Women's Access to Land and Children's Nutritional Outcomes in Rural Burkina Faso

Monsoi Kenneth Colombiano Kponou

Pouirkèta Rita Nikiema

Working Paper 008-2025

AFRICAN ECONOMIC RESEARCH CONSORTIUM

CONSORTIUM POUR LA RECHERCHE ÉCONOMIQUE EN AFRIQUE

Bringing Rigour and Evidence to Economic Policy Making in Africa

Women's Access to Land and Children's Nutritional Outcomes in Rural Burkina Faso

By

Monsoi Kenneth Colombiano Kponou
University of Abomey-Calavi (UAC), Abomey-Calavi, Benin,

and

Pouirkèta Rita Nikiema
Norbert ZONGO University, Koudougou, Burkina Faso

AERC Working Paper 008-2025
African Economic Research Consortium, Nairobi
May 2025

THIS RESEARCH STUDY was supported by a grant from the African Economic Research Consortium. The findings, opinions and recommendations are, however, those of the author and do not necessarily reflect the views of the Consortium, its individual members, or the AERC Secretariat.

Published by: The African Economic Research Consortium
P.O. Box 62882 – City Square
Nairobi 00200, Kenya

Abstract

Across developing countries, women play an important role both as producers of major food crops and in improving household nutrition. This research uses data from the country's first Living Standards Measurement Survey to assess the effect of enhancing women's empowerment on the nutritional outcomes of children in rural Burkina Faso. The results revealed a low baseline level of women's empowerment in rural areas, but empowerment was positively correlated with children's nutritional outcomes. This result regarding empowerment warrants further investigation into the components that most significantly affect children's nutritional status. In this regard, access to land has been identified as a crucial factor in women's empowerment. To leverage land access, we analyze its effect on children's nutritional outcomes. Our results suggest that access to land is positively correlated with long-term nutritional status. The study suggests that improving women's access to land will translate into significant gains in children's nutritional outcomes in rural households.

Keywords: Women; Land access; Children's nutrition; Burkina Faso

1. Introduction

Land tenure security constitutes a critical determinant of agricultural sector development. It enhances agricultural productivity by fostering investment, facilitating access to financial resources, and enabling land transfers, thereby contributing to overall economic growth (Coulibaly, 2021). Access to land is a critical issue, as it constitutes a fundamental asset for food production and serves as a key determinant of shelter and community development (FAO, 2002). Land constitutes the primary factor of production in agrarian economies. Consequently, its mode of access, allocation, transfer, control, and utilization plays a critical role in shaping socio-economic policies and related activities. This issue is fundamental to socio-economic development planning and frequently serves as a source of conflict, particularly within the broader framework of a country's political economy (Daniel, 2021).

In Burkina Faso, women are integral to family farming, accounting for 52 percent of agricultural production. However, their access to land remains severely constrained. Under the prevailing traditional land tenure systems, women hold only insecure (typically annual) land use rights, and the land available to them is often of poor quality or degraded (Bary et al., 2020). An analysis of women's access to land in West Africa reveals their pivotal role in agricultural development as primary land users. Women generally have significantly less access to land compared to men. Their rights to land are often constrained, characterized as limited and temporary, though specific circumstances and degrees of access vary across contexts (Koné, 2011).

Due to restricted access to land, financial services, social capital, and technology, women often bear a greater burden in adapting to and mitigating the effects of climatic shocks. In certain contexts, discriminatory social norms and traditions are legally reinforced, further constraining women's economic opportunities. Evidence suggests that if women farmers had equal access to productive resources—such as land, finance, and technology—as their male counterparts, their agricultural yields could increase by 20 to 30 percent. Consequently, national agricultural output could expand by 2.5 to 4 percent, potentially reducing the prevalence of malnutrition by 12 to 17 percent (UNDP, 2012). Globally, women have access to only 77 percent of the legal rights enjoyed by men on average. Furthermore, nearly 2.4 billion women of working age live in economies where they do not possess the same rights as their male counterparts (World Bank, 2023).

Sufficient access to land could significantly help improve women smallholder farmers' tenure security to land, provide livelihood options, and enhance food security (Dugasseh et al., 2021). Women's landownership, even in the absence

of formal titles, has a positive impact on the welfare of family farmers. Additionally, women's informal land rights contribute to greater household crop diversity and enhanced food security (Schling & Pazos, 2024). The persistent challenges surrounding land rights align with a notable increase in global food insecurity. Since the onset of the COVID-19 pandemic, food insecurity has reached its highest level in nearly two decades (Schling & Pazos, 2024). Between 2019 and 2021, the prevalence of undernourishment rose from 17.4% to 20.2% in Africa and from 10.4% to 13.9% in Western Africa, adding 16 million individuals to the total, which now affects approximately 57.3 million people in Western Africa (FAO et al., 2022).

The findings of (Abdulai, 2025) indicate that women have access to irrigable land, albeit under both implicit and explicit conditions, such as bearing household feeding responsibilities and the size of the household's irrigable land in Ghana. This access to land for irrigation farming has contributed to enhancing women's welfare by providing supplementary income. (Tiwari, 2024a) showed that women's land ownership is associated with a reduction in the incidence of childhood underweight and stunting, as well as an increase in women's body mass index. Furthermore, the analysis suggests that the influence of unobservable characteristics would need to be greater than that of observable characteristics to nullify these estimates, implying that land ownership has a credible positive impact on nutritional outcomes. According to (Koné, 2011a), to better understand the land situation for women in West Africa, we need to consider three key questions: (i) how do women relate to land? (ii) what kind of rights do women have to access, manage and transfer land? And (iii) what arrangements or strategies exist to take account of the 'land needs of this social category.

Worldwide, it is shown that among all assets, land is the basic source of women's survival and development (Rehman et al., 2019). (Rehman et al., 2019)note that given the significant importance of land in women's lives, and the surprising presence of many malnourished children, more research will be needed to understand the link between women's land ownership and children's food and nutritional security. The literature shows that studies in Burkina Faso context are focused on the impact of land tenure security on productivity ((Noufé, 2023) (Keudem & Savadogo, 2023) ; (Coulibaly, 2021) and investment (Bambio & Agha, 2018; Zahonogo, 2016; Brasselle et al., 2014). Our study will contribute to the literature on the impact of land access on children's nutrition status in rural agricultural households.

This paper examines the effect of women's land access on the nutritional status of children under the age of five in Burkina Faso. The study contributes to the literature by analyzing key aspects of women's access to land in rural Burkina

Faso. We consider women's land access through factors such as the acquisition mode and land size. The remainder of the paper is structured as follows: Section 2 presents the conceptual framework and empirical evidence; Section 3 presents an overview of women's land access and child nutrition in Burkina Faso; Section 4 outlines the methodology; Section 5 presents and discusses the results; and the final section concludes the paper.

