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Cashew production: a conduit to attaining sustainable development goal one in rural farming communities of Ghana

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ABSTRACT

This paper examined cashew cultivation as a conduit for poverty reductionamong rural agricultural-dependent folks in Ghana. Using a qualitative case study design, in-depth interviews aided data collection from 78 study participants—farmers (45), farmhands (30), an official of Jaman North District Assembly and agricultural extension officers from the Ministry of Food and Agriculture (MoFA) in the district (2). Thematic analytical framework aided the data analysis based on an a posteriori inductive approach. Two themes and six subthemes were uncovered, namely, 1) prospects for sustainable development: (a) bordering economic growth and poverty alleviation and (b) community empowerment and education; and 2) barriers to sustainable development (a) bordering land tenure issues and subsistence management, (b) limited access to resources and extension services, (c) child labour and educational challenges, and inconsistent and unfavourable pricing. The study unravels intricate dynamics, offering valuable insight into cashews' prospects for sustainable development amid challenges. Enhancing land tenure security, access to resources and extension services, combating child labour in the cashew value chain, and establishing a cashew board to protect farmers' interest are recommended. Overall, strategic investments are required to maximise the sector's benefits, towards a more resilient and inclusive agricultural economy for rural poverty reduction.

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SUBJECTS
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1. Introduction

Poverty remains a fundamental issue in many developing countries, particularly in Sub-Saharan Africa (SSA), which was home to 67% of the world's extreme poor in 2024 (World Bank, 2024). Economic growth is therefore important towards emancipation from the abyss of poverty (Food & Agriculture Organisation [FAO], 2017), and the agricultural sector has the potential for hope in the sub-region. Agriculture plays a vital role in the sub-region's growth in both social, economic, political and environmental aspects (Diao et al., 2019). In Ghana, for instance, the contribution of the agricultural sector to it's gross domestic product (GDP) in 1998 was 47% (Enu, 2014). Between 2007 and 2016, Ghana attained an average economic growth of 7.1% and an average agricultural sector growth of 3.5%; putting the country forward as one of the few to achieve the Millennium Development Goal (MDG) of halving poverty rate by 2015 (Samwini, 2021). Despite the seeming structural transformation over the last couple of years, marked by the growing significance of the service sector in the country's GDP mix, the agricultural sector still employs approximately 34% of the Ghana's workforce and continues to play a crucial role in its socio-economic development (Danso-Abbeam & Baiyegunhi, 2020; Mensah, 2019). Consequently, the creation of an enabling environment for agricultural growth has been the priority of both past and present governments. As such, measures to combat various risks and challenges associated with agricultural development remains a high priority on the agenda of each government (Aduhene-Chinbuah & Peprah, 2024). The promotion of selected non-traditional agricultural produce, such as cotton, kola,

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rubber, cashew, shea, and soya bean, to boost the economic outlook of Ghana has been a joint effort by the Accelerated Agricultural Growth Development Strategy (AAGDS) and the Government of Ghana (GoG); towards export and economic diversification.

Globally, cashew *(Anacardium occidentale)* is recognised as an essential agricultural crop (Boadi et al., 2025; Danso-Abbeam & Baiyegunhi, 2020; Lundy, 2021; Praburaj, 2018). This cash crop is traded in many countries such as Brazil, Kenya, India, Guinea-Bissau, Mozambique and Tanzania and several other African countries (Danso-Abbeam & Baiyegunhi, 2020; Lundy, 2021; Tessmann, 2020); with Ivory Coast (Tessmann, 2020), Benin (Miassi et al., 2019; Miassi & Dossa, 2018), Tanzania and Burkina-Faso among the major producers in Africa. Studies have indicated that cashew cultivation and processing provide numerous benefits to the livelihoods and socio-economic wellbeing of large numbers of farmers, workers and traders around the world (Peprah et al., 2018; Prema, 2025; Yeboah et al., 2023). Cashew provides a vital economic foundation for income generation and food security for smallholder cashew farmers and low-income groups, who work in the processing sector (Miassi et al., 2019; Peprah et al., 2018; Yeboah et al., 2023). In 2015, cashews produced from West Africa accounted for 45% of the global production. Favourable guaranteed revenue from cashews aroused the interest of farmers in West Africa to engage in extensive commercial production with lower-cost inputs offering another incentive. While Africa serves as a significant cashew production hub, it does not assume the role of a major cashew processing centre where value addition occurs. Instead, countries like India, Brazil, Vietnam, and others handle the processing, with most African nations displaying little interest in bearing the infrastructural development costs associated with the processing. As a result, smallholders would have to bear the processing costs directly at the farm gate, which is presently prohibitive.

Cashew production, as noted by Adu (2016) and Romeiras et al. (2017), offers an excellent opportunity for increased profitability for farmers due to its low production costs. Africa supplies 49% of the world's raw cashews (African, Caribbean and Pacific Group of States [ACP], 2017), benefiting countries like Côte d'Ivoire, Ghana, and Nigeria by creating jobs and reducing poverty. The available literature suggests that a growing economy, as observed by FAO (2017), tends to lead to a decrease in poverty rate; and this, the cashew sector could engender. However, evidence from elsewhere suggests that cashew production is not an all-rosy endeavour. For instance, producers encounter challenges when it comes to securing land and credit, especially given the extended period required for fruiting (Miassi et al., 2019; Nsekarije et al., 2022). These difficulties are compounded by a lack of knowledge about production techniques and limited access to necessary inputs (Nsekarije et al., 2022). Additionally, the producers sometimes face significant transaction costs, further hindering their efforts, and they lack adequate access to information regarding market opportunities militates against large scale production (Miassi et al., 2019).

