



RESEARCH
PROGRAM ON
Dryland Systems

Guidelines: Integrating Gender into Biophysical Research

Food security and better livelihoods
for rural dryland communities

April 2015



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Correct citation: CGIAR Research Program on Dryland Systems. 2015. Guidelines: Integrating Gender into Biophysical Research. Amman, Jordan

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Purpose of the Gender Guidelines

These guidelines for integrating gender into biophysical research propose simple and practical steps for taking gender into account throughout the research project cycle. The guidelines are for biophysical scientists who conduct research under the framework of the CGIAR Research Program on Dryland Systems.

These guidelines emerged from a workshop with a select group of scientists representing different Dryland Systems partner centers, which was held on November 2014, in Dubai, UAE. They were later amended by the Dryland Systems Gender Program Coordinator. A number of tools, theoretical frameworks, and practical considerations for integrating gender into agricultural research have been considered with a goal of imparting straightforward methods for gender-responsive biophysical research. The aims are to facilitate the empowerment of rural women, the promotion of gender equity, and the scaling out of gender equitable development in mainstream biophysical research. This is thus a practical way to implement the Dryland Systems Gender Strategy 2014–2017.



Photo: ILRI/Stevie Mann

Why integrate gender into biophysical research?

Increase the rate of adoption

Improve the quality of the adoption

Influence the influencers

Gender equality = equal **rights** for men and women

e.g. women and men have equal human rights.

Gender equity = equal **access** to resources

e.g. to allow women to benefit equally from training, social propriety needs of women must be ensured.

Increase the capacity of (family) workers in agricultural production

Integrating gender into biophysical research will increase the rate of adoption of technologies and innovations resulting from this research and improve the quality of the adoption. When all people who are involved in agricultural production and who do the actual work (often women) receive knowledge and hands-on experience with new technologies and techniques, they will adopt them more readily. The new practices will be adopted to a larger extent (more scaling out) and in a more appropriate way than when we focus on only one type of person such as the head of household or the owner of the farm (often men).

One person, such as the owner of the farm, might take the decision to adopt a new technology, but two questions arise immediately:

1. Who influences the decision-maker such as the head of household or the owner of the farm – the researcher only?
2. Who carries out the decisions made? That is, who then uses the new technologies and implements the new techniques?

Regarding the first question, it might well be that family such as wives, fathers, brothers, mothers, sisters, sons and daughters influence the decision-maker (often male) in his decision; or perhaps a neighbor, local council member, a trader of supplies, or a religious leader. Therefore, to guide the decision-maker in adopting a new technology, we need to identify the influencing factors and individuals involved. This identification of the influences driving decision-making needs to be part of the biophysical research, and is done most efficiently through a gender-responsive system analysis and by involving social scientists specializing in gender.

Regarding the second question, an analysis along the chain of production of crops or livestock will reveal who actually carries out the different steps required. Every member of the household (women, men, the young, the old) might have a task; hired female and male workers might take decisive production steps. All people involved in the production chain need to know what will change in their task, and they need to know how they contribute to the whole. If only the head of household or household decision-maker is trained and exposed to the new experience, he or she might not be interested or might not know how to pass the newly acquired knowledge on (see Box 1). For example, a shiny new machine is bought by a male head of household which remains in the shed while he is working in a paid job in town. At the same time, his wife, who does not know how to use that machine and is perhaps discouraged from doing so, carries on with agricultural production as usual.

Box 1. Example from India

Women grade the produce from their fields and keep the best seed for next year. They store the grains in an earthen container. Ash is mixed along with the grains to protect them from insects and pests before storing. *But* women have no access to information and training in agriculture (ICRISAT 2013/14).

Another strong argument for inclusiveness is to harness all talent available in a society. If more people are involved – more women, more young people, more people from different ethnic or religious groups, more people with different educational and social background, and more people with disabilities – society will harvest more innovation ideas and thus develop more. To harvest these ideas, experience shows that it is important to encourage the participation of the formerly excluded in a targeted manner, and to create an environment that allows this participation (e.g. have a focus group for women only and have it at times and locations that suit the security and cultural propriety needs of women).

In economic development, it is common wisdom that the motivation of human actors makes a decisive difference in reaching development outcomes. Isn't it human rationality that when you benefit from something you make a bigger effort? Therefore, to increase yield increase the benefits of those, who produce, who carry out the agricultural labor – often women (see Box 2). The benefits can be various, such as being able to feed and educate the children better, or being able to independently decide on one's own choice of use of income. Reaping benefits, whatever they are, entails more decision-making power and thus independence of women.

***Harness all talent
for innovation and
development***

Box 2. Example from East Africa

Women are as actively involved in agroforestry as men. However, the level of participation and benefits for the women are constrained by cultural norms and lack of resources (Degrande and Arinloye 2014, citing Kiptot et al. 2013).

