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ORIGINAL PAPER

Fostering resilience and sustainable livelihood outcomes among peasant women: the case of the RING project in East Gonja municipality of Ghana

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Abstract

Literature predicts a heightening of poverty levels and existing disproportionate barriers affecting women in agriculture as future development challenges, particularly in the global south. This makes efforts to build resilience and sustainable livelihoods among peasant women paramount. However, social and environmental justice scholars have demanded for international support in the cost bearing obligations. Therefore, this paper seeks to assess the outcome of the United States Agency for International Development's (USAID) Resiliency in Northern Region (RING) project, which aims to contribute to the Government of Ghana's efforts to sustainably reduce poverty and improve nutrition. To do this, we frame our research within the resilience-building approach and hypothesize that the project goals improve the resilience of the women through sustainable livelihood outcomes. To test this, we adopted an exploratory sequential design in the context of subjective resilience theory employing a paired sample analysis. The analysis shows that the perceived project outcomes among the sampled beneficiaries in both stages significantly correlated. The qualitative finding suggests that fostering resilience among peasant women is viable and calls for efforts to implement similar projects, especially those geared toward bridging gender inequalities in the agriculture sector. It also shows that perceived outcomes among project beneficiaries can serve as valuable input into resilience assessment. We recommend further research into the downstream effects of the Village Savings and Loan Association (VSLA) on peasant women livelihoods.

Keywords East Gonja · Ghana · Peasant women · Livelihood outcomes · Poverty · Resilience

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Introduction

The global 2019 Multidimensional Poverty Index stood at 23.1% with Sub-Saharan Africa (SSA) recording a higher average index of 57.5% (Browne 2019). Most of the SSA poorer population (82%) live in rural areas where agriculture serves as their main livelihood activity (Cooke et al. 2016). The uneven distribution of poverty in the subregion has many possible explanations, including rapid population growth, recurring conflicts, disproportionate impact of anthropogenic climate-induced environmental change, weak institutions, a poor financial structure, and limited technology to adapt (Bassey et al. 2013; Davida and Akangbe 2013; Madin 2020a; Niang et al. 2014). These factors also explain the widening development inequalities evident not only in income distribution but also the existing 'gender gaps'—mostly among women in agriculture (FAO 2011; Flint 2011; OECD 2014; World Bank 2008). Northern Ghana shares similar characteristics of this situation (Bawakyillenuo et al. 2016; Madin et al. 2022).

As such, various development efforts in the form of Social Intervention Projects (SIP), sponsored by International Development Partners (IDPs), have been implemented toward improving livelihood conditions in northern Ghana, especially in the agriculture sector (Asamoah 2010; Barrett et al. 2003; Geraldine 2018). The most noticeable ones in the scholarly literature are those implemented through food aid and the food for work approach (see Abdul Majid et al. 2015; Al-hassan and Poulton 2009; Asamoah 2010; Bonnard et al. 2002; Geraldine 2018; Quisumbing and Pandolfelli 2010; Tenaw and Islam 2009; USAID and USDA 2019). Food aid programs were mainly implemented by IDPs such as Catholic Relief Service (CRS), Adventist Development and Relief Agency, as well as Technoserve (USAID and USDA 2017, 2019). For instance, the CRS and Adventist Development and Relief Agency SIPs were focused on distributing food aid to farming communities, providing general relief for farmers during and after disasters, and assisting vulnerable groups such as the elderly in agriculture. This approach was largely shaped by the 1983–84 food crises (Al-hassan and Poulton 2009). Technoserve, by contrast, implemented its interventions through agro-based cooperative bodies. The cooperative institutions facilitated rural employment and income generation for farmers, processors, transporters, and traders. While the CRS intervention appeared to have targeted vulnerable farmers, the same cannot be said of Technoserve's intervention, which instead focused on promoting the entrepreneurial farmers. Technoserve's criteria for participation were based on selecting farmers with certain assets for engaging in economic activity; of which most vulnerable farmers did not have and therefore could not benefit.

Notable are the interventions implemented under IFAD's Ghana Strategy. Since 1981, IFAD provided financial support in 13 agriculture social intervention projects five of which were implemented in the northern regions (Al-hassan and Poulton 2009; Asamoah 2010; Quisumbing and Pandolfelli 2010). The interventions were aimed at achieving improved, diversified, and sustainable livelihoods for the rural poor, particularly rural women and farmers tilling marginal lands. The IFAD agriculture SIP facilitated efforts to enhance the livelihoods of

selected vulnerable farmers (Asamoah 2010). According to IFAD (2006), the interventions in the northern regions focused on women access to micro-credit, small dams for irrigation farming, and land conservation, such as efforts toward enhancing vulnerable farmers' resource base. The report further expanded that the development of participatory associations has ensured the successful inclusion of the vulnerable farmers in decision-making in their livelihood activities.