In Guinea-Bissau, Temudo and Abrantes (2014) reported that farmers are transitioning from shifting cultivation to cultivating cashew orchards in response to international and national economic policies, as well as conservation initiatives. However, this transition from a state of relative food self-sufficiency to complete dependence on a single cash crop, and from a diverse landscape featuring agricultural fields, fallow lands, and forest patches to a more uniform setting of cashew agroforests, has significant impacts on both the natural environment and the livelihoods of local communities. In response, Lundy (2012) proposes that diversification becomes essential to counter the challenges of low cashew prices. This according to the author, should involve investment in processing facilities, holding onto cashew nuts until market prices recover, engaging in regional produce sales through "parallel systems," or attracting emerging consumer markets to their country. Additionally, with the entry of new players like Nigeria and Vietnam into the global cashew production arena, Lundy (2012) argues that Guinea-Bissau faces heightened competition on the international stage. From the foregoing, entering the cashew production sector presents formidable challenges, with newcomers facing a steep learning curve and complex challenges. Transitioning from traditional agricultural practices to cashew agroforests can have far-reaching consequences for both the environment and local communities. Moreover, global competition intensifies with the entry of new players, for which critical adaptation strategies and multiple competitive advantages must be established—especially by the new entrants. Without such measures, these barriers most definitely will impede the sector's development and further impoverish the vulnerable poor for whom it was meant to emancipate.

To that end, Amponsah et al. (2023) underscore the critical role of income redistribution when they linked poverty reduction to Ghana's economic growth, for which interventions must pursue redistributive justice. Rural communities rely on agriculture as a primary income source, driving poverty reduction (Samwini, 2021; Tampah-Naah et al., 2025). Notably, in Ghana's southern forest, where cash crops dominate, there has been a notable decline in poverty (Tampah-Naah et al., 2025). Redistributive justice entails harnessing current avenues of economic growth to enhance equity through scalable interventions. Cashew production, recognised as a key crop for enhancing rural livelihoods in Ghana, has garnered attention from various stakeholders, including the government. Increased cashew production has significantly improved farmers' living standards, transforming both cultivators and processors to enhance their socio-economic well-being (MoFA, 2016). As a result, farmers are channelling resources, such as capital, time, and labour, into cashew cultivation (Wongnaa & Ofori, 2012). The substantial economic impact of cashew cultivation in Ghana highlights its essential role for both farmers and the nation. Unfortunately, many cashew farmers in rural communities live below the poverty line and are susceptible to food insecurity (Yeboah et al., 2023). Despite all the gains associated with cashew farming, its full potential cannot be achieved if the challenges confronting its cultivation are not addressed.

While there is ample evidence in other locations about how cashew farming can enhance farmers' socioeconomic conditions despite its associated challenges (Lundy, 2012; Miassi et al., 2019; Nsekarije et al., 2022; Temudo & Abrantes, 2014), Ghana lacks such evidence, particularly concerning poverty reduction. Furthermore, Lundy (2012) argues that in Guinea-Bissau and other countries, cashew farmers face heightened competition on the international stage for the sale of their produce due to limited local capacity for processing. With all these issues, how is the sector (in Ghana) faring in the area of ensuring poverty reduction among cashew farmers? This study thus acknowledges the knowledge gap in the potential of cashew farming as a conduit to poverty reduction. For this reason, emphasis is placed on ways by which this agricultural activity influences the socio-economic lives of peasant farmers in Goka, in the Brong Ahafo Region of Ghana—a significant hub for cashew production. Accordingly, ample evidence in this area would collaborate with the global effort on the trajectory to achieving the United Nations Sustainable Development Goal (SDG) One, which seeks to reduce poverty. Building on the above, it is imperative, therefore, to support the poor in productive activities such as cashew growing to set the path for poverty alleviation for more than 1.5 million poor farmers (Monchuk, 2013; ACP, 2017). To this end, the study explored policy direction that can boost and make cashews grow attractive and vibrant, and thereby serve as a channel to improve the socio-economic welfare among peasant farmers in rural communities such as Goka, and elsewhere in Ghana and the global south at large.

2. Cashew production within the global sphere: a conceptual perspective

The paper's focus on cashew farming and its potential impact on poverty reduction in the context of Ghana demands a comprehensive theoretical framework that can delve into the intricacies of global market dynamics, production processes, and their consequences for local smallholders. Global Value Chain (GVC) Theory emerges as a compelling choice due to its capacity to explore how various actors and processes across global value chains interact and influence the income and livelihoods of local producers. This theoretical framework enables an in-depth analysis of crucial questions such as who buys cashews, when, at what price, and how these global market dynamics impact the well-being of smallholder farmers. In this theoretical paradigm, it is argued that GVC Theory is not only relevant but also the most appropriate for the study, given its ability to shed light on the structural challenges faced by cashew farmers in Ghana and the broader implications for poverty reduction.

The GVC framework has gained significant traction as a valuable tool for driving economic development (Wade, 2016; Zhan, 2021). Governments and development agencies have, in response, adjusted their policies to align with the principles of GVCs. One central tenet of GVC-focused policies is the belief that enhancing connections between buyers and suppliers within the chain will yield mutual benefits for all GVC actors. Consequently, GVC interventions are often framed as "win-win" strategies capable of harmonising the interests of various industry stakeholders (Donovan et al., 2015). These synergistic linkages have become a pivotal element in resource-based industrialisation strategies and have provided a rationale for the inclusion of global lead firms as "strategic development partners" in the agendas of policy

planners (Neilson, 2017). Smith (2015), for instance, illustrates how free-trade agreements, coupled with public technical assistance programs, have not only improved market access but have also facilitated cross-border capital investments, serving as the foundation for state-led industrial upgrading in Tunisia. However, these facilitative forms of state governance, which play a crucial role in enabling the functioning of GVCs, may come into conflict with regulatory strategies aimed at enhancing the position of individual value chain actors, such as workers (Alford & Phillips, 2018).

Furthermore, states hold a pivotal role in shaping buyer-supplier relationships within GVCs, thereby either reinforcing or reshaping power imbalances along the chain. Consequently, the governance structure of GVCs frequently emerges from the intricate interplay between economic and political influence (Mayer & Phillips, 2017). As highlighted by Dallas et al. (2019), power is not always confined to firm-level actors but is frequently wielded collectively through institutionalised arrangements involving governments, multi-stakeholder initiatives, or business associations. In Côte d'Ivoire, for instance, the role of Asian traders in the cashew industry has spurred contrasting viewpoints. On one hand, they have been censured for causing supply shortages for Ivorian processors (Tessmann,2020). Conversely, these same Asian cashew buyers have been recognised as significant contributors to farmers' incomes. These divergent perspectives on the function of Raw Cashew Nut (RCN) traders have been mirrored in the industrial policy discourse (Tessmann, 2020). Over time, this discourse has oscillated between advocating for restrictions on RCN exports to benefit local processors, facilitating functional upgrading into processing, and promoting the belief that export liberalisation leads to heightened productivity and increased incomes for farmers, contributing to product upgrading of RCN.