The power shifts involved in development can sometimes be opposed by people who would like to conserve the status quo. Some see allowing others to gain power as “committing social suicide”¹. The empowerment aimed at in Dryland Systems research, is to achieve a win-win situation. One population group acquiring power, for example because they gain in knowledge or are involved in a decision-making process, does not mean that others lose it. From this systemic point of view, power is not seen as a limited good, but as a relationship item that everyone can have (Luhmann 2013; see also Box 3). If, for example, a woman wins in independence – and she thus gains power to withdraw – her husband also wins in power while her financial gains relieve him of some of his financial responsibilities and he can even benefit from her contributions directly.

***Motivate the
people, who do the
labor***

***Empowerment
of one is
empowerment of
many***

¹ A comment made during a frank discussion with researchers in March 2015.

Analyze different trade-off calculations of women and men

Furthermore, trade-offs involving a greater burden of labor for increased income must be taken into account. Research into what motivates women to increase production and what their trade-off calculations are is often strongly related to biophysical research, for example on new technologies and management processes.

Achieving sustainable economic growth – to which biophysical research is contributing, through for example ecologically sustainable innovations, user-friendly technologies and practices – is another reason for including gender aspects. Research shows (Acemoglu and Robinson 2012) that only economic growth distributed in a relatively equal and equitable manner is sustainable growth. This means that the benefits of economic growth are accessible by the majority of the population, men and women. Including female stakeholders such as female researchers, female farm household members, or female representatives of organizations in biophysical research activities is one way to ensure equitable access to the benefits of the research.

Equitable access to benefits of research, make it sustainable



Photo: ILRI/ Stevie Mann

Box 3. Theories of empowerment identify processes of change associated with different concepts of power

For the Gender Strategy, we have adapted Rowlands' (1997) typology of power or agency:

Power from within (change) – growing self-awareness, confidence, assertiveness, motivation, a desire for change which can influence individuals to make/strive for change (even if they fail)

Power to do or to withdraw or withhold cooperation (choice) – growing individual capacities, especially through sharpening knowledge, know-how, and skills, opportunities to access economic/agricultural resources and social contacts/networks, to make decisions, exercise authority, and solve problems

Power over (control) – changes in access to underlying agricultural resources (including labor, jobs, and income) and power relations, and the ability to benefit from these new opportunities and/or overcome power inequalities and constraints

Power with (community) – collaboration, solidarity, shared vision and goals, and joint action with others, including in challenging social norms and practices, negotiating to tackle constraints or abuses, and action to defend common interests.

The four power types listed here, fit systems thinker Niklas Luhmann's overall definition of power:

Power is the ability to withhold one's cooperation; the possibility to live independently

And why integrate gender into all CGIAR Research Programs?

To reach the goals of Dryland Systems' research for development, the different views, needs and demands of men and women active in agriculture must be considered. The best entry points for development in and through agriculture can only be identified by knowing the stakeholders' options for taking on new research results. Policy prescriptions such as CGIAR's Consortium office guideline on preparing 2nd call research proposals confirm this view (Box 4 provides an outline of the gender guideline regarding the 2nd call).

Box 4. CGIAR's guidelines for 2nd call research proposals

Gender-responsive outcomes

- *Integral component* of a CGIAR Research Program's partnership strategy for maximizing impact
- Effective mainstreaming of gender across the research cycle, i.e. in:
 - defining and prioritizing target beneficiary populations and agro-socio-ecosystems
 - setting objectives for discovery research
 - designing and pilot testing innovations, and
 - going to scale with innovations demonstrated to benefit women as well as men at the pilot scale
- Explicit inclusion of gender in impact pathways, outputs, outcomes and theory of change; Flagship Projects, work plans, monitoring and evaluation, and reporting.

How to integrate gender into biophysical research

Process

To respond to the needs and demands, constraints and opportunities of men and women alike, both genders need to be considered at all stages of the research project cycle.

The following paragraphs describe possible actions to integrate gender in each phase of the research. Ideally, gender issues are taken into account from the beginning of the research, but gender considerations can be brought on board at every stage (see Figure 1).