2. Conceptual framework and empirical evidence

From women's access to land to child nutrition: what are the links?

The relationship between women's access to land and children's nutritional outcomes is a crucial issue in the context of developing countries, particularly in agricultural societies like Burkina Faso. Women play a vital role in food production, resource management, and household nutrition (Nikiema & Kponou, 2024). Among low-income agricultural households, farms with greater crop diversity were associated with higher levels of women's empowerment, suggesting that strengthening women's empowerment could contribute to improving food system resilience (Connors et al., 2023).

Women encounter significant barriers in accessing productive inputs, assets, and services, which not only exacerbate their vulnerability to food insecurity but also substantially limit their contribution to overall agricultural output. Agriculture constitutes a fundamental source of livelihood for women, particularly in Africa. However, climatic stresses on agricultural production disproportionately expose women to food insecurity (UNDP, 2012). According to (Nnaji et al., 2022), female-headed households (FHHs) experience higher levels of food insecurity compared to male-headed households (MHHs). Moreover, greater access to land is associated with a reduced probability of household food insecurity. An analysis of the interaction between gender and land access indicates that for each additional acre of land, the likelihood of food insecurity among FHHs declines by approximately 16 percent relative to MHHs.

Women's access to land can be defined in various forms, including formal (legal titles, land certificates) and informal (customary or community-based tenure systems) rights. In Burkina Faso, where land is primarily governed by customary systems, women's access often involves informal tenure agreements or inheritance rights. Formal access may involve land titles or lease agreements, which tend to offer more security and control over land

resources. This framework aims to explore how women's access to land influences children's nutritional outcomes through a series of direct and indirect pathways. The framework draws from existing literature and economic theories to establish a causal link between land access and child nutrition.

Direct pathway: improved household food security

Theories of land access and women's empowerment suggest that ownership or secure access to land increases women's decision-making power, economic stability, and autonomy within the household. The issue of women's land rights is not only of significant relevance in the present context but is also expected to gain increasing importance over time. Pronounced gender disparities persist in the intra-household allocation of resources predominantly controlled by men, leading to potential inefficiencies in agricultural production arising from gender-unequal land distribution (Agarwal, 2003). Land rights are a critical component of women's empowerment, as they directly impact their control over resources, access to credit, and bargaining power in household decisions. Women's empowerment, in turn, influences household outcomes, including children's nutritional status.

Women's access to land enables them to contribute more effectively to food production. According to (Doss, 2006), the proportion of household assets owned by women significantly influences budget allocations across multiple expenditure categories in each period. These effects remain robust even when considering only women's share of farmland ownership. Although the number of households where women own land is considerably smaller than those where women hold other assets, the share of household land owned by women exhibits a statistically significant relationship with five out of nine budget categories in each period. Notably, a higher proportion of farmland owned by women is associated with a significant increase in household expenditure shares allocated to food.

(Kasiwa & Muzabedi, 2020) provide evidence that access to agricultural land has a significant impact on nutritional outcomes, with this relationship holding across the full sample and within subsamples of male- and female-headed households. However, notable gender differences emerge. Among female-headed households, access to farmland is a key determinant of children's dietary diversity, whereas in male-headed households, it is significantly associated with an increase in children's height-for-age z-scores. Additionally, in male-headed households, farmland access positively influences the likelihood of a woman maintaining a normal body mass index, while in female-headed households, it is linked to a significant reduction in the risk of anemia among women.

Indirect Pathway

Enhanced Women's Economic and Bargaining Power

Women's individual land ownership and their autonomy in major household purchases have a positive impact on children's food and nutrition security, with these effects being particularly pronounced among children experiencing severe stunted growth. Furthermore, the positive association between women's land ownership and child nutrition is partially mediated by women's enhanced decision-making power in large-scale household expenditures. The findings underscore the importance of securing women's land rights to strengthen their autonomy, which can serve as an effective policy instrument for improving both women's well-being and children's nutritional security (Rehman et al., 2019). Quisumbing & Maluccio (2000) showed that assets controlled by women exert a positive and significant influence on household expenditure allocations toward investments in the next generation, particularly in areas such as education and children's clothing. Thus, it is shown that there is a strong correlation between the decision-making powers that a person enjoys, and the quantity and quality of land rights held by that person in major societies.

Burrone & Giannelli (2023) investigate the link between women's land ownership and household food security in Tanzania, employing the Household Dietary Diversity Scale (HDDS) as an indicator of food security. They estimate multiple fixed-effects models and conduct a heterogeneity analysis to examine how the impact of women's land ownership varies across households with different levels of reliance on home-produced food. The results indicate that women's landownership plays a crucial role in shaping household dietary diversity. Sole ownership of food crops and joint ownership of cash crops positively affect household food security, with stronger effects observed in households primarily dependent on purchased food. These findings highlight the significance of women's control over income-generating crops in improving food security outcomes.

The results of Harris-Fry et al. (2020) are somewhat more mixed and highlight the quality of the land. Indeed, they showed that land size has a positive impact on maternal dietary diversity scores but does not significantly influence BMI. Production diversity, rather than production value, accounts for 17.6% of the total mediated effect. The effect of land size on BMI is attenuated, with no evidence of a direct effect through either agricultural mediator; however, indirect effects are observed through both production diversity and production value. An increase in land size enhances women's decision-making autonomy, which in turn negatively affects maternal BMI. The positive effect of

