

Chapter Title: Gender, health and smallholder farming

Chapter Author(s): Kirsten Black, David Guest, Brigitte Bagnol, Yngve Bråten Braaten and Anna Laven

Book Title: One Planet, One Health

Book Editor(s): Merrilyn Walton

Published by: Sydney University Press

Stable URL: <http://www.jstor.com/stable/j.ctvggx2kn.11>

---

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



This content is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC BY-NC-ND 4.0). To view a copy of this license, visit <https://creativecommons.org/licenses/by-nc-nd/4.0/>.



Sydney University Press is collaborating with JSTOR to digitize, preserve and extend access to *One Planet, One Health*

JSTOR

## 6

# Gender, health and smallholder farming

*Kirsten Black, David Guest, Brigitte Bagnol, Yngve Bråten Braaten and Anna Laven*

Over the last decade governments and others have come to recognise that sustainable development requires gender equality (Box 6.1) (Sweetman 2002; United Nations 2014). The United Nations Sustainable Development Goals (SDGs) for gender equality (Goal 5) acknowledge that achieving gender parity will require nations to address gender-based violence, equality of employment opportunities for women, sexual and reproductive health and rights, as well as implementing legislative changes that support women's empowerment and their access to economic resources and technology (United Nations Development Program [UNDP] 2016). Gender issues are also reflected in other SDGs relating to health and poverty alleviation. Target 1.B under SDG 1 urges countries to 'Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions'.

Linking gender equality with sustainable development is critical because any vision of a just and sustainable world must include the rights of women and acknowledge that, compared to male counterparts, women and girls in certain settings are disproportionately affected by economic, social and environmental stresses (Leach, Mehta and Prabhakaran 2016). According to the United Nations, women's active involvement in decision-making has enormous potential 'to improve resource productivity, enhance ecosystem conservation and promote

**Box 6.1: Gender**

‘Gender refers to culturally and socially constructed differences between men and women, boys and girls. The perspectives of women and men are different simply because their experience and perception of the fundamental agencies, structures and relationships involved is different. Gender equality recognises the different behaviours, roles, aspirations, values and needs of women and men in the pursuit of equal opportunities. This pursuit is more effective when both women and men are engaged. Gender equity is the fair and just distribution of responsibilities and benefits between women and men, in agriculture involves a committed focus on impact pathways that are inclusive and respect the role of women.’ (B. Chambers. Working paper on gender in agriculture. ACIAR, 24 June 2014)

sustainable use of natural resources, and to create more sustainable, low-carbon food, energy, water and health systems’ (United Nations 2014).

## Gender inequalities are persistent and reinforced

In most countries (from low to high income) men and women do not have equal access to the same natural, human and capital resources. The 2016 Global Gender Gap Report by the World Economic Forum (2017) includes the 11th edition of the Global Gender Gap Index, which quantifies the magnitude of gender-based disparities, and measures the relative gaps between women and men across four key areas: health, education, economy and politics. The index was developed in part to address the need for a consistent and comprehensive measure for gender equality that tracks a country’s progress. The data reported in the index, while incomplete, identifies countries, irrespective of wealth, that divide resources more equitably between women and men. This report concludes that progress is still too slow, concluding that economic gender equality will not be achieved for another 170 years.

## 6 Gender, health and smallholder farming

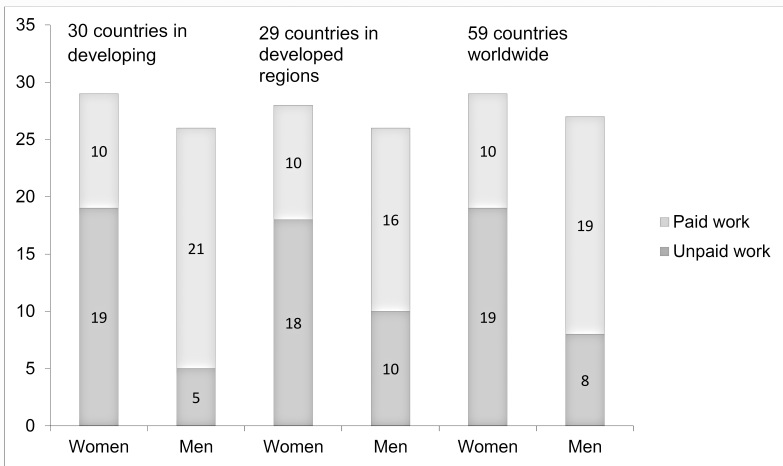


Figure 6.1 Proportion of time spent on unpaid and paid work in selected countries, women and men, 2000–2014 (percentage of time spent per day).

Source: <https://bit.ly/2RXssq2>

The 2016 Global Gender Gap Report also highlights the ‘triple burden of women’, who still undertake unpaid reproductive and domestic work such as caring for children, the sick and the old, and producing, keeping and preparing water and food. They also contribute significantly to production, particularly in smallholder agriculture. Yet, while women in many countries work longer hours than men, they receive no additional benefit. At the household level, international data shows women, when compared to male partners, eat less nutritious food such as meat, and are more likely to be malnourished because of pregnancy and breastfeeding. The unequal distribution of resources in society is reflected within the household (Sen 1983).

