



## BACKGROUND NOTE

# Ending Hunger Sustainably: The role of gender

Ceres 2030 brings together the International Institute for Sustainable Development (IISD), Cornell University, and the International Food Policy Research Institute (IFPRI) to answer two linked questions: (i) What will it cost governments to end hunger as defined by Sustainable Development Goal (SDG) 2? And, (ii), What are the most effective public investments to end hunger sustainably based on the available evidence? Ceres2030 is a three-year project that will conclude early in 2021. SDG 2 is the second of 17 Sustainable Development Goals that together comprise the UN's 2030 Agenda for Sustainable Development (UN General Assembly, 2015). SDG 2 is a commitment to end hunger

sustainably, with sub-goals focused on ending hunger, improving nutrition, increasing small-scale producers' income, and reducing the environmental footprint of agriculture.

The project combines a state-of-the-art economic model to cost the interventions needed to end hunger with a machine-learning enhanced approach to systematic evidence reviews that assess the effectiveness of agricultural policy interventions. The evidence syntheses are designed to support decision-makers in making better use of the available evidence when they choose the interventions to invest in to advance sustainable food systems and end hunger. The project is focused on SDG 2.1, the commitment to end hunger, SDG 2.3 on doubling the productivity and income of small-scale food producers, and SDG 2.4 on ensuring agricultural sustainability and resilience.



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This paper is one of several the Ceres2030 project team are writing on issues that are critical to the realization of SDG 2 but for which there is not enough data to do the issue justice. The Ceres2030 team are not generating new data so much as analyzing and synthesizing existing data. As such, both the cost model and the evidence synthesis are dependent on what is already published. A cost model depends on quantitative data. If that data is not disaggregated by gender, the model cannot build gender-disaggregated conclusions. Gender-disaggregated databases are slowly being built. The research and policy worlds know more now than they did 10 years ago, and they are learning more all the time. However, although they are becoming more available for health and nutritional outcomes, gender-disaggregated statistics for agriculture and rural development remain scarce.

The case for including a gendered analysis has been made before, and eloquently. Some of that literature in relation to agriculture and food security is cited below. The project team hope that in the future, a project looking at existing evidence as Ceres2030 is will have the quantitative data they need to address women's role in agriculture.

Similarly, the syntheses of available evidence are likely with time to find more discussion of gender in the published research. For now, unfortunately, the published research contains as many or more gaps than answers. This briefing note points to the challenges, highlights some interventions that have proven to be effective, and hopes it can contribute to making the case that gender must be counted and consciously included if women's empowerment is to get the place it deserves in realizing the 2030 Agenda.

## THE CHALLENGE

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### 1. WHAT IS THE ISSUE?

Agriculture has a significant gender dimension. Women comprise 43% of the agricultural labour force globally (Food and Agriculture Organization of the United Nations [FAO], 2015). In least developed countries, 64.3% of women were employed in agriculture in 2015. Women are active in agricultural and food systems around the globe. In many subsistence agricultural systems, they have the primary responsibility for food crop production. Typically, they are also responsible for the kitchen gardens that supply household needs. Women are less likely than men to be involved in the production of cash and high-value crops. It is important to remember there are regional variations, but in general, women in agriculture tend to be self-employed, and their tasks are more time- and labour-intensive than those performed by men (FAO, 2011, 2013, 2015). At the community level, women are more likely than men to engage in the management of natural resources for agriculture, including soil and water conservation, afforestation, and crop domestication.

Despite women's active role in agriculture, they are often ignored or excluded from agricultural services and systems. They typically lack equal access to education, although this is improving, and they face legal and cultural barriers in accessing inputs, including credit, in establishing land title, and in obtaining support from extensions services. This affects women's productivity: Female farmers' productivity is lower on average than their male counterparts, both in terms of produced yields and earnings (FAO, 2015). For instance, in the Asia and Pacific region, women typically work



12–13 hours more than men per week, yet they produce 20% to 30% less than men farmers (FAO, 2011: Data derived from United Nations Department of Economic and Social Affairs, 2010). While the reasons for this gendered productivity gap are multifaceted, it is important that policy-makers pay attention to the social and economic costs of the gender-based pay gap and women's unequal access to productive resources. Equalizing this productivity gap would have significant positive benefits. According to the FAO,

If women had the same access to productive resources as men, they could increase yields on their farms by 20–30 percent. This could raise total agricultural output in developing countries by 2.5–4 percent, which could in turn reduce the number of hungry people in the world by 12–17 percent. The potential gains would vary by region depending on how many women are currently engaged in agriculture, how much production or land they control, and how wide a gender gap they face. (FAO, 2011, p. 6).