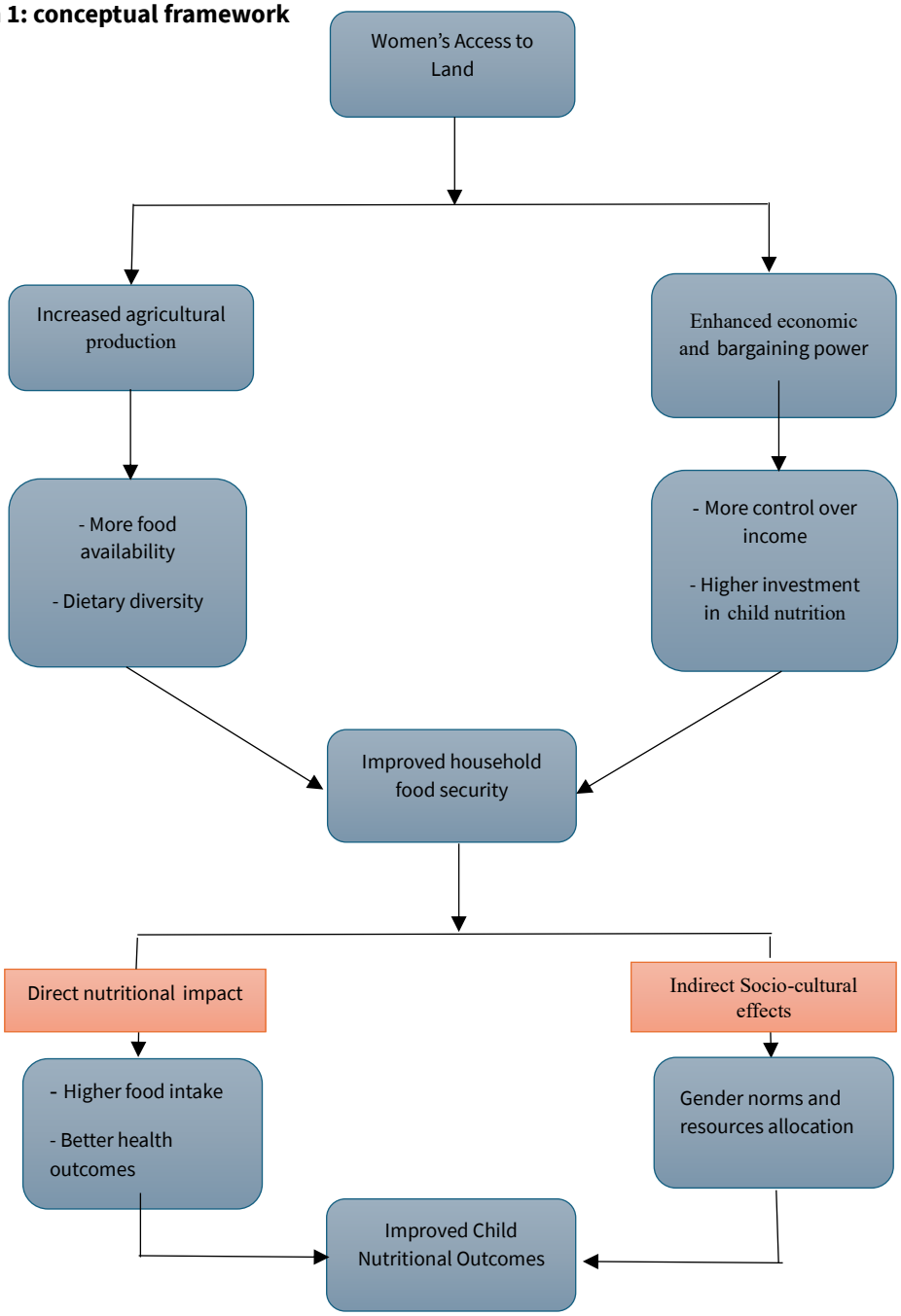
reduced labor time on maternal BMI is offset by the negative impact of household land size on available leisure time. Agricultural interventions should incorporate considerations of land quality, women's decision-making power, and the implications for women's workload in their design.

Social and cultural context: gender norms and household decision-making

The impact of land access on children's nutritional outcomes may vary depending on the social and cultural context. In Burkina Faso, gender norms around land ownership may limit women's control over land, even if they have access. These cultural factors can mediate the relationship between land access and child nutrition by influencing how resources are allocated within the household. To enhance diets, services, and practices for adolescent girls and women, programs must consider their agency, access to essential resources (human, social, and economic), and the broader institutional and sociocultural environment in which they live. The interplay between agency, resources, and opportunity structures is critical, as these factors collectively shape the extent to which gender equality is realized and the level of empowerment adolescent girls and women experience in their daily lives (UNICEF, 2024).

Children's diets and nutritional outcomes are shaped by gender norms and behaviors. In most cultures, women bear primary responsibility for meal preparation, positioning them as key influencers of children's dietary patterns. Gender norms also affect intra-household food distribution and the dietary choices made by older girls and boys. Moreover, men are often perceived as the primary earners, granting them control over household income and, consequently, food purchases. Despite contextual variations, the literature highlights three recurring pathways through which gender norms impact children's diets: gendered food allocation practices, maternal autonomy, and men's role in dietary decisions. These pathways function within the broader framework of household food security, ultimately influencing individual food intake. For instance, the notion of "breadwinner masculinity" may reinforce food distribution patterns that prioritize men's nutritional quality over that of children. Conversely, greater maternal control over financial resources can challenge these norms, potentially leading to more equitable food allocation within households (Meerman & Aberman, 2024).

Graph 1: conceptual framework



Empirical evidence

According to (Daudu et al., 2022), most male-headed households (56.7%) and 46.4% of female-headed households acquired land through family inheritance in Nigeria. A statistically significant difference in farm yield between male- and female-headed households is observed at the 5% level, attributable to disparities in land access and ownership. The estimated treatment effect suggests a substantial improvement in farm yield outcomes for male-headed households relative to their female counterparts. Reliable data on land access and ownership for both male- and female-headed households are essential for accurately assessing the land tenure arrangements of female-headed households. Such data are crucial for informing policy formulation and monitoring progress toward achieving gender equality in land access. The findings of (Daniel, 2021a) indicate that female farm managers exhibit 26% lower productivity relative to their male counterparts. A decomposition of the productivity gap reveals that the mode of land access contributes -300% to the endowment effect and 211.54% to the structural effect, with land purchase and land rental emerging as the statistically significant channels of land acquisition. These results underscore the necessity for policymakers to reform customary land tenure systems that restrict women's access to land ownership.

Ibrahim et al. (2022) examined the impact of smallholders' modes of land acquisition and tenure documentation on child malnutrition. The analysis revealed that households relying on family-inherited land were more likely to have children experiencing stunting, underweight, and overweight conditions. In contrast, households with access to community-distributed land exhibited lower rates of stunting, underweight, and overweight among children. Furthermore, households holding formal land certificates were less likely to have stunted children, while those with informal land documentation were less likely to have children who were wasted or underweight. Overall, smallholder land tenure demonstrated a modest but significant effect in mitigating child malnutrition, particularly through community-level land distribution and informal land documentation in Nigeria. In Congo, the findings of Balasha et al. (2024) highlight the importance of acknowledging the diverse pathways through which women access farmland, even though these pathways do not always ensure long-term security for women's agricultural investments. While women farmers generally do not perceive land access as their primary constraint, they associate land insecurity with a lack of control and rights over land, as well as environmental threats, which pose significant risks to agricultural activities. Consistent with existing literature, the results of these authors confirm that customs and cultural norms, discriminatory

inheritance practices, and male dominance in resource-related decision-making are key drivers of inequalities in women's access to and use of land.