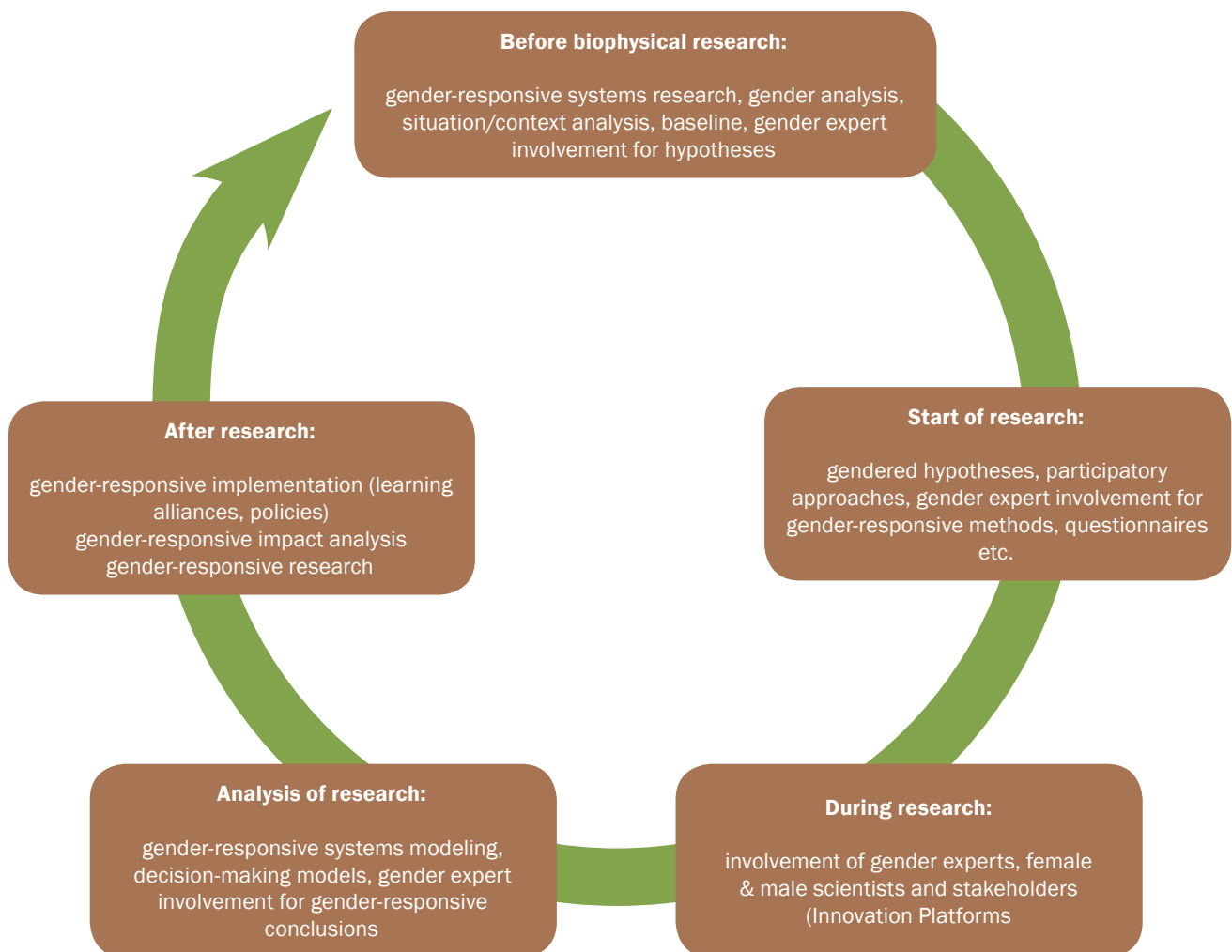


Figure 1: Gender at each stage of the research project cycle

Before starting the research:

- Plan preparatory research of the system and context (gender diagnosis) of the target area including gender aspects in biophysical research approaches.

Example:

1. To formulate research questions and hypotheses describe in a qualitative systems diagnosis, interrelations, possible feedback loops, tacit trade-offs and synergies, and new change points.
2. When using a logical framework for planning the research, include objectives, outcomes, outputs, quantitative and qualitative gender indicators along with or integrated into biophysical indicators, as well as gendered research methods and research activities; all aligned to Dryland Systems (gender) objectives and indicators.

- Budget for the human resources needed to carry out the research such as additional gender expertise (time of the focal point, consultants, other external scientists, etc.).

- Ascertain the relationship of ecological and social factors by carrying out gender-responsive systems analysis. For this analysis define the spatial and time-related boundaries of the system you are researching, describe the context, analyze ecological and social system elements, drivers, interrelations, possible feedback loops, and possible trade-offs and synergies. Ensure that in the social factors gender roles, social institutions and culture (e.g. social norms and values) are taken into account.

Example: Biophysical research and social aspects often relate to the same issues such as land use, water management, division of labor in farming households, or marketing of agricultural produce.

What does **gender-responsive** mean?

Responding through your research and activities to the needs and demands, constraints and opportunities of both genders; men and women alike.

Examples:

Involve women in learning alliances encouraging the women to contribute.

Empower women in their traditional livelihood activities.

Strengthen women to cope with new, non-traditional tasks.

Involve women actively in farm trials and demonstrations.