3. Historical context of cashew growing in Ghana

According to Groothuis (2016), cashew was introduced in Ghana and other West African countries by the Portuguese in the precolonial era, but was not actively promoted until shortly after independence in 1960. Ghana's cashew economy has experienced significant growth since it was revamped in the early 1990s (Peprah et al., 2018; Yeboah et al., 2023). Initially introduced as a cash crop to diversify agricultural production, cashew farming has gained traction due to favourable climatic conditions and increasing global demand. Currently, Ghana produces approximately 180,000 metric tons of raw cashew nuts annually, positioning it as one of the top producers in Africa (British Broadcasting Corporation [BBC], 2025). Major buyers include countries like Vietnam and India, which process cashew nuts for export and local consumption, at a going rate for raw cashew nuts of about $500 per ton at farm gates, and traded by these middlemen around $,20,000 to $40,000 per ton (BBC, 2025). This therefore breeds the paradox of the farmers enriching the middlemen and thereby requires the exclusion and elimination of these—middlemen.

Thus, despite its potential, some cashew farmers in Ghana remain poor, primarily due to price exploitation and limited access to resources such as land, credit, and agricultural inputs (BBC, 2025; Peprah et al., 2018; Yeboah et al., 2023). However, unlike neighbouring countries, Ghana benefits from a relatively stable political environment and government initiatives aimed at promoting non-traditional agricultural exports (Appiah et al., 2019), which may mitigate some of the challenges faced by farmers. However, the processing capabilities within the country are still developing, with only a fraction of raw nuts being processed locally, which limits the value-added opportunities for smallholders. Currently, about 80% of raw nuts are exported (BBC, 2025; Wittern et al., 2023).

While the exclusion of middlemen could undermine the established supply chains through informal market practices or by leveraging their influence to disrupt the market (Ahsan, 2011; Choosung et al., 2022), this is a necessity towards protecting the farmers. To mitigate these challenges, which could arise from the intersection of political and economic interests, a structure akin to Ghana's COCOBOD, which regulates and supports the cocoa sector by ensuring fair pricing and resource access for farmers, could be established for cashew production (Agyei et al., 2021). Such an organisation could enhance transparency, provide necessary support services, and facilitate better market access for farmers, while also incorporating middlepersons into a regulated system that acknowledges their role in the supply chain, thereby reducing potential conflicts and fostering a more equitable trade environment.

Therefore, focusing on market-oriented non-traditional agriculture, Ghana's cashew sector presents substantial development potential despite critiques of mono-crop economies. While concerns about

reliance on cashew farming exist, it can foster a diversified agricultural base and improve livelihoods if managed effectively. Cashews, with their low input requirements and high market demand, offer a viable alternative, providing a safety net for farmers transitioning from subsistence to commercial agriculture while balancing ecological sustainability. Historical trends indicate that targeted investments in this sector, like the cocoa industry, can enhance food security and economic resilience (Yusif et al., 2022). Furthermore, Ghana's relatively stable political environment and government initiatives promoting agricultural diversification further alleviate resource access challenges faced by neighbouring countries. Enhanced support programs, including improved credit access and agricultural extension services, can bolster the cashew industry, ensuring that economic growth translates into tangible benefits for smallholder farmers and fostering a more inclusive agricultural economy.

4. Methods

4.1. Study setting

The study was conducted in Goka in the Jaman North District. Goka was chosen because it is one of the main communities in the Jaman North District, which engages in cashew cultivation. This study, therefore, assumes this community will provide a better understanding in terms of how cashew cultivation contributes to or otherwise derails the attainment of SDG One. The Goka community is bordered by the Tain District to the North-East, South-West to Jaman South and South–East to the Berekum District. Also, the Eastern side of the district is La Cote d'Ivoire (see Figure 1 for details) (Jaman North District Assembly, 2018).

4.2. Study philosophy and design

The study was guided by qualitative epistemology, which helped to gain a better understanding of the phenomenon being studied because it provided an avenue for detailed, subjective experiences, perspectives and views on the topic. Relatedly, an in-depth interview was employed, enabling the respondents to give in-depth insights into the significance of cashew cultivation on their socio-economic welfare. In addition, it permitted the authors to adopt an interpretive paradigm and subjectivist epistemology where the original feelings, experiences and belief systems of the study participants took prominence. The choice of a qualitative approach further offered the authors and the study participants the opportunity to explore new knowledge areas that could have been difficult to capture in a quantitative study.

The case study method was adopted for this research. The case study method presents a comprehensive understanding and an in-depth enquiry into a contemporary phenomenon being investigated and provides a framework for the collection of data from multiple sources (Kekeya, 2021; Priya, 2021). The design was adopted because it allowed the researchers to delve into the individual issues of the farmers on the significance of cashew cultivation in their socio-economic lives through interactive processes. It also permitted

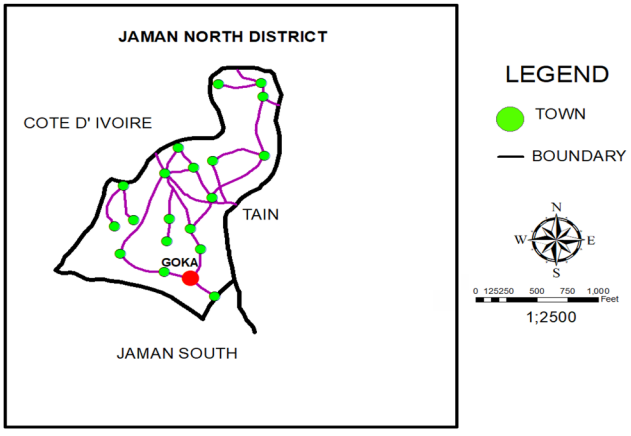

Figure 1. Map of Jaman North District showing the selected community.
Source: Jaman North District Assembly (2018).

interconnection between groups (Kekeya, 2021) and provided a clearer insight into situations. The design was necessary because findings could be generalised to apply to cashew farmers in rural farming communities of Ghana and possibly elsewhere. Furthermore, the design created a path for the identification of key issues in cashew production and the industry in general, which may be beneficial to future research.