According to Nguyen & Le (2023), there is a positive correlation between women's land ownership and their intra-household bargaining power across multiple dimensions. This relationship is particularly pronounced in women's autonomy over decisions related to their children. Additionally, women who own land are better positioned to access formal credit and invest in human capital. The study further highlights the beneficial effects of women's land ownership on family outcomes, particularly in shaping spending and saving behaviors. Among Ethiopian households reporting exposure to drought, women in irrigating households exhibit higher Women's Dietary Diversity Scores (WDDS) compared to those in non-irrigating households. Similarly, in Tanzania, women in irrigating households demonstrate higher WDDS than their counterparts in non-irrigating households, with the positive impact of irrigation on WDDS being more than doubled in households facing drought. Furthermore, among Tanzanian households affected by drought, irrigating households have higher Household Dietary Diversity Scores (HDDS) than non-irrigators. In Ethiopia, children in irrigating households show average weight-for-height z-scores (WHZ) that are 0.87 standard deviations higher than those of children in non-irrigating households. In Tanzania, irrigation is associated with higher WHZ scores for children under five in households that experienced drought within the preceding five years. Overall, the study underscores the significant role of small-scale irrigation in improving households' economic access to food and enhancing nutritional outcomes for both women and children (Mekonnen et al., 2022).

The results of Christian et al. (2023) indicate that an increase in the women's empowerment index is associated with a reduced likelihood of children experiencing anaemia and the co-occurrence of anaemia and stunting. Specifically, improvements in asset ownership and decision-making dimensions of empowerment are significantly linked to a lower likelihood of both anaemia and the concurrent occurrence of anaemia and stunting among children. Moreover, children of empowered women in male-headed households were more likely to suffer from anaemia and the simultaneous presence of anaemia and stunting compared to those whose mothers were in female-headed households. These findings suggest that interventions aimed at improving childhood nutrition through women's empowerment strategies should prioritize asset ownership and women's instrumental agency, while also accounting for the mediating effect of household headship structure. Castet (2024) demonstrated that large-scale land acquisitions (LSLAs) have had a significantly negative impact on child nutrition in Africa over the past two

decades. Specifically, children residing near LSLAs experienced a 20% reduction in dietary diversity scores following land acquisition. These findings are robust across various statistical tests. The study found no evidence of changes in work status or household assets. While LSLAs may yield positive outcomes for agricultural practices, their impact on child food security is adverse. The analysis underscores the critical need to support local communities in the aftermath of foreign agricultural investments.

Allendorf (2007) showed significant associations between women's land rights, empowerment, and child health in Nepal. Using a logistics model, the author found that women who own land are more likely to have the final say in household decisions and their young children are less likely to be severely underweight. Further, Allendorf (2007) indicated that seventy percent of women who own land have the final say on at least one decision alone or jointly compared to 48% of women in landed households and 60% of women in landless households. Similarly, 37% of women who own land have the final say alone on a decision compared to 20% of women living in landed households and 30% of women in landless households.

3. Overview of women's land access and child nutrition in Burkina Faso

Land is an important asset in Burkina Faso and plays an essential role. According to FAO (2010), an increase in women's access to land is crucial to fight hunger and poverty. Women are playing a leading role in agricultural production in Burkina Faso. Despite this important role played by women, they have limited access to land, credit facilities, agricultural inputs, equipment, extension services, market for their produce, education as well as training facilities compared to their male counterparts (Wekwete, 2014). In many traditional systems in Africa, women often only have indirect access to land (for example, through their husbands, brothers or fathers), which means they can access and use the land but do not have control over it, and they generally have no property rights (UNECA, 2017; Kevane & Gray, 1999).

Women in western Burkina Faso often work on land controlled by men but rarely exercise direct control over their land (only in exceptional circumstances). However, while married women from certain ethnic groups (for example, the Mossi) cultivate plots independently of their husbands, and exercise considerable control over what is planted as well as the income from these plots, women from other ethnic groups, such as the Bwa and Lobi, have

lesser access rights, which shows the significant difference between ethnic groups in the country (Kevane & Gray, 1999). Land tenure insecurity has been found to decrease agricultural productivity in Burkina Faso by an estimated 8.9% (Jones-Casey, 2013), According to Manuh, 1998, women who own land are more likely to own small pieces of land than those owned by their male counterparts. Indeed, the average size of women's landholdings in Benin is 1 ha compared with 2 ha for men, whilst in Burkina Faso, male-controlled plots are on average eight times larger than female-controlled plots (Manuh, 1998).

Recently, the World Bank's current Women, Business and the Law report states that women legally have the same rights and opportunities as men to own assets and access credit in Burkina Faso (World Bank, 2023). Séogo & Zahonogo (2023)confirmed in their study of land property rights and agricultural productivity that now both customary and formal land tenure systems coexist in Burkina Faso after the formalization of the customary land system since in 2009. The issue is that there is a gap between the law and the implementation on the ground. Indeed, there is a limited implementation and enforcement of land law for rural women as they are often neglected (TMG Research & GRAF, 2020).

Inheritance and marriage are still the most common ways in which women can acquire access to land. It is obvious that inheritance is the main way of accessing land, notably within local communities and it is done through a transfer of heritage from father to son (Coulibaly, 2021;Daniel, 2021). Thus, Koné (2011) found that marriage and inheritance are the main modes of access to land for women in Burkina Faso under customary law. Effectively, customary land tenure management remains the norm in Burkina Faso's rural areas (Elbow, 2013). In 2012, 68.4% of women reported that they did not own land in Burkina Faso compared to 49.3% of men.

Besides, child malnutrition has remained a critical public health issue in Burkina Faso. All the five indicators of child undernutrition, namely low birth weight, global acute malnutrition, wasting, stunting, and underweight are above the WHO thresholds (Ouédraogo et al., 2020). The country faces a double burden of malnutrition, including undernutrition and overweight/obesity (Ouédraogo et al., 2020). According to recent data, approximately 25% of children under the age of five suffer from chronic malnutrition (stunting), while 9% are acutely malnourished (wasting). These figures are alarming and indicate significant gaps in food security and nutrition (Ministère de la Santé, 2020). Also, the National Nutrition Policy asserts that malnutrition is the underlying cause of 35% of infant and child deaths (Ministère de la Santé, 2016). Malnutrition has significant negative consequences for Burkina Faso, particularly in terms of poor human health, lost human capital, and decreased

economic productivity. In fact, malnutrition also has a negative impact on Malnutrition also hurts their ability to develop to their fullest potential. Malnourished children are at risk of poorer cognitive and motor development and lower school achievement than their well-nourished peers (Grantham-McGregor et al., 1998; Hoddinott et al., 2008)which taken together can, in the long term, significantly impede national development and erode national goals to have a highly skilled workforce.