The roles, responsibilities and decision-making functions for males and females are generally influenced by socioeconomic factors, sociocultural attitudes, and group and class-based obligations (Bagnol 2012). Such cultural beliefs and practices limit women’s mobility, social contact, access to resources, and the types of activities they can pursue.

Institutional arrangements – formal and informal – also create and reinforce gender-based constraints or, conversely, foster an environment in which gender disparities are reduced (Bagnol 2009a; 2009b).

Gender is also expressed through technology. Frances Bray writes:

Men are viewed as having a natural affinity with technology, whereas women supposedly fear or dislike it. Men actively engage with machines, making, using, tinkering with, and loving them. Women may have to use machines, in the workplace or in the home, but they neither love nor seek to understand them: They are considered passive beneficiaries of the inventive flame. (Bray 2007)

As such, technologies and institutions are not ‘gender-neutral’, as gender relations impact on the way they are embedded in communities and other settings. This is relevant to smallholder agriculture where technology is used. Understanding how gender relations interlink and interlock underpins the design, implementation and monitoring of technologies. The same applies to research in technologies and policies. Research is often gender-blind, which creates biased outcomes and detrimental effects. A range of reasons explaining why research has failed to account for women’s contributions to agriculture have surfaced including applying a narrow definition of work and economic activity, stereotypes and sex biases among those who design the research tools and the enumerators who collect the data at the field level (Food and Agriculture Organization of the United Nations [FAO] 1994).

## Making the links between gender, agriculture and health

In developing countries, where the majority of the population (>80 per cent) are involved in smallholder farming, men and women play important, but distinct, roles. Overall, the roles of women are steadily expanding (Box 6.2). The gendered division of labour in agriculture differs both between and within countries. Women comprise about 43 per cent of the agricultural labour force in developing countries and up to 60–80 per cent in some African countries (CARE 2013). The health and nutrition of women therefore can significantly impact

**Box 6.2: The feminisation of agriculture**

Studies have shown that since the 1960s, men have migrated from rural to urban areas in many developing countries in search of better income opportunities. Women's share in agriculture has, as a result, steadily increased over time, leading women to take on agricultural 'roles' that have historically been in the hands of men. However, it is important to note that the feminisation of agriculture does not mean that women farmers necessarily are better off from engaging in agriculture as women are often denied the benefits of their labour (see Box 6.4) .

on agricultural productivity because they are restricted in their access to productive resources, opportunities and healthcare, and as a result produce less than male farmers.

In this chapter, we make the case for interlinking and establishing relationships between gender and agriculture and health research and development programs. We examine how these linkages play out in practice, using a gender lens, and identify the research gaps in understanding the full potential of how these Eco/One Health/gender linkages impact on development programs.

A gender lens countenances a gender analysis of the interplay between the *division of labour*,<sup>1</sup> *access to/control over resources, norms and values*, and *intra-household dynamics*. Key to understanding gender dynamics in agriculture and health is to examine the way these separate dimensions and factors influence each other and interlock (Eerdewijk and Danielsen 2015).

The interlinkages between gender are well documented (CARE 2013; FAO 2011; International Bank for Reconstruction and Development/World Bank 2009; Royal Tropical Institute [KIT], Agri-ProFocus and International Institute of Rural Reconstruction [IIRR] 2012); particularly so for the gendered division of labour, and access to and control over resources.

Studies demonstrate that a 'gender gap in agriculture' exists where women farmers experience inequalities compared with men for productivity, wages, time-use, access to information, social protection,

---

1 Both productive and reproductive work.

extension advice, control over resources and access to decision making (FAO 2011; KIT, Agri-ProFocus and IIRR 2012). Every global gender and development indicator for which data are available reveals that women in rural areas do worse than rural men and urban women, and that they disproportionately suffer poverty, exclusion, poor access to healthcare and poorer nutrition.

Traditionally men in rural areas focus their agricultural activities on cash crops, while women's labour is focused on food crop production, primarily for domestic consumption, with any surpluses sold at local markets. Women are at the forefront of feeding families, making their contribution to household food production paramount for the intake of essential micronutrients by children and the elderly (Sanyang et al. 2014).

Women's role in cash crop production in many low- and middle-resource countries is often invisible or undervalued. Cocoa production is a sector identified as 'man's business' because men traditionally dominate decision-making process and in some countries also the commercial transactions. When women work on cocoa farms, they often do so as unpaid family or casual labour whose contribution does not count (Barrientos 2013) despite substantive research showing women perform half of the tasks on the cocoa farms. Better understanding and recognition of the labour contributions made by women to the production process is the first step towards improving cocoa production.

This illustrates how women working as 'free family labour' are often not counted as farmers in research studies and agricultural value chains because their main responsibility is domestic work (FAO 2011). Evidence suggests that, in addition to work on cocoa, women are involved in most of the household tasks and other 'domestic' work (such as food crop farming and trading). A Ghana study of cocoa farmers, showed that, with all tasks combined, men worked 49 hours per week on average, of which around 10 hours related to household tasks and 39 hours on the farm, while women with an average working week of 63 hours spend around 26 hours on household tasks and 37 hours on the farm (Hill and Vigneri 2011).