4.3. Sampling procedure

Two non-probability sampling techniques were employed for the study. In the first stage, the Goka community was purposively selected. The convenience and purposive sampling techniques were employed to sample 78 participants: 45 cashew farmers, 30 farmhands (i.e. those who; till the land, collect and gather cashews, and separate the cashew apple from the nuts), 1 official from Jaman North District Assembly and 2 agriculture extension officers from Ministry of Food and Agriculture (MoFA) in the Jaman North District (see Table 1 for details). The respective sample size allotment for each category of study participants was determined at the point where saturation was reached. Hence, the selection of the study participants did not consider the study population in the study area. Cashew farmers and farm hands were selected using the convenience sampling technique because of their availability and readiness to take part in the study (Gravetter & Forzano, 2015). Officials from the Jaman North District Assembly and MoFA (extension officers) were purposively selected due to their professional knowledge that could provide information to enrich the study. The inclusion criteria for cashew farmers were: a minimum of 5 years' experience in the cashew industry and being a resident of the community. Additionally, only farmers aged 18 years and above were interviewed. Furthermore, farmhands eligible for the study were those actively engaged in cashew farming activities, including land preparation, cashew collection, and cashew apple separation within the Goka community. Excluded were farmhands who were not involved in these specific cashew-related activities within the Goka community and those under 18 years old.

4.4. Data collection instrument and procedure

In-depth interviews were conducted to obtain data for this study. The interview guide was divided into sections based on the objective of the study. The first section focused on the background data comprising gender, education, age, religion and ethnicity of the study participants (farmers and farmhands). The second section focused on output per cultivation cycle, profit/earnings, external support, and the benefit of cashew production to farmers, among others. Interviews with farmers and farmhands were conducted at their homes, which were free from interference from work schedules. While that of the extension officers was carried out at the district office. The interviews were supported by informal and personal conversations. Interviews with the participants lasted approximately 60 minutes. The interviews with the farmers and farmhands were conducted in the local dialect of the study participants, while discussions with officials were carried out in English. All interviews were audio-recorded with informed consent from the study participants, and handwritten field notes were made alongside.

4.5. Ethical dimensions

Standard ethical procedures relating to informed consent and anonymity were strictly followed. Individual participants' consent was sought, and participation in the study was voluntary. All the participants in this

Table 1. Participant group, nature and type of data collected.

Participant group	Nature of data	Type of data
Cashew Farmers (45)	Information on cashew cultivation practices, income from cashew farming, challenges faced, and their perspectives on the impact of cashew farming on poverty reduction.	Qualitative data
Farmhands (30)	The specific cashew farming activities they were involved in, their roles, and their experiences related to cashew farming.	Qualitative data
An official from the Jaman North District Assembly (1)	Insights and information related to the cashew industry and its impact at the district level.	Qualitative data
Agriculture Extension Officers from MoFA (2)	Expert opinions and knowledge regarding agricultural practices, with a focus on cashew farming.	Qualitative data

study volunteered. Participants were also informed of the intention to allow a third person to scrutinise the transcripts against the audio recordings. To ensure the safety and security of the sensitive individual data, participants were informed that the transcript and the audio would be destroyed immediately after the write-up was completed. Finally, consent for the publication of participants' views was also sought. All these were made clear to the participants before they volunteered and consented to take part in the study.

4.6. Data analysis

All interviews were conducted in the local dialect and were transcribed into English. To guarantee validity, reliability, and quality control, translations were cross-checked with the audio records and handwritten field notes. The authors performed validity checks on some randomly selected translations to ascertain their accuracy. Data coding was performed until theoretical saturation was reached, and an a posteriori inductive method was applied (Braun & Clarke, 2021). Guided by the inconsistencies that might arise in the analysis process (Janis, 2022), relationships were established by merging and refining codes and categories into more conceptual categories based on common relationships. This approach helped us to develop broad and consistent themes with true-to-life experiences, rather than relying on their prior, possibly biased, knowledge of the issue under investigation. The essence of the thematic analysis was that it helped to identify, analyse and report patterns within data, and aided in organising and describing the data in rich detail (Braun & Clarke, 2024). The study results were presented based on themes, and the normative views of the study participants were presented using quotes and excerpts.

5. Findings

The thematic analysis reveals two major themes and five subthemes. The first theme on the prospects for sustainable development has two subthemes that border on economic growth and poverty alleviation and community empowerment, and education. The second theme on barriers to sustainable development has three subthemes covering land tenure issues and subsistence management, limited access to resources and extension services, child labour and educational challenges, and inconsistent and unfavourable pricing. See Table 2 for details.

5.1. Prospects for sustainable development

The substance of this theme captures the developmental imperatives of cashew production as it relates to poverty reduction. Here, two influences were identified: relating to the sector's ability to promote economic growth and poverty alleviation, and its prospects for empowerment. The direct benefits in terms of income to farmers and farmhands, in addition to the indirect educational prospects it offers to the wards and child dependents of actors in the sector, are the subject of discussion. Overall, we noticed direct and indirect effects, which, when harnessed, can elevate the sector's contribution to poverty reduction and engender sustainable development.

5.1.1. Economic growth and poverty alleviation

Cashew farming has the potential to significantly contribute to economic growth and poverty reduction by enhancing the incomes of farmers. In this sub-theme, we present the voices of the participants as they described and argued about the prospects for poverty alleviation through cashew-induced income generation. For example, it was noted that as the cultivation of cashews expands, farmers' improve their

Table 2. Thematic classification of findings.