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HOW? - Example

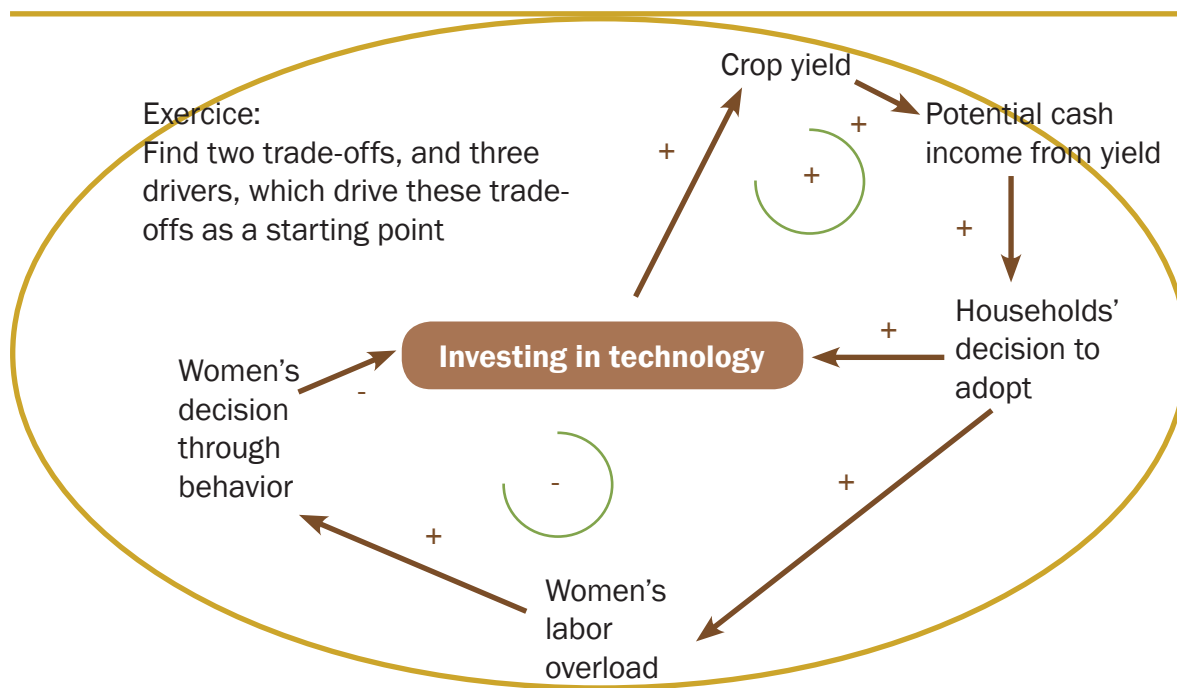


Figure 2:

- Determine the gender context in the target region by carrying out gender analysis (Doss 2013): analysis of needs and demands, opportunities and constraints (Dryland Systems Gender Strategy 2014–2017, Annex 3) faced by women, men, girls and boys regarding their livelihood. Analyze the socio-economic dynamics between these groups, the socio-economic environment (institutions) and their interrelations.

Example:

According to Doss and Kieran (2014) and Dryland Systems gender experts' experience, the following are the essential points for conducting gender analysis:

- Ask questions about different groups of men and women and identify the responses by sex and age
- You do not need to interview men and women from the same households. You do need, however, to interview men and women to avoid bias in your research findings. Interview them separately and jointly, and compare the results
- You need to adapt your questions to the local setting, particularly to understand the gender roles and social dynamics, also between women
- You do not need to compare female and male heads of households as part of the gender

analysis as the differences between these household types are not necessarily related to the sex of the household head.

- *Carry out an interdisciplinary situation analysis or context analysis to identify new phenomena, new interrelations, and a new view on issues and to develop a new research approach.*

Example: “We conducted a gender mainstreaming training in Ethiopia. Trainees got the opportunity to see the difference between information collected from men and women through FGDs that were held with three different groups (all men, all women, and a mixed group of men and women). Trainees were able to see the benefits of including both men and women’s perspectives in their understanding of the issues/challenges and in designing their research questions. The exercise was thus very useful to validate and affirm our instructions to include women in their data collection efforts by going beyond the common or closed household model and collecting sex-disaggregated data” (Bezalet Dessalegn, ICARDA).

- *Put together a monitoring and evaluation (M&E) plan using information from the situational and context analysis and baseline, with indicators integrating a gender perspective (i.e. indicators that both account for men and women’s roles, responsibilities, and empowerment objectives and are relevant to the biophysical research objectives).*

Examples: (1) equity in access to price information (% of women/men accessing information); (2) 30% of women making cheese in the target area are using labor-saving technologies introduced by the project; (3) 50% of all input suppliers that are distributing the vaccine for small ruminants² are female.

- *To ease interdisciplinary work, involve gender experts, social and economic scientists, and anthropologists early on for planning ex-ante studies and (systems) analysis, surveys and for hypotheses formulation.*

Example: Develop targets, research questions and hypotheses which take account of the female and male stakeholders of the overall research theme. Consider including targets that separately address men and women (e.g. 30% of women adopted the technology).

At the start of the research:

- *Formulate gender-responsive hypotheses to include relevant gender issues in the conceptual thinking.*

Example: “Gender-responsive extension and veterinary services improve the livelihoods of women and men smallholders through providing targeted participatory approaches” (Dina Najjar, ICARDA).

- *With the support of a gender expert, devise gender-responsive methods, questionnaires, etc.*

Example: “I used semi-structured interviews on innovation pathways to explore in-depth the trajectory of individual experiences with new agricultural and natural resource management practices, and the role of gender norms and capacities for innovation in these processes” (Dina Najjar, ICARDA).

² Small ruminant livestock are largely controlled by women in the target area.