A woman's 'reproductive role' has traditionally not been seen as 'economic employment', notwithstanding women farmers are often essential contributors to the wellbeing and health of rural households (FAO 2011). The toolbox on gender and cocoa livelihoods, developed

### **Box 6.3: Intersectionality**

'Intersectionality refers to overlapping and intersecting social identities that a person inhabits in relation to oppression and domination.' (Pyburn et al 2015)

A lot of the literature on intersectionality refers to social categories (e.g. 'race'/ethnicity, gender, class, sexuality and ability) as being constructed and dynamic. Hence, the concept of intersectionality allows for a closer investigation of how power dynamics in different agricultural contexts impact on the health of women farmers of different social groupings. For example, in the same farming community, does a young divorced woman have the same access to high-quality fertilisers as a married elderly woman?

by KIT (an institute in the Netherlands) and the World Cocoa Foundation (<http://bit.ly/2CanI7b>), presents evidence that women, more than men, spend their income on health, education and nutrition of their family members. Included in the toolbox are facts about how the lack of female empowerment correlates with childhood malnourishment on cocoa plantations in West Africa (de Boer and Sergay 2012; Schubert 2013). Conversely, when women are empowered chronic child malnutrition is reduced (International Fund for Agricultural Development 2016).

A growing body of literature is critical of research and development programs that group women farmers together as unitary subjects, opposed to men (Ravera et al. 2016). Better understanding is needed about the way women and men with different social identities (age, ethnicity, class, caste and so on) are positioned within agricultural value chains, and how this 'intersectionality' (see Box 6.3) affects productivity and the health of women and men. Women do not necessarily produce food separately from men. Food production is often a collaborative process among family members and other labourers (FAO 2011).

Generally women in agriculture have less access to better quality seeds, fertilisers and equipment, resulting in lower crop yields than those of men (FAO 2017). They also have poorer access to export markets but good access to local markets where they can buy and sell produce, and seek information and establish networks (FAO 2011). Access to training programs is often difficult for women due to household duties (see



section on division of labour), lack of agency and their sometimes limited ability to apply new knowledge due to financial and cultural constraints. Staying with the cocoa sector, women tend to benefit less from technical training, extension services, credit and production inputs than men (Chan and Barrientos 2010). Explanations for this include extension services that have biased selection criteria, such as minimum land size, literacy and ability to purchase inputs, which (often unintentionally) excludes many women (Manfre et al. 2013).

Another explanation is found in institutional structures that hinder women's access to vocational organisations such as farmer groups.

Although cocoa farmer organizations are essential for sharing knowledge, providing services and boosting productivity, they are often dominated by men. Those who are members, who are officers, who get trained and who are served by these farmer organizations are predominantly male farmers. (Velyvis, Murray and Fortson 2011)

Membership of a cocoa cooperative is often limited to the person selling the cocoa (usually male), or it requires land ownership or registration of minimum production or harvest volumes. These requirements exclude the majority of women involved in cocoa production from accessing beneficial services available to men (Chan and Barrientos 2010).

If these gender inequalities were addressed, estimates suggest that yields on women's farms could increase by 20–30 per cent, which could raise total agricultural output in developing countries by 2.5–4 per cent (FAO 2011). Women's roles in food crops plus increased yields combined with more decision-making power could reduce the number of malnourished people in the world by 100 to 150 million or 12–17 per cent (FAO 2017).

Why is it so difficult to close this gender gap? One reason is the gap in Official Development Assistance (ODA) showing women receive less aid in agriculture, forestry and fisheries. A multitude of barriers mean women in many settings are less visible because support programs are mainly designed for men by men with leadership roles. Only 15 per cent of agricultural extension workers globally are women. Only 10 per cent of agricultural aid goes to women (FAO website) and women

**Box 6.4: Social norms and gender relations**

Gender relations are produced and reproduced through social norms and values, and influence the various activities that women and men do, what decisions they can make and which resources they have access to. Understanding the dynamic relations between men and women in various institutional settings (household, community, political forums and so on) can contribute to food security and increased health by going beyond addressing the symptoms of gender inequality (i.e. gaps in access to resources) to addressing the causes of these inequalities (Pyburn et al 2015).

receive only 5 per cent of extension services. Not well documented are the groups of women who benefit least (or most) from ODA.

Agricultural development programs have historically paid little attention to the differential access to assets and knowledge between men and women in agriculture (Johnson et al. 2016; Meinzen-Dick et al. 2011). Many donor-funded activities seek to improve cash crop productivity to boost incomes, and consequently men, traditionally responsible for this activity, have been the primary recipients of training. Understanding gender relations in agricultural settings is key to whether development programs and interventions can successfully promote gender equality and women's empowerment, especially in regards to access and control over resources and intra-household decision-making (see Box 6.4).

