms and unequal gender relations (P2, P13); Facilitating participatory analysis of gender roles in the family and community, including women's roles in decision-making (P2, P13); Creating radio drama that critically engages with gender stereotypes (P9); Using gender role plays to raise awareness of household power relations and decision making processes (P10); Conducting awareness-raising campaigns about the negative dimensions of cultural practices that prevent women from accessing resources (P14); Raising awareness of women's role in food and nutrition security (P8, P18).
	1.2 *Engaging men* Examples include: Conducting gender sensitization of men including facilitated discussion of gender-based challenges and intra-household related decision-making (P1, P2); Conducting baseline surveys with men to determine male perceptions of crop production (P6); Leading regular meetings with men and women to monitor progress on gender equality and mitigate negative effects (P7); Engaging male facilitators of community listening groups (P14); Disseminating maternal nutritional guidelines to men (P15).
	1.3 Visibilising women's contribution in food and nutrition security Examples include (r*eproductive work*): Conducting surveys or assessments of women's reproductive and household responsibilities to avoid negative effects of project activities (P2, P3, P5, P6); Increasing visibility and recognition of women's role in food preparation and household consumption and its link to food and nutrition security (P8, P11, P14; P15, P18). Examples include (*productive work*): Calling attention to women as entrepreneurs (P3, P5, P6, P7, P8, P10, P11, P12; P14, P15); Recognizing gendered dimensions of dairy production and work with livestock (P6); Increasing visibility and recognition of women's multiple roles in fish farming (P7), women's role and labour contribution in post-harvest management (P11) and women's role in food production (P15).

<table>
<tr><td rowspan="3">2.Redistribution strategies
Many projects addressed gender inequalities in access to and control over tangible and intangible resources including technological development and improvements, financial services, knowledge and confidence. To address this problematique, some projects promoted adoption of agricultural technologies and practices to reduce women's labour burden, and others explicitly explored gendered technology preferences to ensure that different groups of farmers have equitable and transparent access to technology, and again others tried to address women's decision making power within the household. There are also projects that went beyond assessing and addressing causes of disparities to investigating and mitigating the impact of enhanced access to resources on relations between men and women to avoid negative impacts.</td><td>2.1 Labour and time
Examples include: Providing technologies and promoting agricultural practices to reduce women's labour burdens and/or save women time (P1, P2, P5, P10, P11, P12)</td></tr>
<tr><td>2.2 Access to tangible resources
Examples include:
● Markets: Supporting women's coconut fair (P3); Assisting producers, marketers or small-scale vendors to diversify products (P10; P11); Promoting women's participation in trade shows (PR13); Linking women farmers with producers of therapeutic foods (P18).
● Financial products: Partnering with microfinance organisations to improve women's access to finance (P2); Using cost-sharing approach to develop fish pond and homestead farming infrastructure (P2); Introducing finance models that enable women to buy goods on credit (P5); Increasing women's access to credit and finance (P7; P10); Linking women's associations with micro-credit agencies (P14).
● Technology: Designing equipment technology that is appropriate and accessible for women (P1, P10; P11; P12); Facilitating access to improved crop varieties (P11, P13; P14); Facilitating access to food processing technology (P6; P11, P14).
● Services and inputs: Choosing store locations strategically to enable women's access (P5); Providing female farmers with agricultural inputs (P14); Changing product size to meet women's economic needs (P15).</td></tr>
<tr><td>2.3 Access to intangible resources
Examples include:
● Training: Agricultural practices (P1, P2, P3, P5, P7, P8, P9, P10, P11, P12, P13, P14, P15, P17, P18); Nutrition and health (P2, P4, P6, P9, P11, P13, P14, P15, P18); Business and marketing (P3, P5, P6, P7, P8, P10, P11, P12, P14, P15)
● Information and Communication Technology (ICT), and extension. Addressing barriers to women's access to agricultural extension using alternative media and ICTs, and organising community listening groups (P8, P9); Advocating for more female extension agents (P1, P14).
● Networks. Supporting women's associations in facilitating farmer-farmer support networks (P3); Facilitating women's access to innovation platforms (P10); Developing gender sensitive Rural Entrepreneurs Nuclei (REN), promoting organisational strengthening and connecting entrepreneurs (P13); Encouraging small and medium scale enterprises (SME) to build retail network comprising women entrepreneurs (P15).</td></tr>
</table>