The Sasakawa Global 2000 intervention was also implemented to boost agricultural activities in the country. According to Al-hassan and Poulton (2009), this intervention focused on the dissemination of improved technologies for maize and sorghum production. They further indicate that the intervention was implemented in partnership with the Ministry of Food and Agriculture using the Agricultural Extension Services Department. Maize production was supported in the southern parts of the country, while sorghum production was promoted in the Northern Regions. However, the program failed and was abolished based on several reasons including poor debt recovery and narrow coverage of a few staple crops (Al-hassan and Poulton 2009; Nyantakyi-Frimpong and Kerr 2015).

Agriculture SIPs in Northern Ghana appeared to have limited their scope to targeting vulnerable women in the agriculture sector. Moreover, the interventions offered little assistance toward fostering resilience and sustainable livelihood among vulnerable peasant women aside from aid packages. Some interventions also rarely target vulnerable farmers at large in their deliveries and thereby raise concerns about their approach (Moseley 2016). As such, these approaches leave much to be desired in the face of the recent empirical findings pointing to the existing inequalities and the enormous benefits that will accrue if they are eradicated (FAO 2011; World Economic Forum [WEF] 2018). Although there is growing interest in the academic community in achieving sustained livelihood among peasant farmers in northern Ghana, there is still little significant progress in the area. Existing work typically takes the form of uncoordinated and scattered individual reports which lessens their impact. These situations undermine lesson learning for improvement in the delivery of result-oriented sustainable livelihoods and resilience-building programs needed to reduce existing inequalities.

Hence, this study explores the effects of the SIP-initiated and/or IDP-supported projects in the East Gonja Municipality (EGM). This research sought to examine the USAID-RING project, which focused on partnering with the Government of Ghana in efforts toward promoting sustainable rural livelihoods in northern Ghana where poverty is very endemic (Global Communities Ghana 2020; Inkoom 2011)**.** Specifically, it seeks to achieve the following: (i) ascertain the perceived project outcomes among beneficiaries and how they foster resilience in achieving sustainable livelihood, (ii) determine whether those perceptions differ significantly among different samples, and (iii) provide lessons and recommendations with regards to promoting sustainable livelihood and poverty reduction in northern Ghana.

Literature review

Gender gaps and sustainable livelihood outcomes among women

Global progress toward achieving gender equality is reported to have slowed down over the past 12 years (WEF, 2018). At the current rate of reduction, it is projected to take 108 years to close global gender gaps, which now stand at 0.68. According to the WEF (2018), since 2006, the yearly overall gender gap has closed by 3.6%, although in 2018 the gap was closed by only 0.03% suggesting a slowing of progress. The economic participation and opportunity gap (41.9%), which includes women in agriculture, constitutes the second slowest on a global average. As such, women, especially in developing nations, continue to be affected by the adverse consequences of inequalities in agriculture (Ongena and Popov 2016; Quisumbing and Pandolfelli 2010). Similarly, women in most parts of rural Africa continue to face disproportionately limited access to agricultural assets, inputs, services, and employment opportunities (Madin 2020b; Quisumbing et al. 2010). Flint (2011) considered these gender gaps as impediments to women productivity and to their contributions to the agriculture sector, which further affect efforts toward achieving sustainable livelihood outcomes. Therefore, it could be argued that for any efforts to reduce poverty and achieve sustainable livelihoods in Northern Ghana, there is the need to bridge existing gender gaps. For example, field evidence indicates that providing women the same access to productive resources as their male counterparts can increase their farm produce by 20% to 30%, whilst reducing hunger within the world population by up to 17% (FAO, 2011).

Yet, the commitment to reducing these gaps in the agriculture sector has been slow, particularly in Ghana, which is ranked 89th globally and 0.012 points behind the top-ranked country in the gender parity index (WEF 2018). This gender inequality is coupled with widespread but uneven regional poverty, with poverty levels in the northern regions persistently over half the population—much higher than in southern Ghana (Cooke et al. 2016; World Bank 2011a). Consequently, women in northern Ghana, and for that matter in EGM, continue to be confronted with limited opportunities to effectively undertake agricultural production (East Gonja District Assembly [EGDA] 2010). These limited opportunities include inadequate access to education, health services, job and commodity markets, land, and new technology, compared to their southern counterparts (Van der Geest 2011). Other problems include limited access to productive assets, (e.g., microcredit), inadequate development of rural infrastructure, and the disconnection from economic growth taking place in the rest of the country (CARE International 2013; Madin and Peprah 2018).