The impacts of agriculture on food quality, nutrition and environmental and human health are well recognised. Poor human health affects the capacity of smallholder farmers to improve production. When compared to Australia, countries in the Asia-Pacific region typically lose between five and 24 times the potential labour due to communicable disease, inadequate maternal and perinatal care, and nutritional conditions (World Health Organization 2008).<sup>2</sup> Poor health and nutrition trap smallholder farmers in cycles of poverty, with little scope to improve crop yields and income. Poverty, in turn, limits their access to improved nutrition and healthcare.

---

2 The World Health Organization compiles data on disability-adjusted life years (DALY).

Health inequalities between men and women likely reflect biological sex and societal gender differences (Denton, Prus and Walters 2004). Women have lower mortality rates across many settings but higher levels of chronic illness and poor mental health (Baum and Grunberg 1991; McDonough and Walters 2001). Women with restricted access to cash and limited control over resources are less autonomous in caring for their own health and deciding on their children's health. Due to geographical, cultural and economic constraints, many women cannot travel alone to a clinic without the authorisation of a male partner or male family member. Thus, while some diseases or afflictions can be gender specific, gender roles and religious, cultural and economic characteristics explain gender differences in health perception and reporting. A 2016 study in Nigeria found women with symptoms of TB and other chronic illnesses did not access healthcare because they were unable to travel to clinics without their husbands' approval, as well as being hampered by unhelpful clinic hours which did not take into consideration their income-generating activities (Oshi et al. 2016).

Women's sexual and reproductive health is also adversely affected by unequal gender relations. Gender inequity results in sexual coercion and physical violence (Fulu et al. 2013) with the consequence that safe sexual practices are impossible to initiate and maintain (Courtenay 2000; Duggal and Ramachandran 2004). These women are more vulnerable to HIV (UNAIDS 2009), other sexual diseases, unwanted pregnancies and have limited access to health services for treatments not directly related to pregnancy (Espen 2009a). Lack of control over sexual and reproductive health compromises young women's access to education and a productive life and limits participation in community initiatives and leisure time. Women's and girls' sexual and reproductive health and rights are further challenged in many Central, South-East Asian and Pacific Island communities where they tend to marry before 18, either because their right to choose is non-existent or where marriage is the only alternative presented to them (Corrêa and Rosalind 1996; Girls Not Brides 2017).

That most cocoa farmers live below the poverty line (Oomes et al. 2016) refocuses the link between cocoa farming and health. Well-managed cocoa trees have the potential to yield several tonnes of dry beans per hectare, yet the global average yield for smallholder

producers remains around 300 kg/ha. Low yields persist because of a combination of poor crop, soil and water management, inadequate infrastructure, inefficient supply chains, financial constraints, pest and disease losses, the inappropriate use of pesticides and fertilisers, unsafe food storage, and low returns to labour.

Technologies to reduce disease losses and increase cocoa yields, based around regular weekly pod harvesting, canopy pruning, sanitation and fertiliser application, have been widely demonstrated to cocoa farmers in many countries (Daniel et al. 2011). An analysis of the benefits to labour in Vanuatu showed that investing 56 hours of labour per month to improve the management of one hectare of cocoa increased yields by 131 per cent and gave an economic return on investment of 150 per cent (Martyn 2013). However, the limited pool of labour is already committed to food gathering and customary obligations (Box 6.5). Labour is further depleted by the migration of youth to urban centres for education and employment, alternative employment opportunities, and constrained by poor health and nutrition (Leonardo et al. 2015).

An alternative approach for improving the livelihoods of cocoa-farming communities involves the close integration of agricultural, health and community interventions. In 2016, the Australian Centre for International Agriculture Research (ACIAR) project, in the Autonomous Region of Bougainville (PNG), involved interdisciplinary project teams<sup>3</sup> working together with cocoa farmers and stakeholders to address key constraints to improving their livelihoods. The core proposition is that higher yields of cocoa beans can be achieved when farm families make moderate progress with more intensified management, including rehabilitation of existing cocoa, replanting with improved genotypes, improved cocoa agronomy, soil management and integrated pest and disease management (Daniel et al. 2011; Simitab 2007). Gender-sensitive family extension approaches supporting intensified cocoa production recognise the complementary roles of men and women in smallholder cocoa production. Intensified cocoa production through improved

---

3 Including agricultural scientists, health and nutrition researchers, community development specialists, entrepreneurship trainers, marketing experts and human geographers.

management potentially frees land for supplementary activities, diversifying incomes for women and youth – including food crops and small livestock – that could improve nutritional outcomes.

This project aims to develop opportunities for women and youth, improve community health and nutrition, foster community enterprise development, and strengthen cocoa value chains. Communities are supported by trained community-based primary crop, livestock and healthcare advisers using mobile technologies and apps to access wider expertise. This initiative entails deep engagement with farming communities, particularly women and youth, who are involved in the design, inception and implementation of the project. Communities celebrate their achievements in an annual chocolate festival that promotes income diversification, improved health and equity.