4. Data and Methods

Data and main variables

Data

This study draws on data from the 2014 Continuous Multisectoral Survey (EMC), the first Living Standards Measurement Survey (LSMS) conducted in Burkina Faso by the National Institute of Statistics and Demography (INSD). The EMC is nationally representative of both agricultural and non-agricultural households. A two-stage stratified sampling method was employed to select over 10,000 households across all 13 regions. In the first stage, 905 enumeration areas (EAs) were drawn, followed by a random selection of 12 households per EA in the second stage.

The EMC provides comprehensive data on household and individual characteristics, including demographics, food and non-food expenditures, food security, agricultural production (land tenure, input costs, and fertilizer use), employment status, household assets, access to information and communication technologies (ICTs), health, education, savings, credit access, social services (clean water and electricity), and anthropometric measurements of children under five years of age.

Main variables

In this study, land access is defined as a woman's ability to independently manage a plot of land, whether under a formal or informal tenure arrangement. This definition is adopted due to the low prevalence of formal land ownership in developing countries such as Burkina Faso. Land access is measured using two key dimensions: (i) the mode of acquisition and (ii) the plot size.

Child nutrition for children under five years of age is assessed through their nutritional status, categorized into three indicators: (i) underweight, (ii) stunting, and (iii) wasting. Therefore, our primary dependent variable is child stunting, wasting, and underweight which we measured respectively by height-for-age z-score (HAZ score), weight-for-height (WHZ score), and weight-

for-age (WAZ score) according to the World Health Organization's child growth standard. This score compares a child's z-score to a reference population, and a child is considered to have stunted, wasted or underweight if the HAZ score is less than 2 standard deviations from the reference.

Methods

To assess the effect of women's land access on children's nutritional outcomes, we estimate the model:

$$Nutrition_i = \phi_0 + \phi_1 Access_i + \phi_2 CC_i + \phi_3 WC + \phi_4 HC_i + \varepsilon_i \quad (1)$$

Nutrition is children's nutritional outcomes (the three states of nutrition stated before) and according to these three measures, three equations are estimated; Access is women's access to land (acquisition mode and land size); CC captures the child characteristics; ϕ_0 is the constant term that captures other factors; WC captures women's characteristics; HC is for household characteristics and ε the error term. Household characteristics include household size, gender, age and literacy of the household head, number of crops produced, and access to clean water or sanitation. The women's control variables include age, education and literacy, and marital status. Children's characteristics include age, sex, and participation in a growth or nutrition program.

The equation 1 can be estimated by Ordinary Least Square (OLS) but this could be biased due to potential endogeneity of women's access to land (Tiwari, 2024); (Nikiema & Kponou, 2024)).

Potential endogeneity: nature and source

Women's access to land could be biased due for at least two reasons. The first reason is reverse causality. Child nutrition may itself influence women's land access. For instance, healthier children may enable mothers to engage more actively in agricultural activities, increasing their bargaining power and ability to secure land. The second reason is due to omitted variable. There may be unobserved factors that influence both women's access to land and child nutrition, such as: household wealth, education levels or cultural norms. Indeed, wealthier households may have better land access and provide better nutrition for children. In the same vein, more educated women may have higher land ownership rights and make better nutrition choices. Additionally, in some societies, gender norms determine both land access and food allocation within households.

Descriptive statistics

This section presents the descriptive statistics of the variables used in this study. The data analyzed are restricted to children under the age of five. Table 1 shows that, on average, an under-five child in Burkina Faso is 29 months old,

and 38.6% of children are under two years of age. In addition, 48.7% of the children were female. Approximately 28% of children are stunted, 15% are underweight, and 9% are wasted. Table 1 also shows that 42.3% and 21.1% of the children were enrolled in a growth program and a nutrition program, respectively.

Table 1 shows that the households are large, with a mean household size of 11 members. Fewer than 5% of households are headed by a woman, and only 25.2% of household heads are literate. On average, rural adults have a low level of education. While a household head would have spent fewer than two years at school, women had less than one year of schooling. On average, over 60% of households have access to clean water, but only 5% have access to sanitation. Table 1 indicates that more than 91% of women had no access to land. Only 3% own land while 5% only use land. While 79% of women acquired land through inheritance, 4.5% accessed land through marriage.

Table 1: Summary statistics

Variable	Obs.	Mean	Std. dev	Min	Max	Definition
Nutrition outcomes						
HAZ	6,443	-1.071	1.771	-6	5.93	Height-for-age z score
WAZ	6,443	-0,827	1.266	-5.9	6	Weight-for-age z score
WHZ	6,443	-0.299	1.414	-5.68	5.85	Weight-for-height z score
Stunted	6,443	0.278	0.448	0	1	1 if HAZ<-2
underweighted	6,443	0.155	0.362	0	1	1 if WAZ<-2
Wasted	6,443	0.089	0.285	0	1	1 if WHZ<-2
Land access						
Women land acquisition mode (ref.=purchase)						
Inheritance	4,772	0.790	0.407	**0**	**1**	1 if woman inherited land
Marriage	4,772	0.045	0.207	0	1	1 if woman acquired land through marriage
Gift	4,772	0.023	0.150	0	1	1 if woman acquired land as gift
Other						1 if woman acquired land for any other reason
No access	6,436	0.915	0.278	0	1	1 if woman has no access to land
Use	6,436	0.050	0.218	0	1	1 if woman only uses land
Own	6,436	0.034	0.181	0	1	1 if woman owns land
Land size	6,352	1.480	3.763	0.01	90	Woman land size in hectare
Women's individual characteristics						