This situation in EGM provides a context where interventions by IDPs have become necessary to augment local efforts needed to eliminate gender gaps necessary for achieving sustainable livelihoods. It is most appropriate for IDPs to assist in fostering resilience of peasant women in the developing world in two contexts: (1) where governments are usually overwhelmed in addressing

development needs (Browne 2019; Kauzya 2007), and (2) in countries which have contributed relatively little to the anthropogenic climate-induced environmental challenges confronting them (Niang et al. 2014). This also aligns with the USAID Feed the Future '*aims to help developing countries address root causes of hunger and poverty specific to their individual and unique circumstances through the transformation of agricultural production and improvement in health and nutrition*' (Zereyesus et al. 2014, pp.1). But little independent research has investigated the extent to which IDPs have contributed in this regard to sustaining livelihoods for the benefit of women in EGM, thus motivating a further inquiry into the phenomenon.

Sustainable livelihood, resilience, and poverty reduction

Sustainable livelihood is defined as when means to livelihood outcomes can cope with and recover from stresses and shocks, maintain, or enhance its capabilities and assets without undermining the natural resource base (Chambers and Conway 1992; DFID 2001; Scoones 1999). The Intergovernmental Panel on Climate Change, IPCC (2012) defined resilience as the strengthening of the ability of a system to forecast, absorb, accommodate, or recover from the effects of harm in a timely and efficient manner. According to Mitchell and Harris (2012), resilience is the ability to resist, recover from, or adapt to the effects of a shock or a change. Béné et al. (2014) defined resilience as the households' ability to restrain or cushion the impacts of shocks on their livelihoods and basic needs through adaptive and transformative capacities. Intrinsically, resilience could emerge as an outcome determined by absorptive, adaptive, or transformative capacities of households or individuals exposed to shocks. Drawing on these concepts and their overlaps, this paper adopts resilience for further analysis of the RING project.

In the past eight decades, the concept of resilience has gained ground in academia and among practitioners as a central paradigm shift toward the possibility of replacing sustainability as the ultimate objective of development (Béné et al. 2014; Folke et al. 2002; Nelson et al. 2007). This is because a resilience-building approach to development considers the changing environment and the limits to resources. Moreover, it involves efforts to tackle the root causes of poverty and inequality now, while ensuring a balanced reduction without adverse effects on both the current and future generations. Nonetheless, scholars and IDPs are increasingly reconsidering the modalities of its implementation and success (Tango 2012; World Vision UK 2013).

The World Bank (2011b) considered resilience-building as a necessity for development just as important as equity and economic opportunities. The DFID (2011) argued that strengthening resilience should be considered a central target for poverty reduction and sustainable economic growth. Likewise, Wilkinson et al. (2016) contended that improving households' resilience, especially to climate extremes, serves as a prerequisite condition toward attaining poverty reduction targets among vulnerable groups such as peasant farmers. Béné et al. (2014) indicated that a resilience approach provides the greatest opportunity to foster integrated efforts toward reducing poverty and inequalities. In the context of rural

livelihoods, fostering resilience needs to emphasize structural and holistic thinking, which embraces resilience of natural resources and the environment. This is essential because poor rural farmers are largely dependent on natural resources and the environment (Béné et al. 2009), of which their households' resilience is inextricably linked to the condition of the environment, the quality of resources, and the capacity to innovate. Thus, strengthening this social-ecological dependence through the resilience approach helps define (or redefine) precisely the vulnerable groups and ensure appropriate targeted interventions (Kuriakose et al. 2012). There is the need to strengthen the absorptive, anticipatory, and adaptive capacities of households in promoting resilience in EGM to make poverty reduction efforts meaningful.

Resilience-building among the most vulnerable countries to climate-induced environmental change has become a foundational goal for climate risk mitigation, but criticism of the theory does exist across various areas of research. For example, Béné et al. (2014) noted that the resilience framework comes with limitations because it does not exclusively focus on or benefit the poor in practice. The framework usually misconstrued the fact that people can adapt to poverty and deprivation by learning to suppress their wants, hopes, and aspirations (Bahadur et al. 2010; Pain and Levine 2012). Also, Coulthard (2012) argued that fostering resilience as a development approach to poverty reduction has failed to recognize individuals' or households' ability to use power or agency to negotiate and influence unfavorable circumstances. Hence, resilience as an outcome cannot always be the true reflection of households as it overly focuses on the household's ability to avoid or recover from shocks to the neglect of the choices exercised by individuals within the households.