### Interconnections between gender, farming system and health

While the relation between gender and agriculture, gender and health, and health and agriculture are well documented, the interlinkage between gender, agriculture and health is less researched; it has the potential to address women's lack of agency around their sexual and reproductive lives and their ability to participate in domestic and agriculture activities. Understanding how malnutrition and ill health compound labour shortages requires a multidisciplinary strategic approach – one which addresses the deployment of technologies and communication networks to better engage women and youth, foster entrepreneurship, address limited capital availability, and improve health.

Interaction between women and men and their physical and social environments diverge as they have different experience of the same environmental niche with different access to, control over and benefit from resources. Different cultural and ecological settings give rise to differentiated needs, interests, rights and responsibilities over natural resources as well as in relation to plant, animal and human health issues. Crops, animals and natural resources are thus 'gendered' (FAO 2011). Similar inequalities exist in managing natural resources where women play a key role in the organisation and use of natural resources yet they are frequently excluded from making decisions about resources

because of their educational, economic, social, political and cultural status (United Nations Environment Programme et al. 2013).

The primary role of women in caring for the young, elderly and sick and in food preparation devalues their important role in food production (Tallis 2002). This responsibility for providing nutrition for adults and children is not accompanied by any power to make decisions, nor the knowledge that can improve nutritional and health outcomes (Asian Development Bank 2013). The unequal distribution of resources and gender discrimination within households often lead to disparities related to health status. In some cultural settings in Africa and elsewhere boys and men traditionally eat first, and girls and women eat the leftovers (Nube and Van Den Boom 2003). When food is short, females eat very little or nothing at all (United Nations International Children's Emergency Fund nd).

Women have different nutritional needs to men and change over a woman's lifecycle: as adolescents, pregnant women and breastfeeding women. In countries such as India (Sivakumar 2008), Tanzania (Bagnol 2015), Sudan (Paul et al. 2014) and South Africa (Oxfam 2014) women have less food than males and the food may also be of lower quality, leading to increased risk of health problems and malnutrition. Widespread nutritional deprivation among women perpetuates an inter-generational cycle of nutrition deprivation in children. Women are also more affected by anaemia (De Benoist et al. 2008) and obesity than men (Kanter and Caballero 2012).

Data from the last Demographic Health Survey carried out in Tanzania and Zambia show women, when compared to men, are less educated and have less access to print and electronic media (Table 6.1). Women in these two countries carry most of the emotional and physical burden of caring for children, the sick and old without preparation and psychological support. Due to the social, cultural and economic discrimination against women and girls, they have no autonomy in relation to their health; only 15.8 per cent of women in Tanzania and 31.7 per cent in Zambia make decisions about their own healthcare (see Table 6.2) (Central Statistical Office and Macro International Inc. 2009; National Bureau of Statistics [Tanzania] and ICF Macro 2011).

	Tanzania		Zambia	
	Women	Men	Women	Men
Women and men aged 15 to 49 who cannot read (%)	27.4	17.6	36.1	18.3
Women and men aged 15 to 49 who are not regularly exposed to any media (TV, radio, or written press) at least once a week (%)	36.0	18.8	33.1	19.1

Table 6.1. Indicators related to gender issues. Source: Central Statistical Office and Macro International Inc. 2009; National Bureau of Statistic [Tanzania] and ICF Macro 2011.

	Mainly wife		Wife and husband jointly		Mainly husband	
	Tanz.	Zambia	Tanz.	Zambia	Tanz.	Zambia
Own healthcare	15.8	31.7	45.0	33.0	38.1	34.0

Table 6.2. Decision making about women's healthcare amongst couples in Tanzania and Zambia. Source: Central Statistical Office and Macro International Inc. 2009; National Bureau of Statistics [Tanzania] and ICF Macro 2011.

## Emerging strategies

Strategies to address the impacts of gender inequity once focused on empowering women but today positive changes result when both sexes, together, question how traditional gender norms, cultural practices and social norms impact on livelihoods. This is an essential step to improving equity and access to productive resources in rural smallholder communities.<sup>4</sup>

In view of the need for better evidence about gender equality including the need to involve men in health, development and gender

4 WorldFish has published a book on 'Gender Transformative Approaches' (see <http://bit.ly/2Q4XZoY>).

equality issues, the International Center for Research on Women (ICRW) and Instituto Promundo (Brazil) have been conducting research across a range of countries (ICRW 2012). This multifaceted research aims to develop evidence-based, practical strategies for engaging men in gender equality, particularly in sexual and reproductive health and gender-based violence. A tool to help civil society organisations engage with men and boys in gender equality was published in 2016 to build awareness (Promundo and United Nations Population Fund 2016).

Programs for men and boys developed by Promundo and South African organisations (Sonke Gender Justice Network and EngenderHealth) cover gender roles and masculinity. Promundo's Mencare+ program engages men aged 15–35 as partners in maternal and child health and in sexual and reproductive health and rights (Promundo 2017). The Sonke Gender Justice Network works with young men and women in communities in Africa to strengthen individual knowledge and skills around gender equality and how it links with sexual and reproductive health and rights and prevention of HIV and gender-based violence (Sonke Gender Justice 2016). Both Promundo and the Sonke Gender Justice organisations involve men and women in transformative programs (Greene and Levack 2010) which encourage critical awareness among men and women of gender roles and norms, support greater participation of women as leaders, challenge the roles and responsibilities and the distribution of resources between men and women and/or draw attention to the power relationships between women and men in the community (Rottach, Schuler and Hardee 2009).