3. Agency strategies A number of projects explicitly addressed disempowerment of women and used different sub-strategies to increase women's leadership and decision-making power on an individual and group level. Here projects prioritized women's leadership, both at the level of project researchers and at the level of participants, and used training and education to increase the capacities and confidence of women leaders. On a collective level, several projects created spaces for women to support each other, forming saving groups, farming cooperatives, and networks of female entrepreneurs.	*3.1 Women's leadership* Examples include: Giving preference to women facilitators or leaders of project supported groups or activities (P3, P13); Supporting women-led businesses and women entrepreneurs (P6, P13); Promoting women owned ponds (P7); Promoting women in strategic positions in savings groups and all-inclusive cooperative society groups (P10); Supporting women to voice concerns in public fora (P13).
	3.2 Collective action Examples include: Creating women's associations (P3); Supporting and developing women's group (P6; P11); Developing women's listening groups (P8, P9); Establishing and/or supporting women's savings group (P10, P13); Establishing women's farming cooperatives (P14).
	3.3 Decision-making Examples include: Encouraging women's project participation to build confidence and enable better participation in decision making (P1); Strengthening women's decision making power based on participatory research and focus on addressing unequal gender power relations in multiple project activities (P2 and P13).
4.Social inclusion strategies Social exclusion and barriers to women's meaningful participation were addressed by employing participatory research strategies. Some projects structured time for community feedback throughout project life or used participatory interventions to engage with community demand at key moments. Some used interactive ICT interventions to make information accessible to different participants. A few projects addressed gender concerns intersectionally	*4.1 Participatory research and priority setting* Examples include: Engaging in participatory design with women farmers for picture book with farming techniques (P1); Tailoring interventions to household needs and allowing beneficiaries to self-select agricultural packages (P2); Establishing feed-back loop to get women's views on project activities and to adapt accordingly (PR); Promoting mutual responsibility between project researchers and participants (P13).
	4.2 Recognizing intersectionality Examples include: Indigenous women (P7, P13); Intergenerational concerns (P2, P13).

5.Project and staff capacity strengthening strategies Projects used strategies that explicitly address gender concerns as they play out in research processes, such as the lack of project staff gender capacity. Most projects invested in gender training and gender experts. Also, there are projects that addressed gender imbalances in research staff and explicitly provided opportunities for women staff for professional development. Some required partners to address gender concerns.	*5.1 Gender training* Engaging gender experts to make presentations during inception workshops and other staff gender trainings, i.e. gender awareness raising/capacity development of project team (PR0, P12, P18); Gender training for staff (P1, P2, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15, P18); Supporting project researchers to attend external gender training (P6, PR4).
	5.2 Gender expertise Examples include: Engaging individual gender experts (P1, P2, P5, P6, P7, P8, P10, P11, P12, P13, P14, P18).
	5.3 Partnering Examples include: Assessing partners for gender expertise (P5); Appointing gender focal points in partner organisations (P7); Expecting partner organisations to integrate gender 'throughout' (P7); Partnering with local government on addressing gender-based violence (P13); Creating "Gender Advisory Committee" with external individuals interested in gender and food security (P15); Partnering with Vietnamese Women's Union (P18).
	5.4 Professional development opportunities Examples include: Providing women with skills training to build research capacity (P1, P3); Supporting female researchers pursuing higher education by incorporating them into the project (MSc/PhD) (P6, P7, P9, P12, P14, P15); Providing scholarships for education in gender studies (P14); Promoting women scientists in research team (P3, P12); Designating female primary investigators (P3); Reporting staff gender ratio (P1, P2, P3, P15)

6.G*ender responsive research practice* strategies Projects addressed gender concerns at different phases of the project cycle. Some projects considered gender concerns at the design and/or planning phase. Almost all projects at some point carried out a gender situational analysis to understand how gender concerns affect project implementation and/or investigated the gendered context in which they are operating. In terms of budget, only few had dedicated project funds set aside for gender integration in project activities. Several projects produced gender analysis reports. Many projects collected disaggregated data but not many recognised the importance of the sex of the enumerators and researchers to address barriers to women's participation. Several projects addressed gender responsive monitoring and evaluation, whereas only few have taken gender concerns into account in research communication and dissemination.	*6.1 Gender responsive design and planning* Examples include: Adjusting project implementation to respond to community feedback (P1, P15); Considering intra-household gender relations when designing participatory aquaculture interventions (P2); Project design informed by land-use and econometric study of men and women farmers (P3); Analysing possible harms to women because of project before finalizing design (P5); Adjusting content of farmer trainings in different regions based on gender analysis (P6); Mapping risks of aquaculture market growth to gender relations (P7); Planning process with gender focus (P7); Conducting participatory research design (P7, P9); Integrating socio-economic findings in scale-up strategy (P8); Using "bottom-up" approach to understanding farming practices for men/women (P12); Applying transdisciplinary research approach combining technical and social project components (P13).
	6.2 Using gender analysis as research methodology Examples include: Conducting baseline and/or situational gender analysis (P1, P2, P3, P5, P6, P7, P8, P9, P10, P11, P12, P13, PR4, P15, P16, P18).
	6.3 Budgets for gender activities Examples include: Designating budget for gender-related activities such as focus groups, trainings, and producing gender-related publications (P1, P2, P13).
	6.4 Gender responsive data collection Examples include: Collecting sex disaggregated data (P1, P2, P3, P5; P6, P8, P9, P10, P11, P13, P15, P16); Recognizing gendered dimension of data collection and encourages male or female interviewers or focus group facilitators strategically (P1, P2, P4).
	6.5 Gender responsive monitoring Examples include: Conducting gender responsive M&E (P1, P2, P7, P13, P14); Using qualitative and quantitative gender indicators (P1, P7, P8, P10, P14); Tracking technology adaption by gender (P8); Developing M&E system to capture evidence of women's access to fortified food (P15)
	6.6 Gender responsive communication and dissemination Examples include: Encouraging academic publications integrating technical and social findings (P1); Producing a film that challenges gender stereotypes and promotes women's entrepreneurship (P6); Requiring and promoting inclusive, non-sexist language in all documents/ communication (P7); Creating interactive radio to engage women (P8, P9).