Themes	Sub-themes
Prospects for sustainable development	Economic Growth and Poverty Alleviation
	Community Empowerment and Education
Barriers to achieving sustainable development	Land Tenure Issues and Subsistence Management
	Limited Access to Resources and Extension Services
	Child Labour and Educational Challenges
	Inconsistent and Unfavourable Pricing

financial stability, leading to better living standards and a reduction in poverty levels. Like our study, various studies highlight that cashew production is essential for inclusive growth, particularly in rural areas where it helps meet the basic needs of individuals and families (Romeiras et al., 2017; Yeboah et al., 2023). The income generated from cashew farming allows farmers to address their fundamental needs, thus facilitating a pathway out of poverty. As one farmer stated:

> "Cashew farming has become a lucrative business for me, especially during the harvesting season when I sell my produce at the market. It has helped me to support my family and pay for my children's education." [Farmer, IID]

This sentiment captures how increased income from cashew cultivation enables farmers to invest in their families and communities. The transformative impact of cashew farming is further reflected in the experiences of many farmers. During an interview, a forty-year-old farmer shared: *"I used to rely on subsistence farming for my livelihood, but with the income I make from cashew farming, I can save money and invest in other businesses. It has truly transformed my life."* The financial benefits extend beyond immediate income; they also contribute to improving the quality of housing, health, and nutrition for farmers and their families. As a sixty-two-year-old farmer and a a 28 year old farmhand noted:

> "Cashew farming has not only helped me generate income, but it has also allowed me to provide better housing for my family. I was able to build a decent home for my children, which has improved our overall living conditions." [Farmer, IID]

> "I work on people's farms. All kinds of farms. But the most lucrative is the cashew farms. That is where I gain a chunk of my daily bread. [Farmhand, IID]

Moreover, the health and nutritional status of farmers' households improve as they can afford better healthcare and nutritious food. One farmer remarked during the interview that:

> "The income generated from cashew farming has positively impacted the health of my family. With the additional income, we can access better healthcare services, provide nutritious food, and ensure the well-being of our family members."

Additionally, the financial stability gained from cashew farming enables farmers to invest in their children's education, breaking the cycle of poverty and illiteracy. As a farmer and a farmhand proudly stated:

> "Cashew yields from my farm continue to increase yearly. The income from the sales of cashews has helped in the education of my children. Even though I only had an education up to the basic level, I have been able to educate my children to the tertiary level. I am a proud father." [Farmer, IID]

> "Thanks to cashew farming, I have a livelihood. As a migrant from northern Ghana, I work on people's cashew farms as a labourer. This is paying off, and I am not doing badly at all." [Farmhand, IID]

This commitment to education not only enhances the prospects of the children but also contributes to the overall socio-economic growth of the community. Thus, cashew farming stands as a pivotal avenue for economic growth and poverty alleviation, primarily through the incomes of farmers. By expanding production and improving market access, farmers can enhance their livelihoods and provide better educational opportunities for their children. This investment in education ensures that the next generation acquires valuable skills that benefit the entire community, ultimately reducing unemployment and fostering social stability. Such transformative changes contribute significantly to the achievement of sustainable development.

5.1.2. Community empowerment and education

Cashew farming in the Goka community serves as a vital source of economic empowerment, significantly contributing to poverty reduction. The labour-intensive nature of the industry allows various community members to engage in wealth creation. More than half of the cashew farmers reported employing at least six labourers for activities such as weeding, tilling, picking, and gathering. This collective effort not only provides immediate income but also fosters community cohesion. Here, the participants noted impacts that span community development, and the ability to fulfil the educational aspiration of their wards; a step towards emancipating them from poverty and pushing them towards self-reliance and

nation-building. Through offering direct income-generating opportunities to farmhands and others connected to the cashew value chain, the sector also promotes farm and non-farm incomes that go a long way to promote development. As one sixty-two-year-old farmer and a 35-year-old farmhand stated:

> "Cashew farming has become a reliable source of income for me and my family. With the increasing demand for cashews, there are more opportunities for employment in the sector, especially during the harvest season. This has enabled me to hire extra hands to assist with the farm work and provide employment for members of my community." [Farmer, IID]

> "Many of my colleagues depend on these cashew farmers to employ us. As poor migrants, we do not have access to land, but their invitation and employment to support their work constitute a survival strategy. Through this, they are reducing unemployment and poverty in our families." [Farmhand, IID]

This highlights how cashew production not only alleviates current poverty levels but also empowers community members to improve their livelihoods. Moreover, the division of labour in cashew farming reflects distinct gender roles, where men primarily focus on planting while women engage in harvesting and separating the cashew apple from the nut. This division is essential for enhancing both the production process and the quality of the nuts. A fifty-one-year-old farmer noted:

> "Before I ventured into cashew farming, I struggled to find a stable source of income. However, since I started farming cashews, I have been able to provide employment opportunities for the youth in my community. This has helped to reduce unemployment and improve the economic situation in my community." [Farmer, IID]

Women's contributions as breadwinners highlight their critical role in the socio-economic fabric, further supporting family stability and community development. However, the financial benefits of cashew farming extend beyond immediate income, with many farmers expressing a commitment to using their earnings for future security and educational purposes. One twenty-eight-year-old single mother shared:

> "I usually try to save half of the revenue my children and I receive from cashew picking and use it on rainy days. It gives me a sense of security." [Farmer, IID]

This proactive financial management reflects an understanding of the importance of education as a tool for long-term prosperity. Increased income can be reinvested in children's education, breaking the cycle of poverty and fostering a more educated future generation.

5.2. Barriers to achieving sustainable development

In this theme, the factors that currently hinder the development of the cashew industry, and in particular, its ability to drive poverty reduction, in tandem with the United Nation's development goal one, are discussed. The items border on land tenure issues and subsistence management, limited access to resources and extension services, child labour and educational challenges and issues relating to inconsistent and unfavourable pricing for the cashew nuts. Together, these barriers, if not addressed, could derail the sector's transformative prospects. Additionally, these challenges could deepen inequality, particularly in the future, if efforts are not made to tackle child labour, as this could increase these children's vulnerability and rob them of a bright future, should they substitute school for short-term income-generating opportunities on the cashew farms.