### Conclusion

In this chapter, we discussed the linkages between gender, agriculture and health, showing how a reduction in maternal illness, childhood death and gender violence would significantly improve agricultural productivity.

Given a significant proportion of women and men in low-income countries work in agriculture, scrutinising the links between agriculture, gender and health makes sense if the Sustainable Development Goals (SDGs) are to be achieved.



All areas – research, policies and interventions – require the engagement of both sexes, but in a way that recognises their social and identity differences. The risk of development aid, research and institutions reinforcing existing gender inequalities is ever present. Health programs that emphasise women's role in caring responsibilities reinforce gender stereotypes and unintentionally maintain women in a gender-constrained world with limited access to information and resources. How to increase men's role in domestic work, caring for the sick and the old and sharing the responsibilities of caring for babies and children (Sweetman 2002) are questions for researchers.

Better integration and co-ordination of health and agriculture programs could address the constraints imposed by poor health on agricultural production and, conversely, by poor agricultural production on health. This can help improve food security and nutrition-sensitive agriculture.

Approaches that examine, question, and change rigid gender norms and address power imbalances can benefit agricultural productivity and improve the health and nutrition of men, women and children by better understanding and co-ordination of the gender, agriculture and health nexus.

If we continue to fragment development aid into silos of discrete uni-disciplinary programs, we ignore the interlinkages and potential synergies between gender, agriculture and health that underpin the benefits of Eco/One Health approaches. Embracing these linkages will improve the effectiveness and impacts of programs designed to benefit everyone involved in smallholder agriculture. Improved livelihoods will inevitably lead to better outcomes in community health and education, which will in turn further improve livelihoods and reduce poverty.

## Works cited

- Asian Development Bank (2013). *Gender equality and food security. Women's empowerment as a tool against hunger*. Philippines: Asian Development Bank.
- Bagnol, B. (2009a). Gender issues in small-scale family poultry production: experiences with Newcastle disease and highly pathogenic avian influenza control. *World's Poultry Science Journal* 65(2): 231–40.

## 6 Gender, health and smallholder farming

- Bagnol, B. (2009b). Improving village chicken production by employing effective gender-sensitive methodologies. In *Village chickens, poverty alleviation and the sustainable control of Newcastle disease*, ACIAR Proceedings 131, R.G. Alders, P.B. Spradbrow and M.P. Young, eds., 35–42. Canberra: Australian Centre for International Agricultural Research.
- Bagnol, B. (2012). *Advocate gender issues: a sustainable way to control Newcastle disease in village chickens*. INFPD Good Practices for Family Poultry Production Note 03. International Network for Family Poultry Development, International Fund for Agricultural Development, and Food & Agriculture Organization of the United Nations.
- Barrientos, S. (2013). *Gender production networks: sustaining cocoa-chocolate sourcing in Ghana and India*, Working Paper No. 186. Manchester: Brooks World Poverty Institute. <http://dx.doi.org/10.2139/ssrn.2278193>
- Baum, A., and N.E. Grunberg (1991). Gender, stress and health. *Health Psychology* 10(2): 80–5.
- Bray, F. (2007). Gender and technology. *Annual Review of Anthropology* 36: 37–53.
- de Bruyn, J., Wong, J., Bagnol, B. Alders, R. (2015). Family poultry and food and nutrition security. *CAB Reviews Perspectives in Agriculture Veterinary Science Nutrition and Natural Resources* 10(13):1-9. doi: 10.1079/PAVSNNR201510013
- CARE (2013). The picture of both opportunity and hunger is decidedly female. <https://bit.ly/2SvHv6d>.
- Central Statistical Office (CSO), Ministry of Health (MOH), Tropical Diseases Research Centre (TDRC), University of Zambia, and Macro International Inc. (2009). *Zambia Demographic and Health Survey 2007*. Calverton, Maryland, USA: CSO and Macro International Inc.
- Chan, M., and S. Barrientos (2010). *Improving opportunities for women in smallholder-based supply chains: business case and practical guidance for international food companies*. Seattle: Gates Foundation.
- Corrêa, S., and P. Rosalind (1996). Direitos sexuais e reprodutivos: uma perspectiva feminista. *Physis* 6(1–2): 147–77.
- Courtenay, W. (2000). Constructions of masculinity and their influence on men's well-being: a theory of gender and health. *Social Science & Medicine* 50(10): 1385–401.
- Daniel, R., et al. (2011). Knowledge through participation: the triumphs and challenges of transferring Integrated Pest and Disease Management (IPDM) technology to cocoa farmers in Papua New Guinea. *Food Security* 3(1): 65–79.