- To demonstrate the outcomes achieved later on, carry out a baseline survey on households disaggregated by gender, and strive to collect data at sub-household level.

Example: In a gender working group meeting participants agreed that the collection of sub-household data is done less often because more time and thus costs are required for these. Cecilia Turin (CIP), however, mentioned that one can define typologies of households and survey selected households within groups including female and male household members.

Box 5: Experiences of gender researchers in Dryland Systems

- Using the logical framework, create a work plan that includes data from the situational analysis and addresses the constraints, opportunities and current changes faced by men and women
- Be flexible with the work plan to accommodate unforeseen circumstances (i.e. diseases, political instability)
- Stay open to learning from the community/participants and identify additional stakeholders as needed to address community needs
- Consider having both female and male research assistants, enumerators and facilitators as appropriate
- Involve the community (both men and women) in monitoring their own progress in the project. This can increase the ownership of the project by community members and improve the long-term sustainability and success of the project
- Be aware that your presence influences local social dynamics

During the research:

- When organizing research and activities, consider gender roles in the research process (Tavva et al. 2013; see also Box 5).

Example: “With support from gender expertise in Karak, gender research suggests that delivering benefits in cheese making to women implies working in groups with women (this may include forming new women’s groups) to control income from fat separators introduced by ICARDA. Often, women do most of the work in cheese processing yet husbands control the income. By working in groups, women are more likely to control the income from cheese making, since it is easier to claim profits from other women than from one’s own husband. The fat separators also reduce drudgery for women in milk churning, which otherwise would take 1.5 hours manual churning” (Dina Najjar, ICARDA).

- Involve gender experts to provide socio-cultural data (also for bio-economic-social systems and multi-agent modeling in the analysis stage).
- Co-produce knowledge on options by female and male scientists and stakeholders, for example in innovation platforms (IPs) and learning alliances.

Examples can be found in Louhaichi and Haddad (2014) and Gurung and Menter (2013).

Analysis of the research:

- Involve gender experts for gender-responsive conclusions, for example on different trade-off calculations for women and men.

Example: Women in Zambia had smaller plots of nitrogen-fixing trees than men, possibly because of the heavy workload that women bear, land constraints, or risk aversion (Degrande and Arinloye 2014).

- If feasible, carry out gender-responsive systems modeling (e.g. bio-economic-social systems and multi-agent modeling).
- Analyze data on the basis of economic and social decision-making models, taking the influence of culture into account.

After the research:

- Share project results with the community (positive and/or negative); discuss options for the community if the results are not easily accepted; involve all stakeholders in sharing the project results, including those who are potentially interested.

Example: Use gender-appropriate approaches to disseminate results (consider who owns/ accesses/controls information and communications technologies (ICTs) such as radios or cell phones), numeracy, literacy - Consider training locals (as research assistants, enumerators, etc.) to help share results.

- Implement with gender-responsive approaches to innovation platforms, learning alliances, policies, building enabling environments for women and men, capacity development of female and male stakeholders, and value chain development.

Example: Interventions connected to Dryland Systems research encompassed the following:

- *Involvement of women in training, farm demonstrations, field visits, learning alliances, and intervention platforms*
- *Creating and strengthening women's groups and associations*
- *Empowering women by developing capacity regarding their crops, livestock and farming methods*
- *Gender-disaggregated surveys*
- *Gender-responsive value chain development*
- *Gender-differentiated development and dissemination of technologies and practices*
- *Developing the capacity of women and men to perform in non-traditional roles*
- *Empower women for successful livelihood building off-farm or on-farm (integration of system overlaps).*
- Utilize gender-responsive approaches such as gendered policy briefings and capacity developments in scaling up and out (see Box 6).
- Package technologies and fit the packages to the context (land tenure, access to resources, decision-making power, income) of women and men.

Example: Projects and programs that provide positive outcomes in reaching women and achieving greater gender equality include the following key elements:

- *Providing small packages and affordable ways to bring technologies to poor women and men*
- *A quota system or reservation policy for women, coupled with effective capacity strengthening, increasing mobility, and reducing women's time burden*
- *Promoting collective action and organization among women, coupled with market-oriented capacity strengthening and mechanisms for women to secure their income and resources*
- *Utilizing a mix of delivery approaches such as radio, social networks, farmer field schools, and participatory approaches. This is coupled with affirmative action of staff in terms of gender policy and gender-responsive actions to ensure that useful innovations reach poor women and men farmers*
- *Paying attention to heterogeneity of women and men producers with proper targeting to reach those who are in the most need (Ragasa, 2012)*
- Carry out gender-responsive impact analysis (IFAD 2013) and feedback loop studies.
- Plan for gender-responsive research, which expands, complements or deepens the research results.