The existing productivity deficit is attributed to women having greater responsibility for unpaid domestic work, less access to the factors of production (including land, high-quality seeds, fertilizer, farm equipment, hired labour, and credit), and less access to information networks such as farmers' organizations (FAO, 2015; World Bank & ONE, 2014). Women are also often excluded from agricultural extension programs and markets (O'Sullivan et al., 2014; Pionetti, 2006). These limitations in women's access to production support are largely driven by social and cultural norms (O'Sullivan et al., 2014). In many social and political systems, women are marginalized in (or excluded from) decision making, both within the household and in formal decision-making institutions. Their exclusion is often supported in law.

To close the productivity gap between small-scale and larger commercial farms, farmers need access to energy, irrigation, and transportation. In sub-Saharan Africa, the majority of poor farmers—especially female farmers—lack access to such infrastructure (FAO, 2006). Many experts and communities have identified the need for low-cost and reliable energy as an input for agriculture. Energy is essential to run equipment, process and refrigerate food, pipe water, and run irrigation systems (FAO, 2006). But energy is especially critical for rural women's productivity because a significant share of the household tasks traditionally given to women and girls take far longer than they should due to poor infrastructure and low levels of mechanization. Women's economic opportunities are also enhanced when transportation infrastructure and affordable transportation services are available. Safe and reliable transit can greatly reduce women's time burden, expand their work opportunities, and enlarge market access, either directly or through improved access to cooperatives and producers' organizations (FAO et al., 2010).

Women are also disadvantaged compared to men as consumers of food. With other conditions being equal, poor households headed by women are more successful in providing a nutritious diet for children than poor households headed by men (International Finance Corporation [IFC], 2013, p. 5). Yet cultural traditions and social structures often leave women poorer and more prone to malnutrition than men. This includes pregnant and nursing mothers, who often need special and additional food (FAO et al., 2018). As a result, women are up to 11% more likely than men to report food insecurity (Nagel, 2016). Food insecurity is more prevalent for women not only as a global average but also in every region of the world (FAO et al., 2017). Too often, child hunger is also inherited: a mother who is stunted or underweight due to an inadequate diet will often give birth to low birth weight children.

It is important to remember that women's situations and contexts vary enormously around the world, and their experiences are also shaped in ways that intersect with other variables, including race, religion, age, and socio-economic status. Nonetheless, gender differences are marked. Cultural, social, and economic inequalities between men and women result in less food being produced, less income being earned, and higher levels of poverty and food insecurity. In some regions, as land is moved from subsistence production to cash crops, women's access to land and food is curtailed, as

they have primary responsibility for household food production but are denied access to commercial agriculture. To address these kinds of inequalities, governments have adopted the UN SDGs, also called the UN 2030 Agenda. Two goals in particular are relevant: SDG 2, the commitment to end hunger sustainably (which is the primary focus of the Ceres2030 project), and SDG 5, the commitment to women's equity and empowerment.

## 2. WHY DOES GENDER MATTER TO CERES2030?

To realize the ambitious and intersectoral agenda outlined in the SDGs, governments need to invest in policy interventions that maximize synergies and limit trade-offs. The goals form an interdependent whole, with sub-goals that overlap and reinforce each other. For women to enjoy food security, for example, governments will need to protect and promote SDG 5.5, which is a commitment to ensuring women's full and effective participation as well as equal opportunities for leadership at all levels of decision making in political, economic, and public life. Box 1 illustrates the specific gender issues and interventions relevant to the SDG targets.



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## 3. HOW IS GENDER INTEGRATED INTO CERES2030?

The economic model used in Ceres2030 is a dynamic computable general equilibrium model that is both multi-country and multi-sector. It simulates the operation and interactions of national and international markets, taking into account production, demand, and prices. The model integrates this economic simulation with an analysis of biophysical and socio-economic trends (Laborde et al., 2013). The model integrates the key economic factors that affect agriculture, thereby providing a robust quantitative framework for estimating the costs of agricultural policy interventions. The model also tracks household-level consumption, the production of major food items, and other sources of income.