7.Accountability strategies Most projects developed a formal gender strategy. These strategies shared a similar focus on under-standing the gendered context of the project, and most focus on how and when women will be included during the project. However, some strategies stayed at the conceptual level, while others had more practical detail of the process of implementation. A few projects defined gender targets to measure progress on their gender strategic work, though most of these targets were limited in scope to the number of women involved	*7.1 Gender strategies* P1; P2; P3; P7; P9; P10; P11; P13; P14, and P15.
	7.2 Targets Examples include: ● P1: 40% of project staff female; 70% of women farmers involved in the project interventions; 40 working hours per year and 20% of self-reported physical strains of women reduced; 25,000 consumer female farmers oriented to at least one new tool and/or technique. ● P5: Target 50% of customers women; at least one woman staff member in each shop ● P8: Target 50% women farmers. ● P10: 50% of farmers trained on fertilizer micro-dosing will be women. ● P14: 20% participation of women farmers at each site; At least one women cooperatives per kebele (for a total of 60 kebeles).
8.Evidence generation strategies Projects collected evidence to inform future initiatives and orient technology and market development in gender-responsive ways. Some projects explored the role of media in gendered technology adoption processes or how women's access to resources affects food security. By generating evidence on of gender dimensions of interventions, and asking gender-aware research question, these projects contributed to a larger body of knowledge regarding gender dynamics in agriculture and food security	*8.1 Addressing knowledge gaps* Examples include: Exploring gender, food security, and technology use (P1, P8, P9, P10, P11; P12); Assessing effects of using fortified foods on nutrition from a gender perspective (P15, P18); Examining the gendered dimensions of access to assets and credit (P2, P5, P7, P13; P14) and markets (P3, P11, P13).
	8.2 Gender strategic research questions Examples of including gender specific research questions: ● Can participatory testing of drudgery-reducing technologies for women facilitate technology adoption and scaling? (P1); ● How do women understand gender equality? (P2); Will financial and entrepreneurship training, access to credit, and increased value train participation affect women's income, food security, and empowerment? (P2); ● Can ICT-extension enable small-scale female farmers to adopt technology and improve productivity? (P8); ● Does a gender focused media have an effect on differential adoption of men and women? (P9); ● Dynamics of women's participation in technology development and how women benefit (P12).

Annex 3: CIFSRF Gender Outcomes Achievements

Main Outcome Categories	Sub-outcomes with illustrative examples from CIFSRF projects
1. Women Reached Outcomes Outcomes include number of women who have been involved in project activities as participants.	*1.1 Women Reached* Examples include: ● *Women reached in diverse roles* as agricultural producers (P1, P2, P3, P5, P7, P8, P9, P10, P11, P12, P13, P14, P15, P16, P17, P18), food preparers and (grand)-mothers (P2, P4, P6, P9, P11, P13, P14, P15, P18), entrepreneurs (P3, P5, P6, P7, P8, P10, P11, P12, P14, P15), workers (P5 and P15), service providers (P8, P10, and P11), and consumers (R4, P5, P6, P15) ● *Different social categories of women reached*: Indigenous women (P7, P13), young women/girls (P6, P10, P13), and grand-parents (P2).
2. Women Accessing Resources and Benefits Outcomes Outcomes refer to women's increased opportunities and/or abilities to use resources and derive benefits from these resources. These correspond to different needs of women and are often directly related to particular roles. The set of resources considered is broad and includes intangible resources such as knowledge and skills and time as well as tangible productive resources. Derived benefits include reduced drudgery, food, health, and income.	*2.1 Increased access to knowledge and skills* Examples include: ● *Knowledge and skills about agricultural practices:* Improved crop management (P1, P2, P13); Disease control (P3); Input use (P5); Aquaculture (P7); Fertilizer application (P10; P14). ● *Access to extension services*: Gender responsive extension materials designed with and for women (P1, P9); Gender responsive ICT using radio and mobile-phones (P8, P9). ● *Business knowledge and marketing skills:* Package of financial planning tools for women farmers (P2) Value added techniques to diversify products (P3, P6, P12); Book and record-keeping and marketing skills for women micro- and small enterprises (P11). ● *Knowledge about nutrition and health: Importance of breast feeding (P2);* Negative effects of established gender roles and gender inequitable intra-household decision-making on nutrition (P2); Nutrition benefits of yogurt (P6), fish (P7), millet (P11), pulses (P14), and fortified foods/vitamin A (P15); Negative effects of sexual harassment and domestic violence (P9, P13).
	2.2 Increased/strengthened group membership Examples include: Women production groups/associations/cooperatives, farmers organisations (P3, P6, P7, P13, P14); Women self-help groups (P11, P13); Women listening groups (P8 and P9); Innovation platforms (P10); Women's savings and credit groups (P10, P13); Groups of women entrepreneurs (P6, P13).