Box 6: Scaling up and out – utilize gender appropriate approaches to disseminate technologies or innovations

- Take women's workload and family duties into account
- Consider who owns/accesses/controls the information *media* such as ICTs so that both women and men receive the information
- Consider different preferences of women and men regarding *time and location* of meetings/trainings
- Consider that men and women often have different literacy or numeracy rates and education levels when identifying mechanisms to scale up
- Identify *existing networks* in the area, including women's groups, farmers' cooperatives, other local groups (religious, cultural and social) and organizations (NGOs), government agencies, or private sector to share information with
- Consider various networks and resources available for scaling up such as Rural Advisory Services, or existing organizations such as the Global Forum for Rural Advisory Services, www.gfras.org
- Use various approaches such as innovation platforms or single-sex groups to meet the *cultural* propriety and social needs of both men and women farmers
- Consider starting projects with single-sex groups if needed to encourage the women to talk, and then return to mixed-sex groups when the women feel confident enough to speak publically

Approaches

Approach 1: Gender-responsive systems research as a tool to mainstream gender into biophysical and agro-economic research:

- a. Systems assessments (qualitative systems diagnosis, interdisciplinary systems narrative)
- b. Formulating gender-responsive, interdisciplinary hypotheses
- c. Systems analysis
- d. Research on main socio-economic-cultural constraints
- e. Systems modeling:
 - i. Social research coding turned into variable definition for modeling
 - ii. Gender-disaggregated survey data used in modeling.

Approach 2: Multi-methods, multi-strategy research as a tool to mainstream gender into biophysical and agro-economic research.

Quantitative methods such as:

- a. Gender-disaggregated (see Doss and Kieran 2014) and sub-household level surveys (see Gender, Agriculture & Assets Project 2012)
- b. Baseline surveys (Malapit et al. 2014) and impact studies
- c. Econometric analyses including variables pertaining to gender issues
- d. Financial analysis expanded to include socio-cultural ratios
- e. Gender approach to utility functions
- f. Quantitative decision-making models (game theory) using gendered approaches.

Box 7: Why gender-responsive systems research?

Gender-responsive systems research in biophysical and agro-economic research allows us to:
Identify interrelations and feedback loops between ecological, economic and socio-cultural (gender) elements and system structures
Discover tacit trade-offs and synergies linked to social roles, status and networks
Open new entry points for gender-responsive sustainable agricultural development in drylands.

Qualitative methods such as:

- a. Gender-sensitive participatory research, for example:
 - i. Interviews and focus groups
 - ii. Social action research
 - iii. Participatory observation
 - iv. Discourse analysis (communication analysis)
- b. Ethnographic methods and anthropological observation
- c. Social and anthropological experiments on gender roles, trade-off differences between genders, and gender interrelations.

Box 8: Why multi-strategy research?

A multi-methods, multi-strategy research is purposely designed from the outset and is comprehensive, so that:

Qualitative research facilitates quantitative research (hypotheses, in-depth knowledge aiding interpretation, triangulation)

Quantitative research facilitates qualitative research (selection of interviewees, of focus).

Additional gender resources categorized by theme

Articles and links on the themes shown in Table 1 are listed in the References, and are also available on the Dryland Systems website.

Table 1: Gender resources

Theme	Source(s)
Access and control of assets	Meinzen-Dick et al. (2011); Dryland Systems (2014d)
Agroforestry	Catacutan and Naz (2014)
Crops; women's crops	Orr et al. (2013, 2014)
Climate change	Jost et al. (2014)
Conservation	Najjar et al. (2013)
Cooperatives	My.COOP (2015)
Decision making	Homann-Kee Tui et al.
Empowerment	Khuri (2014)
Seasonal division of labor (activity profile)	Dryland Systems (2014b)
Equality	Danida (2008)
Food security and nutrition	BRIDGE (2014)
Gender Audit	
Gender analysis in agricultural research	World Agroforestry Centre (2014); Doss (2013)
Gender mainstreaming in agricultural research	IFPRI Gender Tool Box (2009)
Household_	Bishop-Sambrook (2014)
Livestock_	IFAD (2010)
Marketing	
Natural resource management_	Degrande and Arinloye (2014)
Value Chain_	ICRISAT (2013/2014)
Water	
Wage Gap	Hegewisch et al. 2010)
Working conditions	Torero 2013)