Also criticized among the resilience-building approaches is the highly favored traditional quantitative approach to resilience measurement, which depends on objective indicators and frameworks of assessment. Kamara (2019) critiqued that the objective framework approach, in reality, remains distant from the contexts and cultures of Africa. This is premised on the basis that objective assessment mismatches the risks posed by recurrent climate variabilities in impoverished social-economic settings such as northern Ghana. Christiansen et al. (2018) further indicated that the approach results in few concrete shreds of evidence for deriving standard comparable and aggregable indices for practical application. This resulted in an approach that is overly reliant on a few standardized quantifiable tools that have not been tested at all spatial scales (Jones et al. 2018). The standardized quantifiable tools create a situation where realistic research focuses on building and strengthening resilience is urgently needed to maintain cohesiveness and development gains (Kamara et al. 2019). Given the foregoing discussion, this paper seeks to contribute to subjective resilience assessment efforts and calls to address the gap of objective resilience assessment by focusing on examining subjective resilience among peasant women in Northern Ghana (e.g., Christiansen et al. 2018; Jones et al. 2018). This would help ensure context specific, robust indicator selection, and incorporation of beneficiaries' knowledge and perception of their resilience (Jones and Tanner 2015; Maxwell et al. 2015).

Material and methods

Study area

The East Gonja Municipal Assembly (EGM) is one of the local administrative Districts of the Savannah Region. It is located in the Southeastern corridors of the Northern Region of Ghana. See Fig. 1. According to the Ghana Statistical Service [GSS] (2014a), the total population of the Municipality is about 134,450 as of 2010. The total number of males is 69,721 (51.9%) while the females constitute 65,729 (48.1%). The Municipality is mainly rural, with 81.3% of the total population dwelling in the countryside (EGDA 2014).

The Municipality shares common boundaries with the Mion District and the Tamale Metropolitan Assembly to the North, Central Gonja District in the West, Nanumba-North, Nanumba-South, and Kpandai Districts to the East, and the Brong-Ahafo Region to the South, respectively (see Fig. 1). It covers a total land area of about 8,340.10 square kilometers, representing 11.95 percent of the total land area of Northern Ghana (GSS 2014a). This gives a population density of about 16 persons per square kilometer. Salaga, the capital city, is located at the center of the Municipality. The Municipality serves as the largest local unit in the Savannah Region and the entire country in terms of landmass (GSS 2014b). The vast nature and the location of the EGM have contributed to deplorable living conditions due in part to its widely scattered settlements, which affect the efficient provision of basic

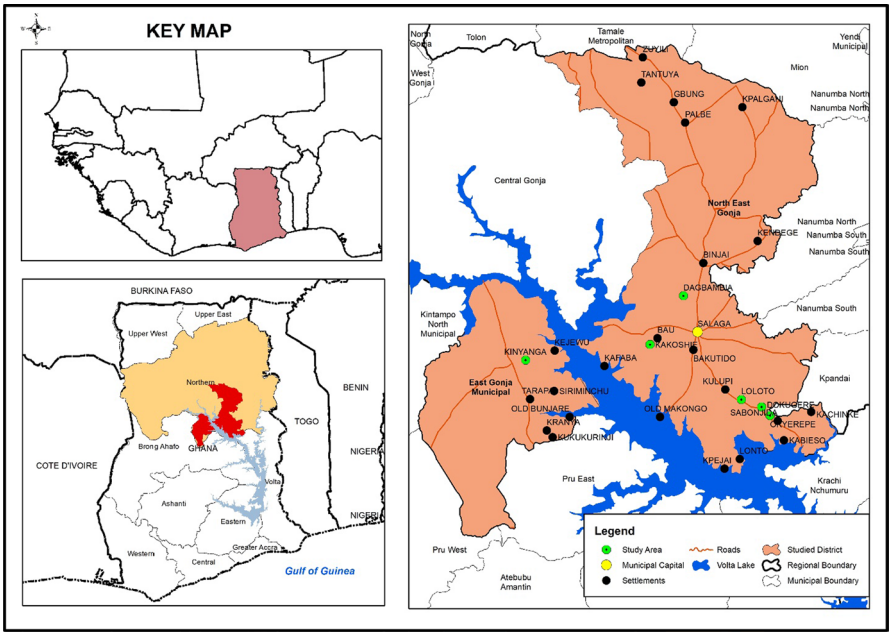

Fig. 1 Map illustration of the Study Area in the National and Municipal context with towns where beneficiary women were sampled in light green and other settlements in black color

services (EGDA 2014). The study communities are Kpolo, Sisepe, Kpembe, Kitoe-Nkwanta, and Dagbambia.