Age of woman	6,443	32.822	15.365	15	99	Age of woman in completed years
Education of woman	6,369	0.683	2.337	0	16	Number of years education
Woman marital status						
Single	6,430	0.224	0.417	0	1	1 if woman is single or in a simple cohabitation relationship
Monogamous union	6,430	0.408	0.491	0	1	1 if woman is married and in monogamous household
Polygamous union	6,430	0.366	0.481	0	1	1 if woman is married and in polygamous household
Household characteristics						
Age of household head	6,443	45.703	14.626	16	99	Age of household head in completed years
Sex of household head	6,443	0.952	0.212	0	1	1 if household head is male, 0 otherwise
HH literacy	6,443	0.252	0.434	0	1	1 if household head is literate
HH education years	6,443	1.420	4.439	0	16	Number of years of household head education
HH education level (ref.=no education)						
Primary education	6,443	0.076	0.266	0	1	1 if obtained primary education
Secondary education	6,443	0.018	0.133	0	1	1 if obtained secondary education
Household size	6,443	11.071	5.516	2	53	Number of household members
Under five children	6,443	3.080	2.111	0	17	Number of under five children in household
Improved seed	6,443	0.075	0.264	0	1	1 if household uses improved seed, 0 if local seed
Crop number	6,443	4.977	3.263	1	29	Number of crops produced by household
Food expenditures	6,443	0.554	0.112	0.06	0.92	Share of food expenditures
Clean water	6,443	0.609	0.488	0	1	1 if household has access to clean water source
Sanitation	6,432	0.050	0.218	0	1	1 if household has access to sanitation
Poor	6,443	0.479	0.499	0	1	1 if household is poor
Child's individual characteristics						
Age (months)	6,443	29.038	16.106	0	59	Child age in months
Child under 2	6,443	0.386	0.486	0	1	1 if child is under 2 years old (23 months)
Child sex (female)	6,443	0.487	0.499	0	1	1 if child is female, 0 otherwise
Household child	6,443	0.819	0.384	0	1	1 if child is of household head
Growth programme	6,443	0.423	0.494	0	1	1 if child participates in growth programme
Nutrition programme	6,443	0.211	0.408	0	1	1 if child participates in nutrition programme
Children under five	6,443	3.064	2.105	0	17	Number of children under five years

5. Results and Discussion

We present our key OLS results for HAZ, WAZ, and WHZ in Table 2. Columns 1, 3, and 5 estimated the effect of land access and land size while columns 2, 4, and 6 estimated with controls. The results show that when considering control variables, the coefficient increased in value for all nutritional outcomes. We interpret the estimated coefficient from controlled regressions (Columns 2, 4, and 6). All the regressions are clustered and based on all sampled women and we control for when women are spouses.

The results show that women's access to land through ownership significantly influences WHZ (short-term). Indeed, when a woman owns the land, it favours WHZ by a standard deviation of 0.342. When a woman only uses land has a significant and positive effect on the HAZ and the WAZ scores. While HAZ increases by 0.253 standard deviation, WAZ increases by 0.206 standard deviation. These results are in line with those previously reported in the literature (Tiwari, 2024). According to Allendorf (2007) , children of mothers who own land are significantly less likely to be severely underweight in Nepal. In addition, women's land ownership indicated a positive and significant effect on children's HAZ scores of children in Pakistan (Rehman et al., (2019) .In his study, Tiwari (2024) showed that women's land ownership is associated with a reduction in the incidence of childhood underweight and stunting in Nepal. These results suggest that land ownership is a short-term factor compared to land use. Thus, land access through its use is more important for nutrition outcomes as land use has a direct effect through women access to other assets related to agricultural activities.

Our results also show that land size positively affects children's short-term nutritional status (WHZ). This result is consistent with Balasha et al., (2024), and Pindiriri (2022) . Indeed, this result can be explained by the fact that land size is an indicator on the extent to which a woman has access to land and this then, determine the types of produced food for the household. Results also, suggest that child gender matters in the short term, . Indeed, being a girl reduced WAZ and WHZ by respectively 0.074 and 0.099 standard deviations in children's nutrition scores. This suggests that female children benefit less from mother assets than boys do. In fact, in rural areas, child sex preference leads households to ease access to assets to mothers who have boys compared to those with girls. This result is in line with Tiwari (2024) who found that the incidence of underweight and stunting is stronger for boys than girls in Nepal. In addition, child age and participation in a nutrition program matter both in the long and short term. However, age and participation in nutrition

programme negatively influence nutrition outcomes by decreasing HAZ and WAZ scores.

Among women's characteristics, while age negatively influences children's WAZ and WHZ (short term), woman literacy positively influences the WHZ. Moreover, a woman's marital status is negatively correlated with children HAZ (polygamous), and WAS (monogamous) respectively. However, being a spouse has no significant correlation with children's nutritional outcomes. This result is possible as we considered all women in our sample (spouse, daughter, relative). For household characteristics, the results indicate that factors such as the gender of the head of household, the level of education, household size, and the number of children under five in the household do not influence nutrition outcomes. However, household wealth matters for WHZ. Indeed, being poor increased the z score by 0.098 SD in the short term. Also, even though access to clean water has a positive influence, the effect is not significant while access to sanitation has a mixed effect. Indeed, access to sanitation is positively related to short term outcome and negatively to long term outcome (HAZ) meaning that access to social services matters in the short term.

Table 2: OLS estimates for children's nutritional status

Variables	(1) HAZ	(2) HAZ	(3) WAZ	(4) WAZ	(5) WHZ	(6) WHZ
Woman uses land	0.232**	0.253***	0.187**	0.206***	0.067	0.075
	(0.103)	(0.096)	(0.078)	(0.075)	(0.088)	(0.089)
Woman owns land	-0.230	-0.229	0.067	0.082	0.316**	0.342**
	(0.160)	(0.166)	(0.098)	(0.105)	(0.141)	(0.148)
Land size	-0.007	-0.004	0.004	0.006**	0.012**	0.012***
	(0.005)	(0.006)	(0.003)	(0.003)	(0.005)	(0.005)
Female child		-0.009		-0.074**		-0.099***
		(0.042)		(0.031)		(0.036)
Age (6-23 months)		-1.478***		-0.970***		-0.234**
		(0.104)		(0.081)		(0.103)
Age (24-59 months)		-2.025***		-1.043***		0.146
		(0.100)		(0.077)		(0.099)
Nutrition program		-0.338***		-0.181***		0.036
		(0.061)		(0.048)		(0.052)
Woman age		-0.002		-0.003**		-0.003**
		(0.002)		(0.001)		(0.002)
Woman literacy		-0.097		0.062		0.156**
		(0.070)		(0.055)		(0.064)
Woman is spouse		0.068		0.060		0.032
		(0.071)		(0.056)		(0.063)
Polygamous union		-0.160*		-0.114		-0.026
		(0.093)		(0.071)		(0.078)
Monogamous		-0.125		-0.130**		-0.063

union						
		(0.081)		(0.062)		(0.070)
Head gender (male)		-0.003		0.030		0.048
		(0.132)		(0.097)		(0.106)
Head education		0.004		0.004		0.002
		(0.005)		(0.004)		(0.004)
Children under five		-0.004		-0.016		-0.024
		(0.021)		(0.016)		(0.018)
Household size		0.004		0.003		0.001
		(0.006)		(0.005)		(0.006)
poor		-0.026		0.040		0.098**
		(0.052)		(0.038)		(0.044)
Access to clean water		0.028		0.043		0.041
		(0.057)		(0.043)		(0.052)
Access to sanitation		-0.202*		0.037		0.211*
		(0.122)		(0.083)		(0.125)
Constant	-1.061***	0.801***	-0.844***	0.250*	-0.333***	-0.282*
	(0.033)	(0.180)	(0.025)	(0.140)	(0.029)	(0.160)
Observations	6,347	6,301	6,347	6,301	6,347	6,301
R-squared	0.002	0.113	0.001	0.060	0.003	0.025