5.2.1. Land tenure issues and subsistence management

The barriers to land access for cashew production were thoroughly discussed, as this posed a significant challenge to expanding their plantation. Land is a critical factor in the cultivation of cashews, and its ownership directly, and positively influences farmers' economic emancipation. In Goka, farmlands are primarily held by families or communities under customary rules, which govern land use. While this communal system can facilitate access to land, it also presents challenges that hinder investment in sustainable farming practices. Insecure land tenure and conflicts over ownership creates instability, preventing farmers from making long-term improvements. Many farmers rely on family or communal land, which provides them with the freedom to operate according to their terms and enjoy the full benefits of their labour. This arrangement supports the continuation of farming practices passed down through

generations, enhancing both productivity and socio-economic welfare (Dzanku & Tsikata, 2022; Sarpong, 2011). However, those who cultivate on hired or purchased land face the constraints of sharecropping arrangements, such as the "abusa" system, which limits their control over farm management and divides profits, often leaving them with insufficient income to invest in improvements. As one farmer noted:

> "In the past, getting land for cashew farming was quite difficult and expensive. But now, with easy access to land, more people are showing interest in cashew farming. This has made it easier for farmers like me to expand our farms and increase our yields." [Farmer, IID]

> "Most farmers complain about the land. I would have switched to owning a farm if I had access to land. Because there is more profit in farming by yourself than working for others. But land access is a problem." [Farmhand, IID]

Conversely, reliance on hired land can restrict farmers' ability to make transformative changes. In seasons of low productivity, their livelihoods are disproportionately affected, as profits must be shared with landowners. This limitation on earnings not only impacts individual farmers but also stifles broader economic growth within the community. The subsistence nature of cashew farming further complicates these dynamics. Many farmers produce primarily for their own needs, with reported seasonal averages of 6–10 bags of cashews harvested per individual. This reliance on cashew farming for daily sustenance underscores the precariousness of their economic situation. As one forty-year-old farmer explained:

> "As a cashew farmer in this area, I have observed that cashew farming is largely subsistence-based. Most farmers in the community rely on cashew farming for their livelihoods and basic sustenance." [Farmer, IID]

While access to land can enhance livelihoods, the limitations imposed by insecure land tenure and subsistence farming practices can impede the economic emancipation of cashew farmers. This situation highlights the need for supportive measures, such as agricultural extension services and community cooperation, to boost productivity and secure farmers' economic futures. As noted by another farmer in the interview, *"I wish to scale up production. But I do not have the land to do so. Access to land is difficult."* Thus, addressing land ownership issues is critical for fostering sustainable practices, enhancing productivity, and ultimately facilitating the economic emancipation of cashew farmers in Goka.

5.2.2. Limited access to resources and extension services

The participants also lament the poor state of extension services and ancillary agricultural resources and services that are required to enhance their production. For example, we noted that the lack of adequate agricultural extension services and resources significantly restricts farmers' ability to adopt modern, sustainable farming techniques, ultimately limiting productivity and environmental stewardship. In the Goka community, many farmers rely heavily on traditional practices such as wide tree spacing, rain-fed irrigation, minimal pest control, outdated pruning practices, and reliance on low-yielding varieties, which can hinder their capacity to enhance yields and implement environmentally responsible methods. The importance of technical support cannot be overstated. Farmers who received guidance from agricultural extension officers report substantial improvements in their productivity. As one thirty-two-year-old farmer noted during the interview: *"We receive some form of agricultural extension services from agriculture officers. The technical support has partially enabled me to improve my productivity."* However, the effectiveness of these services is inconsistent, and many farmers still lack access to the necessary resources and knowledge to modernise their practices. This gap in support creates barriers to adopting sustainable techniques, which are essential for long-term agricultural viability and alignment with SDG 12.

The reliance on outdated practices not only limits crop yields but also compromises environmental stewardship. Without proper guidance on sustainable farming techniques, farmers may inadvertently engage in practices that deplete soil health and reduce biodiversity. As highlighted by another farmer in an interview, *"The need to increase cashew yield is my biggest dream. Unfortunately, this is not being fulfilled due to the support I obtain from the extension officers."* This underscores the critical role that adequate agricultural extension services play in empowering farmers to enhance productivity while promoting sustainable practices. Therefore, addressing these gaps is essential for fostering responsible consumption and production, as well as ensuring the long-term success of cashew farming in Goka.

5.2.3. Child labour and educational challenges

Under this sub-theme, we discussed child labour—the indulgence of children in economic activities, and in particular, in cashew production value chain. This represents another challenge in the production channel and could derail the sector's ability to achieve poverty reduction, especially in the long term. The prevalence of child labour in cashew farming significantly undermines educational advancement and the human capital development of these children, creating a substantial barrier to achieving SDG 4 (Quality Education). Many children are engaged in labour-intensive tasks on farms, which diverts their time and attention away from schooling and limits their potential for future advancement. This issue poses a long-term threat to economic emancipation, as children who miss educational opportunities are likely to remain trapped in low-skill employment. As one farmer highlighted:

> "Cashew farming has become a reliable source of income for me and my family. However, I see many children working during harvest time when they should be in school." [Farmer, IID]

This sentiment reflects a broader concern among community members about the impact of child labour on future generations. While some farmers acknowledge the economic necessity of involving their children in labour, it ultimately perpetuates a cycle of poverty and limits the potential for upward mobility. Moreover, the lack of educational attainment due to child labour not only affects individual children but also has wider implications for community development. As noted by an official from the Jaman District Assembly, efforts to curb child labour have seen some success, yet challenges remain:

> "We have advised farmers to allow children to work only during school holidays, but the temptation to involve them in labour during peak seasons is strong." [Official of the Assembly, IID]

Addressing child labour is crucial for ensuring that future generations can access quality education and break free from the cycle of low-skill employment. When children are allowed to prioritise their education, they gain the skills and knowledge necessary for better job opportunities and economic advancement. Without targeted interventions to eliminate child labour in cashew farming, communities risk perpetuating poverty. The aspirations for improved educational outcomes and sustainable development will remain unfulfilled, hindering progress for both individuals and society.