The challenge facing the Ceres 2030 modellers as they seek to integrate gender into the cost model is the lack of gender-disaggregated data at the scale they require for a national and global analysis. Increasingly, such data is being collected, and where possible, the Ceres2030 model will incorporate gender-disaggregated effects. The model will be able

to generate a coarse analysis of the effects of agricultural policy interventions by gender by combining household-level data, such as the number of women in the household and the sex of the household head, with data on broader gender patterns in farming and society. While the Ceres2030 model is already breaking new ground by using what household-level data is available, it is important to underline that such data still does not uncover the intra-household allocation of food and other resources by gender. More women live in households with men than without. Women may also have access to "hidden" forms of support through kinship groups or other social relationships that compensate for their relatively lower income compared to men. (See Doss et al. [2018] for more on the misconceptions and data gaps that hinder informed gendered analyses of agriculture). To fully capture gender-disaggregated outcomes, the model would need data at the level of the individual so as to simulate intra-household decisions. That data does not yet exist.

The lack of gender-disaggregated data is also reflected in the official SDG indicators. Only one of SDG 2's 13 indicators has an explicit, measurable gender dimension: Indicator 2.3.2, *Average Income of Small-Scale Food Producers, by Sex and Indigenous Status* (Inter-Agency and Expert Group on SDG Indicators, 2019). Even for this indicator, data availability remains unresolved, which is a problem beyond the scope of SDG 2 alone: of the 54 gender-specific indicators across the 17 SDGs, less than 20% meet the criteria of well-defined indicators with already available data (designated Tier 1 by the UN) and nearly the same number falls into those that lack both a clear definition and coordinated data collection (Tier 3) (Inter-Agency and Expert Group on SDG Indicators, 2019). The balance fall into Tier 2, where the indicators are well-defined, but the data is not yet available.

Despite these challenges, the Ceres2030 project team looked for gender-specific data in the evidence syntheses and used the available household data to explore the gender implications of selected interventions while considering their implications for the realization of SDG 2. Each of the eight evidence syntheses offers detailed information on the role of gender. Each evidence synthesis focuses on a different intervention, including value-chain relationships, farmer adoption of climate-resilient crops, and production approaches in water-scarce areas (the focus of each paper can be viewed online at [www.ceres2030.com/eight-interventions](http://www.ceres2030.com/eight-interventions)). Information from the evidence synthesis will allow the Ceres2030 project team to understand and track the differences in behaviour and performance of female- and male-headed households in terms of type, yield, and income from agricultural production as well as consumption patterns. The data also allows insight into households that have a large share of female members and disaggregation of households by proportion of women of working age.

The model could also be used to estimate gender effects by using data on sectors or specialized crops where gendered differences are documented. For example, the modellers can presume that the removal of trade restrictions and distortions (mentioned in SDG 2.b, which addresses the means of implementation) will have differentiated effects between male and female producers where the data shows that men and women grow different crops. The Ceres2030 team could use the information available about gender differences within the agricultural sector to inform estimates of how a given intervention might affect women and men differently. However, such data requires extensive processing and validation. Ceres2030 does not have currently have the capacity to include this dimension when defining the typology of households. It is an addition that would be possible were additional resources made available.

Additional information on gender is included in some of the evidence synthesis papers. Overall, approximately 10% of interventions reviewed in the papers assessed gender differences in the outcomes of the interventions. The outcomes of the evidence synthesis show, for example, that two-thirds of livestock keepers in lower- and middle-income countries are female, and that gender and marital status affect membership in farmers' organizations, with married women less likely to join. Self-help and women's groups seem to be better suited to support female decision making on social issues and investments, especially on education and health care.

Clearly, an analysis that looks at the gender disparities is vital. It is also critical that the analysis look at how best to develop policies and monitoring to eliminate discrimination and create a more balanced engagement (regardless of gender) for achieving SDG 2. The data now available that is disaggregated by the sex of the household head, the share of household members who are female, and the share of female producers is incomplete. Indeed, such gender analysis may miss significant gender differences in outcomes. To obtain differences at this level, more granular data must be collected to better understand gendered differences between and within households.

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# Ceres2030

Sustainable Solutions to End Hunger

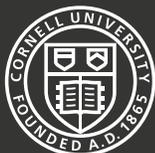


## ABOUT CERES2030

Ceres2030 brings together three institutions who share a common vision: a world without hunger, where small-scale producers enjoy greater agricultural incomes and productivity, in a way that supports sustainable food systems. Our mission is to provide the donor community with a menu of policy options for directing their investments, backed by the best available evidence and economic models.

The partnership brings together Cornell University, the International Food Policy Research Institute (IFPRI) and the International Institute for Sustainable Development (IISD). Funding support comes from Germany's Federal Ministry of Economic Cooperation and Development (BMZ) and the Bill & Melinda Gates Foundation (BMGF).

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