- De Benoist, B., E. McLean, I. Egli, and M.E. Cogswell (2008). *Worldwide prevalence of anemia 1993–2005. Global Database on Anemia*. Geneva: World Health Organization.
- de Boer, F., and N. Sergay (2012). *Increasing cocoa productivity through improved nutrition. A call to action*. Global Alliance for Improved Nutrition, Centre for Development Innovation, and Wageningen University & Research Centre.
- Denton, M., S. Prus, and V. Walters (2004). Gender differences in health: a Canadian study of the psychosocial, structural and behavioural determinants of health. *Social Science & Medicine* 58(12): 2585–600.
- Djoudi, H., et al. (2016). Beyond dichotomies: gender and intersecting inequalities in climate change studies. *Ambio* 45(Supplement 3): 248–62.
- Duggal, R., and V. Ramachandran (2004). The abortion assessment project – India: key findings and recommendations. *Reproductive Health Matters* 12(24 Suppl):122–9.
- Esplen, E. (2009a). *Gender and care: overview report*. Brighton: Bridge.
- Esplen, E. (2009b). *Gender and care: supporting resource collection*. Brighton: Bridge.
- Food and Agriculture Organization of the United Nations (1994) *Alternative data sources for women's work in agriculture*. Asia and Pacific Commission on Agriculture Statistics, 15th Session, Manila, Philippines, 24–28 October 1994, Agenda Item 9. Rome: Food & Agriculture Organization of the United Nations.
- Food and Agriculture Organization of the United Nations (2011). *Women in agriculture: closing the gender gap for development*. Rome: Food & Agriculture Organization of the United Nations.
- Food and Agriculture Organization of the United Nations (2017). Gender. <https://bit.ly/2wiSgQ1>.
- Fulu, E., et al. (2013). *Why do some men use violence against women and how can we prevent it? Quantitative findings from the United Nations Multi-Country Study on Men and Violence in Asia and the Pacific*. Bangkok: United Nations Development Program, United Nations Population Fund, United Nations Entity for Gender Equality and the Empowerment of Women, and United Nations Volunteers.
- Girls Not Brides (2017). Child marriage around the world: Papua New Guinea. <https://bit.ly/2sp0XX9>.
- Greene, M., and A. Levack (2010). *Synchronizing gender strategies: a cooperative model for improving reproductive health and transforming gender relations*. Washington, DC: Population Reference Bureau.
- Hill, R., and M. Vigneri (2011). *Mainstreaming gender sensitivity in cash crop market supply chains*. ESA Working Paper No. 11-08. Rome: Agricultural

## 6 Gender, health and smallholder farming

- Development Economics Division, Food & Agriculture Organization of the United Nations.
- International Bank for Reconstruction and Development/World Bank (2009). *Gender in agriculture sourcebook*. Washington, DC: World Bank.
- International Center for Research on Women (2012). Men and gender equality policy project. <https://bit.ly/2E41One>.
- International Fund for Agricultural Development (2017). What works for gender equality and women's empowerment - a review of practices and results. <http://bit.ly/2rnRM8X>.
- Johnson, N.L., C. Kovarik, R. Meinzen-Dick, J. Njuki, and A. Quisumbing (2016). Gender, assets, and agricultural development: lessons from eight projects. *World Development* 83: 295–311.
- Kanter, R., and B. Caballero (2012). Global gender disparities in obesity: a review. *Advances in Nutrition* 3(4): 491–8.
- Leach, M., ed. (2016). *Gender equality and sustainable development*. London: Taylor & Francis.
- Leach, M., L. Mehta, and P. Prabhakaran (2016). Sustainable development: a gendered pathways approach. In *Gender equality and sustainable development*, M. Leach., ed., 1–33. London: Routledge.
- Leonardo, W.J., et al. (2015). Labour not land constrains agricultural production and food self-sufficiency in maize-based smallholder farming systems in Mozambique. *Food Security* 7(4): 857–74.
- Manfre, C., et al. (2013). *Reducing the gender gap in agriculture extension and advisory services: how to find the best fit for men and women farmers*. MEAS Discussion Paper No. 2. Champaign-Urbana: United States Agency for International Development.
- Martyn, T. (2013). *Barriers to smallholder adoption of cocoa IPDM: a case study from Malekula, Vanuatu*. Canberra: Australian Centre for International Agricultural Research.
- McDonough, P., and V. Walters (2001). Gender and health: reassessing patterns and explanations. *Social Science & Medicine* 52(4): 547–59.
- Meinzen-Dick, R., et al. (2011). *Gender, assets, and agricultural development programs: a conceptual framework*. Paper No. 99. Washington, DC: CAPRI Working.
- National Bureau of Statistics (Tanzania) and ICF Macro (2011). *Tanzania demographic and health survey 2010*. Dar es Salaam, TZ: National Bureau of Statistics and ICF Macro.
- Nube, M., and G.J. van den Boom (2003). Gender and adult undernutrition in developing countries. *Annals of Human Biology* 30(5): 520–37.