6. Conclusion and Policy Implications

Our study analyzed the effect of women's access to land on child nutritional outcomes in rural Burkina Faso. Using the nationally representative data from the 2014 Multisectoral Continuous Survey, we tested the hypothesis that women's access to land is positively correlated with the nutritional status of their children. We measured children's nutritional outcomes were measured by the following anthropometrics: height-for-age z score, weight-for-age z score, and weight-for-height z score. The results show that women's access to land and land size are positively linked to children's nutritional outcomes. While land ownership and land size have a short-term effect, land use affects both long and short-term outcomes. Thus, we suggest that public policies aimed at improving women's access to assets should be integrated with measures facilitating women's access to land. National policies may be required in updating laws on land ownership and land inheritance for women and include cultural and social norms changes.

7. References

Abdulai, I. A. (2025). 'I feed my family but I own no land': Understanding the complexities of women's irrigable land access and wellbeing in northern Ghana. *World Development Perspectives*, *37*(March), 100659. https://doi.org/10.1016/j.wdp.2025.100659

Agarwal, B. (2003). Gender and land rights revisited: Exploring new prospects via the state, family and market. *Journal of Agrarian Change*, *3*(1–2), 184–224. https://doi.org/10.1111/1471-0366.00054

Allendorf, K. (2007). Do Women's Land Rights Promote Empowerment and Child Health in Nepal? *World Development*, *35*(11), 1975–1988. https://doi.org/10.1016/j.worlddev.2006.12.005

Balasha, A. M., Nkulu Mwine Fyama, J., Kasongo Lenge, E., & Nyumbaiza Tambwe, A. (2024). Women farmers' access to marshlands for agricultural food production in the Democratic Republic of Congo. *Social Sciences and Humanities Open*, *9*(December), 100772. https://doi.org/10.1016/j.ssaho.2023.100772

Bambio Y, & Agha, S. B. (2018). Land tenure security and investment: Does strength of land right really matter in rural Burkina Faso? *World Development*, *111*, 130–147.

Bary, H., Tall, F., Koudougou, S., Stiem-Bhatia, L., & Sanou, S. (2020). SECURING LAND ACCESS FOR WOMEN An innovative process based on social legitimacy. *TMG Research*, 1–17.

Brasselle, A. . S., Gaspart, F., & Platteau, J. P. (2014). LITERATURE REVIEW OF LAND TENURE IN NIGER, BURKINA FASO, AND MALI CONTEXT AND OPPORTUNITIES. *Journal of Development Economics*, *67*(2).

Burrone, S., & Giannelli, G. (2023). Do Households Where Women Own Land Fare Better for Food Security? Evidence for Tanzania. *IZA Institute of Labour Economics*, *16382*, 1–50. https://doi.org/10.2139/ssrn.4541364

Castet, A. (2024). The impact of large-scale land acquisitions on child food insecurity in Africa. *World Development*, *179*(March), 106597. https://doi.org/10.1016/j.worlddev.2024.106597

Christian, A. K., Atiglo, D. Y., Okyere, M. A., Obeng-Dwamena, A., Marquis, G. S., & Jones, A. D. (2023). Women's empowerment, children's nutritional status, and the mediating role of household headship structure: Evidence from sub-Saharan Africa. *Maternal and Child Nutrition*, *19*(3), 1–13. https://doi.org/10.1111/mcn.13520

Connors, K., Jaacks, L. M., Awasthi, A., Becker, K., Bezner Kerr, R., Fivian, E., Gelli, A., Harris-Fry, H., Heckert, J., Kadiyala, S., Martinez, E., Santoso, M. V., Young, S. L., & Bliznashka, L. (2023). Women's empowerment, production choices, and crop diversity in Burkina Faso, India, Malawi, and Tanzania: a secondary analysis of cross-sectional data. *The Lancet Planetary Health*, *7*(7), e558–e569. https://doi.org/10.1016/S2542-5196(23)00125-0

Coulibaly, D. A. (2021). An Analysis of the Impact of Agricultural Productivity in Land Tenure Security on Burkina Faso. *African Economic Research Consortium Consortium*, *466*, 1–40. https://doi.org/10.1504/IJARGE.2022.10053269

Daniel, G. I. (2021). *Modes of Access to Land, and Gender-Related Productivity Gap in Burkina Faso Gniza Innocent Daniel* (Policy Brief No.750; Policy Brief). http://www.unesco.org/education/pdf/WOMEN_F.PDF.

Daudu, A. K., Awotide, B. A., Adefalu, L. L., Kareem, O. W., & Olatinwo, L. K. (2022). Impact of land access and ownership on farm production Empirical evidence from gender analysis in Southwestern Nigeria. *African Journal on Land Policy and Geospatial Sciences*, *5*(1), 129–153.

Doss, C. (2006). The effects of intrahousehold property ownership on expenditure patterns in Ghana. *Journal of African Economies*, *15*(1), 149–180. https://doi.org/10.1093/jae/eji025

Dugasseh, F. A., Aapengnuo, C., & Zandersen, M. (2021). Land tenure regimes for women in Community Resource Management Areas (CREMAs) in Northern Ghana: Opportunities and threats. *Land Use Policy*, *109*, 105602. https://doi.org/10.1016/j.landusepol.2021.105602

Elbow, K. (2013). *BRIEF Placing land rights at the heart of development BURKINA FASO'S AMBITIOUS EXPERIMENT IN PARTICIPATORY LAND TENURE REFORM Burkina Faso*.

FAO. (2002). *Gender and access to land*.

FAO, IFAD, UNICEF, WFP, & WHO. (2022). The State of Food Security and Nutrition around the world. In *The State of Food Security and Nutrition in the World 2022*.

Grantham-McGregor, S. M., Chang, S., & Walker, S. P. (1998). Evaluation of School Feeding Programs: Some Jamaican Examples. *The American Journal of Clinical Nutrition*, *67*, 785S-9S.