Agriculture serves as the mainstay of the Municipality's economy and employs over 77.4% of all the economically active population (GSS 2014c). In terms of gender, the sector employs over 66.5% of the economically active women in the Municipality. The agricultural activities that women undertake comprise food crop farming, picking wild shea nuts and dawadawa fruits, agro-processing, and trading in foodstuffs. According to the census report, women in the Municipality serve as major producers of food crops such as groundnuts, rice, and beans. Other food crops cultivated by peasant women include maize, sorghum, millet, cowpea, and cassava (East Gonja District Assembly [EGDA] 2014). To a large extent, agriculture activities among women in the Municipality is predominantly smallholder, subsistence, and rain-fed. The marginal production nature of women is further worsened by erratic rainfall and highly variable climate patterns in the ecological zone (Antwi-Agyei et al. 2017; Assan et al. 2018). The animals reared in this region include cattle, sheep, goats, pigs, fowl, and guinea fowl. In most cases, the animals are owned by men or families of male farmers mainly for the prestige of the animals and their value as a self-sustaining investment (EGDA 2014).

The predominantly smallholder, subsistence, and rain-fed dependent agriculture characteristics of women in the EGM have constrained local efforts toward enhancing sustainable livelihood outcomes. Consequently, the well-being and livelihoods of most households and individual peasant women productivity are immensely impaired by these barriers (World Bank 2016). The peasant women are also exposed to socio-economic factors that discriminate against them and make them less capable to cope and adapt (Assan et al. 2018; CARE International 2013). Examples include the reported social and cultural discrimination against women in efforts to own land and assets (Assan et al. 2018). These vulnerabilities make EGM a unique locale to assess sustainable livelihoods efforts among women. Also, EGM has been purposefully selected because it is noted for outmigration of its young women to southern Ghana for menial jobs due to low productivity and crop failure caused by climate change (Kjetil et al. 2017; GSS 2014d).

Study design

The study adopted an exploratory sequential mixed method design for data collection and analysis. The mixed-methods design was adopted for several purposes. First, the design was used to help explore perceived outcomes of the RING project among beneficiaries and develop questionnaires for a quantitative survey using the qualitative design in Stage One (Creswell et al. 2003). Second, it helped evaluate and generalize perceived project outcomes from the sample through the quantitative survey in Stage Two (Morse 1991). Third, it provided an opportunity to test subjective resilient assessment theory and its usefulness in the Ghanaian context (Creswell and Clark 2017; Morgan 1998). Data on specific areas of the design, implementation, and the perceived outcomes of RING initiated by USAID in the study area were collected from beneficiaries, key informants, and appropriate institutions. The

list of beneficiaries was obtained from the EGM planning unit. A sample size of 42 beneficiary peasant women was selected for in-depth interviews in Stage One. A random sampling size of 254 was calculated from a total of 700 RING beneficiaries using the Yamane (1965) formula and an error margin of 5% (see Table 1). The 700 included only those who have received the full project package. The data collection was conducted in two stages as follows.

In Stage One, we interviewed 42 beneficiary peasant women, two (2) heads of relevant institutions, and eight (8) community leaders to explore the project's scope and outcomes using interview guides and opened-ended questionnaires in February 2017. This was designed to make room for in-depth qualitative interviews with respondents, which would be exhausting using larger sample sizes. It was also implemented to help us identify and explore perceived or experienced project outcomes across diverse beneficiaries in the study area. The interviewed respondents were selected from communities within each of the area councils in the Municipality (See Table 2). This was to ensure that the beneficiaries interviewed under this stage are drawn across all parts of the Municipality. The qualitative interviews were manually coded into themes as presented in Table 4. The emerged themes from the sampled respondents included (1) increased access to improved commodity market, (2) improved capacity to avoid seasonal food insecurity during the lean season, (3) diversified dietary needs toward improving well-being, (4) provision of alternative livelihood outcomes, and (5) improved access to savings and credit facilities.

After analysis of data sets from the Stage One, we conducted quantitative survey with 218 beneficiaries in August 2019 using structured questionnaires developed from Stage One (see Fig. 2 and Table 2). We collected the list of project beneficiaries from the Municipal Planning Unit to help sample the respondents. Through the beneficiary list obtained, the first respondent was selected randomly and then the remaining respondents thereafter were interviewed using a sample interval of five, thereby interviewing every fifth beneficiary on the list. The number of respondents interviewed in each community was proportional to the households' population of each of the communities based on the projected 2010 Population and Housing Census. The purpose of Stage Two was to statistically validate and help generalize the qualitative data from Stage One.