	2.3 Increased access to productive resources Examples include: *Credit:* Microfinance and cost-sharing agreements (P2; P7; P13); Credit for agricultural inputs (P5). *Inputs:* Seeds (P3, P13; P14); Fertilizer, and pesticides (P14). *Markets:* Diversification of products and creating new markets (P3, P10).
	2.4 Increased adoption and use of new technology Examples include: ● *Equipment/farm machinery:* Hand-held corn shellers, farm rakes, grain storage bags, millet threshers and mini-power tillers (P1); Micro-dosing applicator (P10); De-hulling machine (P11); Blender (P12). ● *Techniques:* Homestead food production (P2); Fermenting techniques (P6); Aquaculture (P7), and simplified fertilizer application process (P10); Vegetable drying techniques (P10). ● *Crop varieties*: Small millets (P11); Chickpeas and green beans (P14); Nutritious potato (P13).
	2.5 Reduced drudgery Examples include: Due to labour-saving technology (P1; P11); Reduction of time needed to go to shops for agricultural inputs and household goods (P5).
	2.6 Increased consumption of nutritious food Examples include: Fish (P2, P7); Yogurt (P6); Millet (P11); Vegetables (P13); Pulses (P14); Fortified sun-flower oil (P15).
	2.7 Increased access to income Examples include: ● *Increased proceeds of women farmers* such as: P1, P2, P14 (increased yields from farming and home gardens); P3 (women access to new markets with increasing number of women producers participating and earning every year); P7 (family income increased and women benefitting through more active role in leather processing process). ● *Employment opportunities* for women were increased by P5 (farm shop assistants), by P7 (in retail node of fish value chain), by P8 (radio hosts) and as agricultural workers (P12) ● *Increased turnover of women entrepreneurs and business-owners* was achieved in P6 (of women-owned yogurt production); P11 (of millet porridge vendors), and P15 (of women sunflower oil retailers).

3. Women's Empowerment Outcomes These outcomes involve women's strengthened capacities to make choices on their own and voice concerns that are listened to and acted on. Here unequal gender relations can be challenged as they are seen to be the basis for constraints of women. Specific outcomes include increased control over decisions, increased leadership and voice, enhanced recognition of women in roles as 'knowers' and agents of change, as well as positive change in social and gender norms and behaviours.	*3.1 Increased control over decisions* Examples projects: ● *Production*: Increased influence on what to grow at homestead (P2; P14); More equitable intra-household decision-making concerning production (incl. start-up and investments) (P7). ● *Consumption*: Increased influence on intra-household food consumption (P2; P14); Redistribution of decision-making from men to women of what food to buy and consume (P13). ● *Nature of decision-making:* Input (P2; P14); Joint decision-making (P7); Autonomy (P13).
	3.2 Increased leadership & voice Examples include: Representation of women in formal leadership positions in fish farmer organizations (P7); Individual leaders of project supported producer groups (P13); Collective leaders of self-mobilized women's saving groups (P13); Collective leaders representing women strategic interests and advocating for women's rights vis-a-vis local government (P13).
	3.3 Enhanced recognition and status Examples include: ● *As knowledge holders* and legitimate research partners (P1; P2; P7; P13). ● *As farmers*: With increased yields (P1; P2; P14); Homestead (P2; P14); In fish farming families (P7); In post-harvest management (P11); Women's self-recognition as farmers (P13). ● *As women entrepreneurs and business owners*: Formal registration of women vendors (P11). ● *As food preparers and as mothers* (P2; P14) ● *Value of women's care work* (P2 and P13).
	3.4 Change in gender norms and behaviour Examples include: Changes in labour divisions in the household with greater male support for reproductive tasks and child-care (P2; P13); Challenging prevalent 'macho' culture and domestic violence against women (P13).