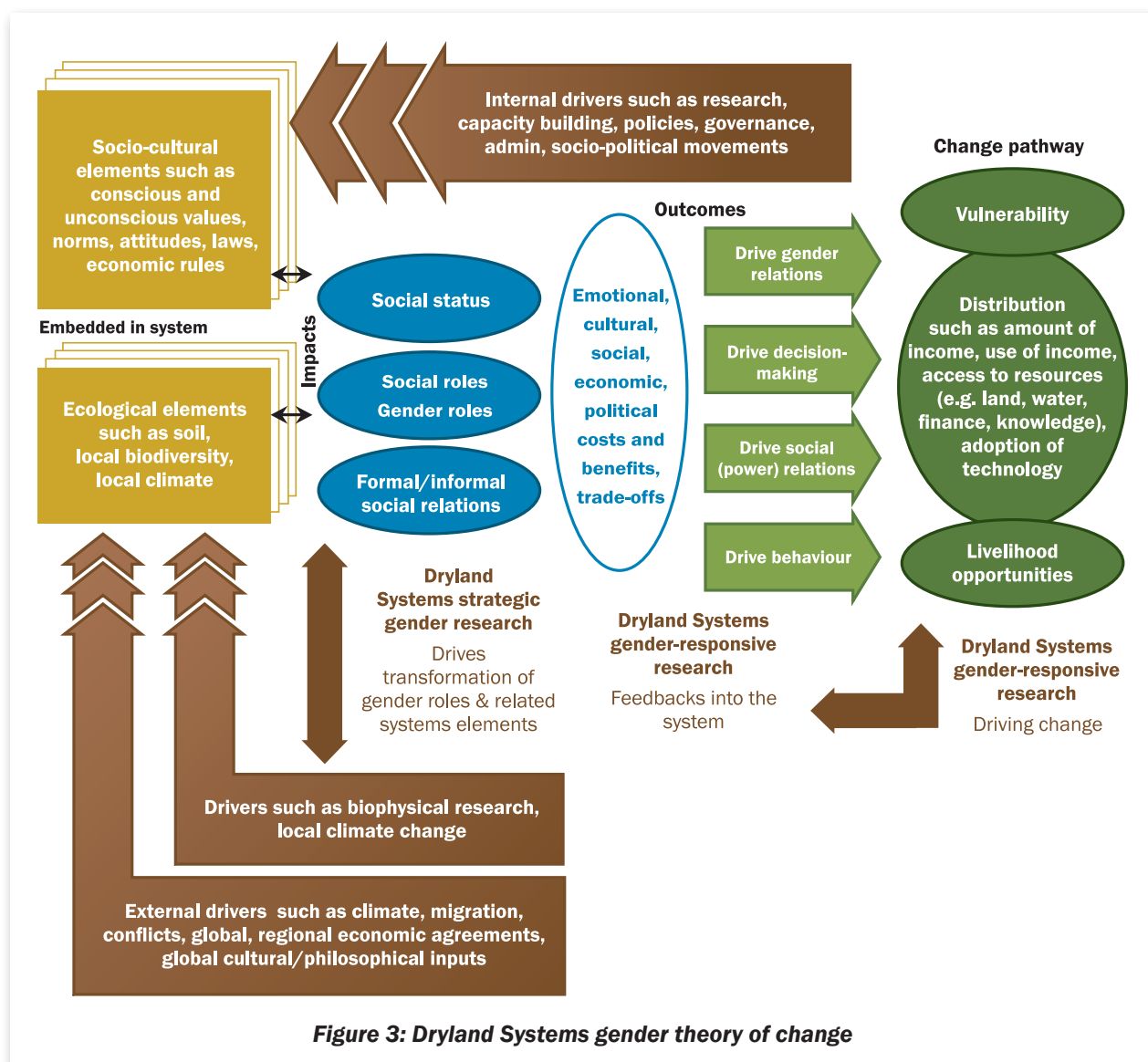
Annexes

Annex 1: Gender IDO, theory of change, impact pathway

A key Intermediate Development Outcome (IDO) of Dryland Systems is **IDO 5 Gender /women's empowerment**: women and youth have better access to and control over productive assets, inputs, information, and market opportunities and capture a more equitable share of increased income, food, and other benefits.

Gender indicators:

- Scaling out gender equitable development interventions by national agricultural research systems (NARS) and partners
- Adoption of guidelines for empowering rural women and increased gender equity by NARS and development partners. The targets for both are 30% of the respective institutions.



The theory of change in the Dryland Systems Gender Strategy is based on a model of social change whose explicit aim is to reduce social inequalities, inequities, and poverty, and to support the marginalized in their struggle for “empowerment.” Thus, while this Strategy focuses on women’s empowerment, it also takes into consideration the fact that poor men may also be disempowered.