The data collected from both stages were organized, coded, and analyzed using both qualitative and quantitative methods. We hypothesized that there are no

Table 1 The RING project package distribution

Package	# Of items per beneficiary	Total beneficiaries
1. Small Ruminants	3	988
2. Seedlings (Potatoes and Soya Beans)	Varied	8099
3. VSLA Groups	–	7854
4. Farm Implement (hand gloves, head pans)	Varied	1338

Source the East Gonja Municipal Planning Unit, August 2019

Table 2 Descriptive and inferential statistics of interviewed beneficiaries and key informants involved in the design and implementation of the SIPs

District/area council	Institutions/communities	Number	Number of respondents	Respond rate
Departments	DPCU	1	1	
	USAID-RING Office	1	1	
Kpariba area council	Communities	1	10 (52)	
	Chief	1	1	
	Unit Communities	1	1	
Kpembe area Council	Communities	1	10 (52)	
	Chief	1	1	
	Assemblyman	1	1	
Kulaw area council	Community	1	9 (52)	
	Unit Committee	1	1	
Makango area council	Communities	1	6 (31)	
	Chief	1	1	
	Unit Committee	1	1	
Salaga area council	Community	1	7 (31)	
	Assemblyman	1	1	
Total respondents		24	52 (218)	86%
Mean age of sampled beneficiaries			35 years	

Stage two descriptive statistics are in brackets

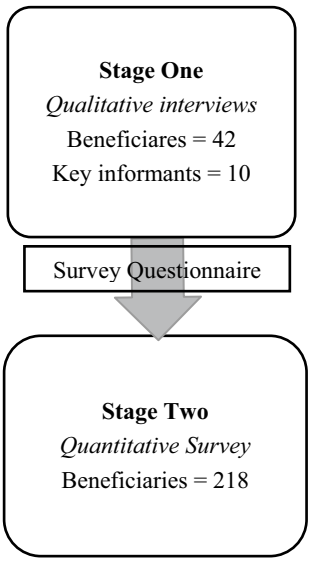

Fig. 2 Graphical presentation of workflow of the study design

significant differences in the findings obtained in the two stages regarding the beneficiaries' perceived project outcomes. To test this, we employed Paired Sample Z-Test to evaluate whether there are significant differences between the proportions of the two samples using the following formula.

$$\sum_{1=5}^{n} \frac{(P1-P2)-0}{\sqrt{P(1-p)\left(\frac{1}{n1}+\frac{1}{n2}\right)}}$$

The pooled proportion estimate variance was also used to normalize the differences in the sample sizes of the two stages and ensure equal variations.

$$\sqrt{P(1-p)\left(\frac{1}{n1}+\frac{1}{n2}\right)}$$

From the equations, P_1 = percentage observed in stage one, P_2 = percentage observed in stage two, P = combined percentage obtained from the corresponding total respondents of the two stages, n_1 = sample size of stage one, n_2 = sample size of stage two, n = total sample size of the two stages. Tables, charts, percentages, and graphs were employed in analyzing quantitative data mentioned in the project outcomes, while descriptions were used in the case of the qualitative analysis of the level of project perceived outcomes and satisfaction. The responses from the in-depth interviews were manually coded into themes and counted across all the respondents' transcripts. See Table 4 for the coded themes. The frequencies of the themes were used to calculate proportions for further analysis in the above formula. The data collected were also entered into the Statistical Package for Social Scientists (SPSS) and Excel software for correlation analysis. See Table 3 for calculated outputs.

Table 3 Paired Sample Test Statistics

	Paired differences					Z-Obs	N	Sig.(2-tailed)
	Mean %	Pooled variance	Std. error mean	95% confidence interval				
				Lower	Upper			
Stage one – stage two	2.80	112.06	1.68	−0.51	6.10	1.67	260	0.095
Correlations								
Stage one and stage two						R	df	Sig.(2-tailed)
						0.986	5	0.002

Table 4 Evaluation of the perceived project outcome by peasant women toward fostering resilience and sustainable livelihoods among women in the study communities