- Oliver, D. (1955). *A Solomon Islands society*. Cambridge, MA: Harvard University Press.
- Oomes, N., Tieben, B., Laven, A., Ammerlaan, T., Appelman, R., Biesenbeek, C., Buunk, E. (2016). *Market Concentration and Price Formation in the Global Cocoa Value Chain*. Amsterdam: SEO Amsterdam Economics
- Oshi, D.C., S.N. Oshi, I.N. Alobu, and K.N. Ukwaja (2016). Gender-related factors influencing women's health seeking for tuberculosis care in Ebonyi State, Nigeria. *Journal of Biosocial Science* 48(1): 37–50.
- Oxfam (2014). *Hidden hunger in South Africa. The faces of hunger and malnutrition in a food-secure nation*. Oxford: Oxfam.
- Paul, A, Doocy S, Tappis H, Funna Evelyn, S. (2014). Preventing malnutrition in post-conflict, food insecure settings: a case study from South Sudan. *PLOS Currents Disasters* July 7 (Edition 1).
- Promundo (2017). *MenCare+*. <https://bit.ly/1NH2idO>.
- Promundo and United Nations Population Fund (2016). *Strengthening CSO-government partnerships to scale up approaches. Engaging men and boys for gender equality and SRHR. A tool for action*. Washington, DC; New York: Promundo and United Nations Population Fund.
- Pyburn, R., G. Audet-Bélanger, S. Dido, G. Quiroga, and I. Flink (2015). *Unleashing potential: gender and youth inclusive agri-food chains*. KIT SNV Working Paper Series 7. Amsterdam: Royal Tropical Institute (KIT).
- Ravera, F, B. Martin-Lopez, U. Pascual, and A. Drucker (2016). The diversity of gendered adaptation strategies to climate change of Indian farmers: a feminist intersectional approach. *Ambio* 45 (Supplement 3): 335–51.
- Rottach, E., S.R. Schuler, and K. Hardee (2009). *Gender perspectives improve reproductive health outcomes: new evidence*. Washington, DC: Population Reference Bureau.
- Royal Tropical Institute (KIT), Agri-ProFocus, and International Institute of Rural Reconstruction (2012). *Challenging chains to change: gender equity in agricultural value chain development*. Amsterdam: KIT Publishers, Royal Tropical Institute.
- Sanyan, S., Pyburn, R., Mur, R., Audet-Bélanger, G. (2014). Against the grain and to the roots. Dakar: CORAF/WECARD and Royal Tropical Institute (KIT).
- Schubert, C. (2013). Using bananas to fight gender imbalances on cocoa plantations. <https://bit.ly/2G28vsv>.
- Sen, A. (1983). Poor, relatively speaking. *Oxford Economic Papers*, New Series 35(2): 153–69.
- Simitab, H.J. (2007). Towards a sustainable cocoa economy in PNG: enhancing production through adoption of Integrated Pest and Disease Management

## 6 Gender, health and smallholder farming

- (IPDM) with farmers' participation. In *Roundtable Conference on a Sustainable World Cocoa Economy*. Accra, GH.
- Sivakumar, M. (2008). Gender discrimination and women's development in India. <http://bit.ly/2RCzb4J>.
- Sonke Gender Justice (2016). *Annual report March 2015–February 2016. Celebrating 10 years of advancing gender justice*. Cape Town, ZA: Sonke Gender Justice.
- Sweetman, C., ed. (2002). *Gender, development and poverty*. Oxford: Oxfam.
- Tallis, V. (2002). *Gender and HIV/AIDS*. Brighton: Institute of Development Studies.
- United Nations Programme on HIV/AIDS. (2009). *Agenda for accelerated country action for women, girls, gender equality and HIV. Operational plan for the UNAIDS. Action Framework: Addressing Women, Girls, Gender Equality and HIV*. Geneva: UNAIDS.
- United Nations (2014). *The world survey on the role of women in development 2014. Gender equality and sustainable development*. New York: UN Women.
- United Nations Development Program (2016). Sustainable development goals. <https://bit.ly/2csURy2>.
- United Nations Environment Programme, United Nations Entity for Gender Equality and the Empowerment of Women, United Nations Peacebuilding Support Office, and United Nations Development Programme (2013). *Women and natural resources. Unlocking the peacebuilding potential*. New York: United Nations Environment Programme, United Nations Entity for Gender Equality and the Empowerment of Women, United Nations Peacebuilding Support Office, and United Nations Development Programme.
- United Nations International Children's Emergency Fund. Eastern and Southern Africa. Gender and nutrition. <https://uni.cf/2QgPYO3>.
- van Eerdewijk, A., and K. Danielsen (2015). *Gender matters in farm power*. KIT, CIMMYT, CGIAR Research Program on Maize. Amsterdam: Royal Tropical Institute (KIT).
- Velyvis, K., N. Murray, and J. Fortson (2011). *Gender mainstreaming strategy and action plan for the Cocoa Livelihoods Program*. Washington, DC: Mathematica Policy Research.
- World Health Organization (2008). *Death estimates for 2008 and disability adjusted life year (DALY) estimates for 2004 by cause for WHO member states*. Geneva: World Health Organization.