5.2.4. Inconsistent and unfavourable pricing

Another pressing issue discovered relates to the inconsistencies and the unfavourable pricing regimes that confront cashew farmers. From the data, this undermines both their income security and long-term planning. Notwithstanding increased global demand for cashew nuts, these smallholder farmers struggle to attract fair compensation for their harvests because of fluctuating market conditions and the lack of a transparent pricing regime. Middlemen and buyers often dictate prices with little or no room for negotiation, thereby leaving farmers vulnerable to financial exploitation. This unpredictability creates a problem which makes it difficult for them to cover production costs, invest in improved practices, meet their current needs or save for future needs. As one farmer lamented,

> "We spend years working on these trees. But when it's time to sell their fruits, the price just drops without any tangible explanation. If even where the reasons seem germane, you could always smell an attempt to cheat you."
>
> [Farmer, IDD]

Such unpredictability, according to the participants, not only erodes their trust in the market system but also discourages new entrants into the cashew farming sector. This may "stall rural development efforts", as succinctly put by one participant, since no other avenue for emancipation exists. Many farmers also expressed frustration over the lack of policy support to ensure minimum prices or protect them from price manipulation. In some cases, they resort to selling at a loss to prevent their nuts from rotting. "Sometimes, we are compelled to sell just to clear the stock—even if it implies losing money," another farmer shared.

Short of structured pricing frameworks, even high-yield seasons could bring little benefit, which could create a cycle where productivity does not translate into prosperity. This insistent issue contributes to financial instability and emotional stress among farming households. Effective interventions such as market information systems, farmer cooperatives, and regulatory oversight are crucial to address this

imbalance. However, until then, the vision of leveraging cashew farming as a conduit to economic empowerment could remain fragile and uncertain, even unattainable.

6. Discussion

The research highlights the significant role of cashew farming in enhancing the livelihoods of farmers in the Jaman North District, where land is primarily held under communal ownership. This system fosters better land management and enables many farmers to cultivate cashews on their family land, thus enjoying the full benefits of their labour. However, challenges such as insecure land tenure, inadequate agricultural extension services, and an unfair and unregulated pricing regime hinder the adoption of sustainable practices, limiting productivity and environmental stewardship. Farmers who receive support from agricultural extension officers report improvements in their yields, underscoring the importance of technical assistance in promoting modern farming techniques. Moreover, the prevalence of child labour in cashew farming poses a critical barrier to achieving quality education for future generations. Many children are engaged in labour during peak harvest seasons, which diverts them from attending school and diminishes their opportunities for upward mobility. This cycle of low-skill employment threatens long-term economic emancipation for families and communities. The findings have significant implications.

From the discourse, it is evidently clear that cashew farming has the potential for sustainable development, particularly in enhancing farmers' incomes and creating jobs. As a lucrative cash crop, cashews enable smallholder farmers to transition from subsistence to commercial agriculture, significantly boosting their livelihoods and contributing to poverty reduction (BBC, 2025; Peprah et al., 2018; Yeboah et al., 2023). The labour-intensive nature of cashew cultivation and processing generates substantial employment opportunities for local farmhands, stimulating economic growth in rural areas. Additionally, integrating cashew farming with diverse agricultural practices promotes environmental sustainability by improving soil health and biodiversity, which mitigates risks associated with monoculture farming (Hashmiu et al., 2022; Peprah et al., 2018; Yeboah et al., 2023). These findings highlight the importance of targeted investments in infrastructure, education, and access to credit to maximise the sector's benefits. Such support can ensure that the economic gains from cashew farming are equitably distributed among smallholder farmers and their communities, fostering a more inclusive agricultural economy that not only elevates individual livelihoods but also strengthens local economies overall.

The findings of the research underscore the critical role that cashew farming plays in the livelihoods of farmers in Goka in the Jaman North District, particularly within the context of communal land ownership. This aligns with existing literature that emphasises the importance of land as a vital asset in rural economies. According to Dzanku and Tsikata (2022) and Kansanga et al. (2018), ownership of land and its size are key indicators of socioeconomic status in rural populations. The communal land system in Goka, governed by customary rules, facilitates better land management and allows farmers to cultivate cashews on family land, thereby maximising the benefits of their labour (Sarpong, 2011). This arrangement supports individual farmers and fosters community cohesion, which is essential for sustainable agricultural practices. However, reliance on hired land can restrict farmers' ability to invest in transformative changes, as noted in the research, highlighting a disparity in economic outcomes based on land tenure.

Moreover, the research also reveals significant challenges that hinder the potential of cashew farming to contribute to economic emancipation. Insecure land tenure and inadequate agricultural extension services emerge as critical barriers. The lack of secure land rights can deter farmers from investing in long-term improvements and sustainable practices, as they may fear losing access to the land they cultivate (Alban Singirankabo & Willem Ertsen, 2020; Ekpodessi & Nakamura, 2022). Thus, access to land is crucial for cashew farming as it enables farmers to cultivate and expand their operations sustainably. Secure land tenure encourages investment in long-term agricultural practices, leading to improved yields and productivity (Kansanga et al., 2018; Lanz et al., 2018). Furthermore, with adequate land, farmers can diversify their crops, reducing reliance on monoculture and enhancing food security. This stability not only boosts income for smallholder farmers but also fosters resilience against market fluctuations and environmental challenges.

Furthermore, our findings highlight the necessity of agricultural extension services in promoting modern farming techniques. Farmers who receive guidance from extension officers report enhanced yields, as one farmer noted, "The technical support has enabled me to improve my productivity." This supports the assertion by Bennett et al. (2018) that access to technical support is essential for improving productivity and ensuring environmental stewardship. Without such support, many farmers struggle to adopt modern practices (Becerra-Encinales et al., 2024), limiting their productivity and hindering progress towards SDG 12 (Responsible Consumption and Production).