Project influence on resilience	Respondents citing the influence	Benefits or risk recovery
Increased access to improved commodity market	9.5% (6.4%)	1 Increased stability in income for the family without disrupting other food-producing activities (Antwi-Agyei et al. 2018)
		2 Higher chances of achieving other livelihood objectives [e.g., payment of house bills, wards school fees, etc.] (Bawakyillenuo et al. 2016)
		3 Wealth accumulation to serve as assets to cushion the household in shocks (Baiphethi and Jacobs 2009)
		4 Reduction in the marginalization of smallholders in the commodity market (Flint 2011; Peterman et al. 2010; Van der Geest 2011)
Improved capacity to avoid seasonal food insecurity during the lean season	23.4% (10.1%)	1 Improve the nutrition necessary for good health(FAO 2016; Hazell and Bernstein 2013)
		2 Less likely to adopt strategies with maladaptive effects (FAO 2016)
		3 Prevention of seasonal migration, thereby Making household labor available all-year round (Antwi-Agyei et al. 2018)
		4 Reduction in seasonal food insecurity vulnerability (Antwi-Agyei et al. 2018)
Diversified dietary needs toward improving well-being	21.6% (22.0%)	1 Improve the nutrition necessary for good health (FAO 2016)
		2 Reduction in micro-nutrients deficiency (Sperling and McGuire 2012)
		3 Improvement in household well-being to increase production hours
Provision of alternative livelihood outcomes	66.7% (95.4%)	1 Provision of alternative sources of income at different seasons within the year (Laube et al. 2012)
		2 Higher chances of achieving other livelihood objectives [e.g., payment of house bills, wards school fees, etc.] (Bawakyillenuo et al. 2016)
		3 Wealth accumulation to serve as household assets needed to cushion members in shocks (Baiphethi and Jacobs 2009)
		4 Higher chances of saving as a prerequisite for accessing credits and loans

Table 4 (continued)

Project influence on resilience	Respondents citing the influence	Benefits or risk recovery
Improved access to savings and credit facilities	64.3% (99.1%)	1 Higher chances of making savings to access credits and loans
		2 Provision of empowerment opportunities for assets acquisition (Assan et al. 2018)
		3 Less likely to adopt strategies with maladaptive effects (FAO 2016)
		4 Higher chances of achieving other livelihood objectives [e.g., payment of house bills, wards school fees, etc.] (Bawakyillenuo et al. 2016)

Stage One ($n=42$) statistics are outside the brackets, Stage Two ($n=218$) statistics are in brackets

Results and discussions

The USAID agriculture social intervention project

The USAID's RING project aims at strengthening structures in one of Ghana's poorest regions by partnering directly with the decentralized government to fulfill its responsibilities to develop the local areas, through improving the social and economic well-being (especially for women) of those areas. The project does this by providing funds directly to the Municipal Assembly to execute their development priorities set by the planning units and the communities. The project is partnered with Global Communities, six regional departments, and 17 districts in Northern Ghana to address poverty and the poor nutritional status of vulnerable peasants (Global Communities 2018, 2020). The partnership is aimed at improving the livelihoods and nutritional status of vulnerable households in beneficiary districts. This is being achieved through three complementary project components: increasing the consumption of diverse quality foods, especially among women and children, improving behaviors related to nutrition and hygiene of women and young children, and strengthening local support networks to address the ongoing needs of vulnerable households (Global Communities 2018). Besides, there are efforts to strengthen the agricultural market and value chain, promote gender sensitivity and equity, and increase employment-generating potential. The three complementary project components are implemented based on five focal areas, which form the basis of this paper analysis. The focal areas are further discussed in the next section.

Interactions with the planning unit and other informants revealed that the USAID Agriculture SIP targeted mainly women of childbearing age between 15–45 years. This is to help alleviate poverty among these women by fostering resilience and sustainable livelihoods in agriculture in the selected Districts. According to Global Communities (2018), the project also comprises intervention efforts devised to improve the nutrition and livelihood status of vulnerable women at the reproductive stage. It adopted a multi-sectoral approach to foster the resilience of the women through all-year agriculture income generation, savings and loans, nutrition, water, sanitation and hygiene, and good governance interventions.

Thus, the intervention supports the selected beneficiaries by focusing on social, natural resources, physical, human, and financial capital to improve their resilience toward sustainable livelihood outcomes. What is worrying is why older women are not included in the project given that they are equally or even more vulnerable comparable to women of childbearing age. The approach in a way contradicts the findings of Armando et al. (2003), who asserted that poverty among aged women is pervasive in developing countries and that they are also part of virtually every household. One could have deemed the project to be more laudable if it had targeted this vulnerable group as well. The interview with the Assembly indicated that the project is targeting over 8000 beneficiary women in the EGM (see Table 1). The Municipal Assembly and related staff, especially in

the agriculture sector, have also received skill training and sensitization to help in the implementation and delivery of the project objectives. The officers usually receive training as project coordinators in the field to help implement the project or to improve their human capacity in those regards. However, the project implementation processes are still on-going in the Municipality despite its full implementation in the sampled communities since its inception in 2014.