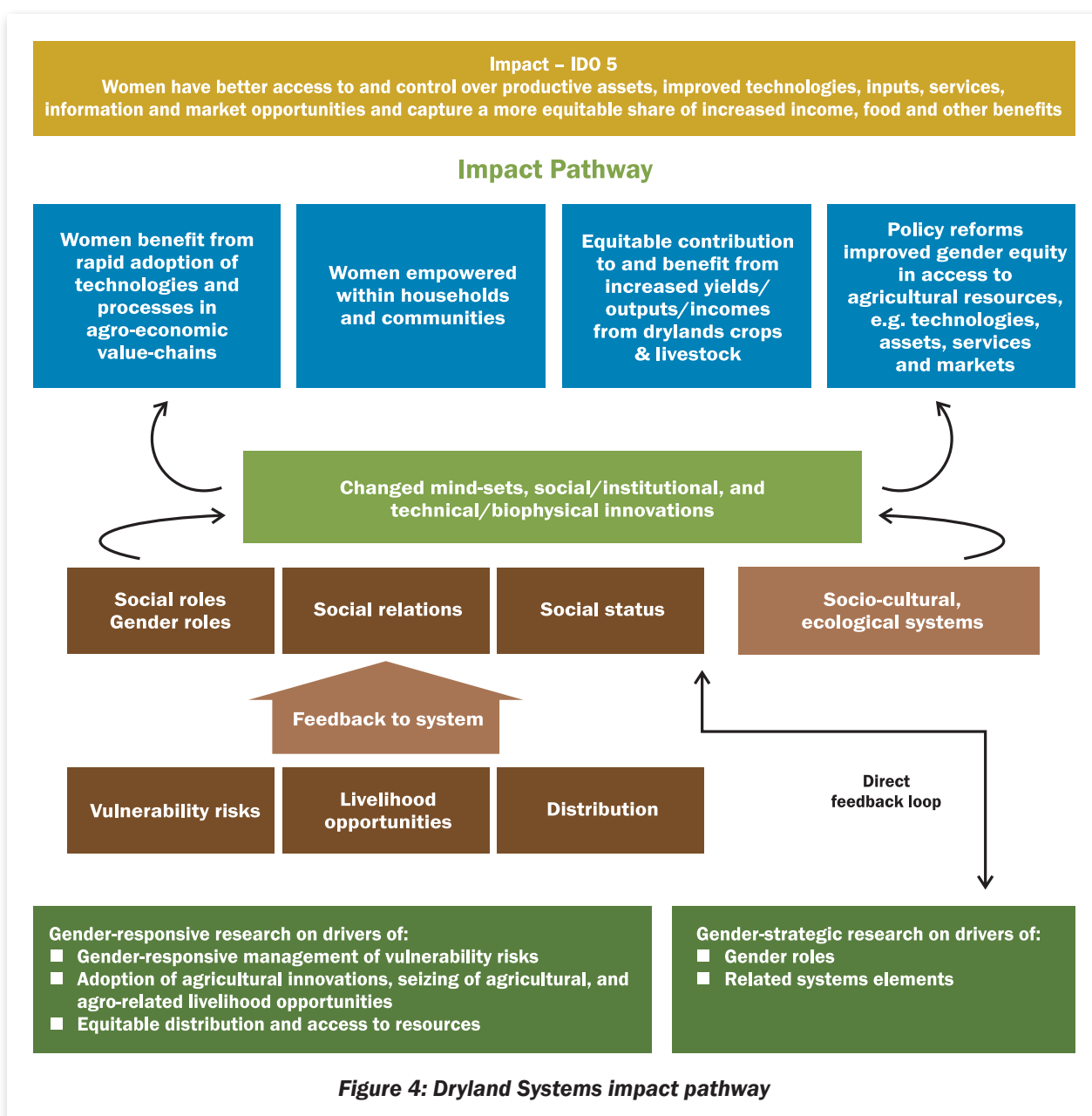
The theory of change, illustrated in Figure 3, builds on the concept of “institutions,” Kabeer’s (2010) definition of “empowerment” and Rowlands’ (1997) typology of power or agency, all of which were introduced in Section 2.2 of the Gender Strategy, 2014. Figure 3 shows the root causes of inequality and disempowerment, and the pathways by which these can be remedied.

Socio-cultural elements and ecological elements constitute the system and determine social status, informal and formal social interrelations, and gender roles. Conscious and unconscious emotional, cultural, social, economic, and political **costs, benefits, and trade-offs of decisions and behavior** depend on the different social roles, status, and social networks of people interacting in this system. All decisions by human actors depend on these costs, benefits and trade-offs, which are relative to their social roles, status and interrelations. Decisions and behavior establish the system’s ability to manage socio-ecological vulnerability, equitable distribution of resources and benefits, and equitable access to opportunities. These are pivotal for the sustainable development of a society, economic growth, and sustained well-being of all stakeholders and, ultimately, of a viable agricultural livelihood system.

Change is driven by the change of socio-cultural elements or ecological elements of the system, based on which the **interrelations** of systems elements change. Such a change can be driven by influences external to the system such as climate change, plant, animal or human diseases, conflicts, migration, economic booms, crises, and international agreements, or cultural and philosophical stimuli. Internal changes, often inspired by external influences, can be brought about by government policies, education and capacity building, socio-political movements, and research. Individual agents of change, building on their social roles, status, and networks determined by systems elements, inspire internal changes, but hardly bring them about alone.

The theory of change provides a model to help Dryland Systems identify ways in which it can contribute appropriately and effectively. For example, the CRP can leverage change that is already happening to:

- Identify, harness, and build on positive “external changes” to develop demand-led innovations (e.g. gender-sensitive, climate-smart production practices)
- Provide data/analysis that inform, support, and monitor and evaluate the impact of public policies and action in improving gender-equitable contributions to and benefits from agricultural innovations
- Partner with social movements that are calling for changes in the status quo to close gender gaps in access to individual, household or community resources and to innovations in dryland systems.



Annex 2: Sources and literature

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RESEARCH
PROGRAM ON
Dryland Systems

The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas.

Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centers and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

The program is led by the International Center for Agricultural Research in the Dry Areas (ICARDA), a member of the CGIAR Consortium. CGIAR is a global agriculture research partnership for a food secure future.

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