Therefore, we suggest a sound and well-articulated policy framework geared towards cashew production to improve the economy of farmers on a sustainable level. MoFA should collaborate with all stakeholders, i.e. farmers, extension offices and local authorities, to create a platform where pertinent issues relating to the cultivation of cashews can be identified and necessary measures provided. Furthermore, cooperation between the agriculture sector ministry, private businesses and non-governmental organizations to assist local cashew farmers with irrigation systems places farmers at an advantage of year-round production and increases crop (cashew) yield as practised in other jurisdictions such as Brazil Oliveira et al. (2006) and India (Mangalassery et al., 2019). In addition, easy access to loans for the farmers, capacity building, provision of improved seedlings, market information and processing facilities must be a priority for the government and cashew producers.

In addition, the prevalence of child labour in cashew farming presents another pressing issue that the research addresses. The involvement of children in labour-intensive tasks not only undermines their educational opportunities but also perpetuates a cycle of poverty, low-skill employment, and inclusive development (Lin, 2022; Morgan et al., 2021). This finding resonates with broader discussions in the literature regarding the socioeconomic implications of child labour. As highlighted in various studies, child labour often arises from economic necessity, where families rely on the additional income generated by their children's work (Yeboah & Boafo, 2024). The research indicates that many children are engaged in labour during peak harvest seasons, which diverts them from attending school. One farmer remarked on the necessity of involving children in labour, emphasising the economic pressures families face. Without addressing child labour, communities risk hindering the educational aspirations of future generations, which is crucial for achieving SDG 4 (Quality Education).

Finally, the persistence of inconsistent and unfavourable pricing reflects broader structural imbalances within the GVC, where value addition and profit accumulation remain concentrated in export-processing and international markets. This leaves primary producers in a precarious position. The farmers at the bottom of this chain, predominantly in low-income settings, lack the bargaining power and market information to negotiate fair prices. This leaves them vulnerable to exploitation by both middlemen and market fluctuations. This asymmetry undermines their economic security, discourages investment in quality improvement, and entrenches rural poverty (Alhassan Bawa, 2021). Tackling this problem requires institutional reforms that redistribute value more justifiably across the chain. Drawing inspiration from Ghana's Cocoa Board (COCOBOD), the study recommends the formation of a national Cashew Board that can control purchasing processes, enforce minimum pricing, and oversee quality standards. Such a body would serve as a protective intermediary, ensuring that farmers receive fair compensation and stable income regardless of volatile market dynamics (Agyei et al., 2021). In addition to providing oversight, the Board could support capacity building, promote farmer cooperatives, and facilitate access to reliable market data. This ultimately will empower farmers within the value chain. Such an intervention would enhance their well-being and economic resilience, while encouraging sustainable production and long-term industry growth. By so doing, it will elevate the voices and interests of smallholder cashew farmers within the governance of the sector, since it is essential if cashew cultivation is to fulfil its promise as a pathway out of poverty.

7. Implications

The implications of this study are significant for policymakers, agricultural stakeholders, and community leaders in Goka. First, enhancing land tenure security, particularly through communal farming arrangements and partnerships, is vital to encourage farmers to invest in sustainable practices and improve productivity. Policies promoting secure land rights and collaborative farming can empower farmers and

foster economic emancipation (Katsekpor et al., 2024). Strengthening agricultural extension services is essential to equip farmers with modern techniques and knowledge, thereby increasing yields and promoting environmental stewardship. Additionally, addressing child labour is crucial for ensuring that children can access quality education and break the cycle of poverty. Targeted interventions, such as awareness campaigns and support programs, can mitigate child labour practices in cashew farming. Focusing on these areas highlights the need for a holistic approach to agricultural development that prioritises education, communal land rights, and sustainable practices, ultimately contributing to the achievement of the SDGs in the region.

8. Strengths and limitations

This study significantly contributes to the literature on cashew farming, global value chains, and sustainable development. It provides a comprehensive analysis of the global cashew value chain, identifying key actors, pricing dynamics, and their impact on local smallholders' income and well-being. The research emphasises the structural challenges faced by cashew farmers, highlighting the need for a holistic approach that includes access to credit, resources, technology, and knowledge. Additionally, it considers broader implications for poverty reduction and well-being, aligning with the theory of human security. However, the study did not address the environmental impacts of cashew cultivation, such as deforestation and biodiversity loss. Expanding cashew farming can degrade ecosystems, disrupt the ecological balance, and lead to soil degradation; therefore, it requires a balanced approach (Nachibi & Morgan, 2023). Furthermore, we did not explore the potential dilemma of increased cashew production, which raises questions about international competition and declining prices within the global value chain. Successful production expansion may flood the market, echoing the "tragedy of the commons," where overexploitation occurs due to a lack of regulation. Thus, we underscore the necessity for strategic planning and market management to align cashew production expansion with SDGs and local industrialisation efforts, avoiding adverse consequences such as market instability. Future research should explore how such a "tragedy of the commons" can be prevented through the transformation/processing of these raw nuts to increase their value.

9. Conclusion

This study underscores the transformative potential of cashew farming in Goka, highlighting critical challenges such as insecure land tenure and inadequate agricultural extension services. It advocates for enhancing land security and promoting communal farming partnerships to empower smallholders. Addressing child labour is also essential to ensure children can pursue education instead of labour, while establishing a body that oversees the purchasing and regulation of the sector will protect the vulnerable farmers and deal with GVC issues. The research provides a framework for policymakers to implement targeted interventions that align agricultural growth with the SDGs. Ultimately, it calls for a comprehensive approach that fosters productivity while championing social equity and environmental sustainability in the cashew sector.

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Ethical approval and consent to participate

The rationale behind the study was explained to the participants, and then written and verbal consent was sought from them before agreeing to participate in the study. As the dignity, safety, and well-being of the interviewees were a matter of primary concern to the researchers, participation in the study was strictly voluntary, and no identifying or sensitive information was recorded.

Consent for publication

Not applicable.

Authors' contributions

CP contributed to the conception and design, acquisition and analysis of data, and manuscript drafting. VP contributed to the study conception, design, and proofreading of the manuscript. DA contributed to the conception and design, acquisition and analysis of data, and manuscript drafting. AKM contributed to the analysis of data and manuscript drafting. All authors read and approved the manuscript.

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Data availability statement

The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request.

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