Harris-Fry, H., Krishnan, S., Beaumont, E., Prost, A., Gouda, S., Mohanty, S., Pradhan, R., Rath, S., Rath, S., Pradhan, S., Mishra, N. K., Allen, E., & Kadiyala, S. (2020). Agricultural and empowerment pathways from land

ownership to women's nutrition in India. *Maternal and Child Nutrition*, *16*(4), 1–12. https://doi.org/10.1111/mcn.12995

Hoddinott, J., Maluccio, J. A., Behrman, J. R., Flores, R., & Martorell, R. (2008). Effect of a nutrition intervention during early childhood on economic productivity in Guatemalan adults. *Lancet*, *371*(9610), 411–416.

Ibrahim, K. H., Hendriks, S. L., & Schönfeldt, H. (2022). The effect of smallholder land tenure on child malnutrition in Nigeria. *Land Use Policy*, *119*(August), 106214. https://doi.org/10.1016/j.landusepol.2022.106214

Jones-Casey, K. (2013). *Land Tenure Security and its Contribution to Food Security*.

Kasiwa, J. M., & Muzabedi, E. (2020). Access to Agricultural Land and Nutritional Outcomes at the Household Level: A Gender Perspective Analysis in Democratic Republic of The Congo (DRC). *African Economic Research Consortium*, *BMGF-006*.

Keudem, G. G. L., & Savadogo, K. (2023). Land tenure security and agricultural production in the rural areas of Burkina Faso. *African Journal of Agricultural Research*, *19*(11), 1083–1099. https://doi.org/10.5897/ajar2023.16520

Kevane, M., & Gray, L. (1999). A Woman's Field Is Made at Night: Gendered Land Rights and Norms in Burkina Faso. *Feminist Economics*, *5*(3), 1–26.

Koné, M. (2011a). Women and land. *Afd & LandTenure & Developement*, 83–95. https://doi.org/10.1007/978-3-319-64385-4_5

Manuh, T. (1998). *Women in Africa's Development: Overcoming Obstacles, Pushing for Progress* (Briefing Paper #11; Africa Recovery).

Meerman, J., & Aberman, N.-L. (2024). Impact of Gender Norms on Children's Diets Findings from a scoping review. *GAIN Working Paper*, *January*(39), 1–31.

Mekonnen, D. K., Choufani, J., Bryan, E., Haile, B., & Ringler, C. (2022). Irrigation improves weight-for-height z-scores of children under five, and Women's and Household Dietary Diversity Scores in Ethiopia and Tanzania. *Maternal and Child Nutrition*, *18*(4), 1–11. https://doi.org/10.1111/mcn.13395

Ministère de la Santé. (2016). *Politique Nationale de Nutrition*.

Ministère de la Santé. (2020). *Politique Nationale de Nutrition*.

Nguyen, M., & Le, K. (2023). The impacts of women's land ownership: Evidence from Vietnam. *Review of Development Economics*, *27*(1), 158–177. https://doi.org/10.1111/rode.12941

Nikiema, P. R., & Kponou, M. K. C. (2024). Women's Empowerment and Child Nutritional Outcomes in Rural Burkina Faso. *Review of Economics of Household*, 1–24. https://doi.org/10.1596/1813-9450-10560

Nnaji, A., Ratna, N. N., & Renwick, A. (2022). Gendered access to land and household food insecurity: Evidence from Nigeria. *Agricultural and Resource Economics Review*, *51*(1), 45–67. https://doi.org/10.1017/age.2021.13

Noufé, T. (2023). Impact of land tenure security through customary law on agricultural productivity in Burkina Faso: Propensity score matching approaches. *Land Use Policy*, *143*(2).

Pindiriri, C. (2022). *Bringing Rigour and Evidence to Economic Policy Making in Africa Nexus of Agricultural Policies and Nutrition Outcomes: Linkages Between Land Access Policies and Nutrition Outcomes in SSA* (APANO-004).

Quisumbing, A. R., & Maluccio, J. A. (2000). Intrahousehold Allocation and Gender Relations: New Empirical Evidence from four developing countries. *FCND DISCUSSION PAPER*, *84*, 1–91.

Rehman, A., Ping, Q., & Razzaq, A. (2019). Pathways and associations between women's land ownership and child food and nutrition security in Pakistan. *International Journal of Environmental Research and Public Health*, *16*(18). https://doi.org/10.3390/ijerph16183360

Schling, M., & Pazos, N. (2024). Effective land ownership, female empowerment, and food security: Evidence from Peru. *World Development*, *181*(May), 106680. https://doi.org/10.1016/j.worlddev.2024.106680

Séogo, W., & Zahonogo, P. (2023). Do land property rights matter for stimulating agricultural productivity? Empirical evidence from Burkina Faso. *Land Use Policy*, *125*.

Tiwari, M. (2024a). Land ownership and nutrition in Nepal. *Review of Development Economics*, *28*, 1838–1870. https://doi.org/10.1111/rode.13124

TMG Research, & GRAF. (2020). *Securing Land Access For Women: An innovative process based on social legitimacy*.

UNDP. (2012). Gender, Agriculture and Food Security. *Gender and Climate Change*, 1–36.

UNECA. (2017). *Measuring Gender Equality and Women's Empowerment in Africa.*

UNICEF. (2024). Technical Guidance: Advancing Gender Equality for Optimal Nutrition in Adolescent Girls and Women. *New York: UNICEF, September 2024*, 1–46.

Wekwete, N. N. (2014). Gender and economic empowerment in Africa: Evidence and policy. *Journal of African Economies*, *23*(Suppl_1), i87–i127.

World Bank. (2023). Women, Business and the Law 2023. In *World Bank*. https://doi.org/10.1596/978-1-4648-1944-5

Zahonogo, P. (2016). Property rights and farmers investment decisions in Burkina Fas. *Ghanaian Journal of Economics*, *4*(1), 139–157.

Mission

To strengthen local capacity for conducting independent, rigorous inquiry into the problems facing the management of economies in sub-Saharan Africa.

The mission rests on two basic premises: that development is more likely to occur where there is sustained sound management of the economy, and that such management is more likely to happen where there is an active, well-informed group of locally based professional economists to conduct policy-relevant research.

Bringing Rigour and Evidence to Economic Policy Making in Africa

- Improve quality.
- Ensure Sustainability.
- Expand influence.

www.aercafrica.org

Learn More

www.facebook.com/aercafrica

www.instagram.com/aercafrica_official/

twitter.com/aercafrica

www.linkedin.com/school/aercafrica/

Contact Us
African Economic Research Consortium
Consortium pour la Recherche Economique en Afrique
Middle East Bank Towers,
3rd Floor, Jakaya Kikwete Road
Nairobi 00200, Kenya
Tel: +254 (0) 20 273 4150
communications@aercafrica.org