The village savings and loans association

The village savings and loans association (VSLA) are an initiative under the RING project aimed at increasing access to savings and credit to foster resilience among peasant women in Northern Ghana within the 17 selected Districts. The VSLA sought to overcome the challenges of accessing credit by the rural peasant women by building on a model that enables a group of people to combine their savings to have a source of lending funds. This model adopts the olden practices of collective savings in a way that requires no outside capital, only a lockbox, three keys, and basic financial training (PROCOCO-Ghana 2016). Thus, members who make saving contributions to the funds are also able to take a loan from it, as it serves as a self-reproducing mechanism. The initiative provides an opportunity to ensure that more remote areas (usually inhabited by peasant women) have adequate access to loans and credit facilities. Also, this initiative under RING is currently being used to support the poverty graduation efforts of the Government of Ghana through the Livelihood Empowerment Against Poverty (LEAP) Program. Thus, the RING implementing Districts are allowed to apply and complement the initial efforts of LEAP households with the services of VSLA. This is to help provide a positive impact on the entire RING beneficiary household to ensure inclusive empowerment in building resilience. However, it was observed on the field that the initiative currently does not make use of any form of modern technology in the contribution and saving processes.

The focal areas of RING in fostering resilience

To effectively foster the ability of vulnerable households or individuals to resist, recover from, or adapt to the effects of a shock or a change that adversely affect their livelihood, there is a need to consider their human, social, natural resources, physical, and financial capital (Altieri et al. 2015; Chapin et al. 2010). This is especially crucial as the approach seeks to ensure resilience that helps the individual to cope with and recover from shocks and maintain or enhance capabilities and assets both now and in the future without undermining the natural resource base (Cutter et al. 2008; DFID 2001). Therefore, it is necessary to assess the contribution of the RING project by considering the five focal areas of the project to better appreciate how the resilience of peasant women is being fostered. This would also help delineate and capture the possible outcomes (both perceived and experienced) rather than preparing and using objective checklists of outcomes (Jones et al. 2018; Tobergte and Curtis 2013; Vanclay 2002).

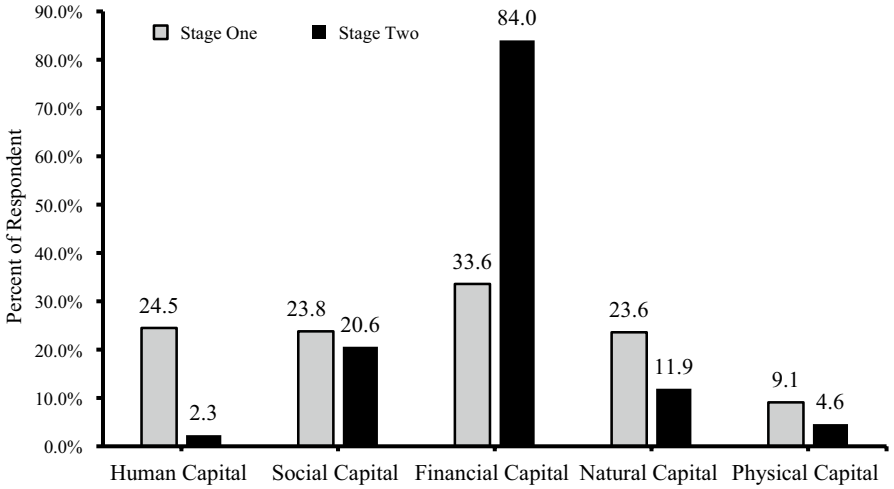

Fig. 3 The Overall Focal Areas of the RING Project in the EGM Toward Resilience-Building and Sustainable Livelihood Outcomes. Source Authors' Field Survey, February 2017, and August 2019

Although some challenges are inevitable with regard to measuring the subjective resilience among SIPs beneficiaries and attributing those results to the outcomes of the SIPs, this study assessed the RING's livelihood strategies that contribute or enable the beneficiaries to foster resilience, rather than considering the desired outcomes which are problematic in counting and measuring. The desirable aspect of using this study approach is to meet the primary step of ascertaining RING's intended outcomes, the means to achieve those outcomes as well as the contextual factors and their potential to bring about those desired outcomes.

Figure 3 is quite revealing in several ways. Notably, the findings showed that the human capital component was cited by 23.8% (20.6%) of the respondents. This component of the project consists of capacity building through which the beneficiary women were trained in child health nutrition, household sanitation, and hygiene to enhance their capacity in feeding and consumption of a balanced diet. This is deemed crucial in helping peasant women to increase and sustain their productivity through good health. Particularly, where sanitation and nutrition-related diseases constituted the most reported diseases in the Municipality, representing over 50% of annual reported cases (Savannah News 2011) of disease that affects productive hours.

The study findings aligned with earlier research evidence that individuals and communities endowed with diverse social capital are in a better position to be more resilient (see Table 4). Thus, 24.5% (2.3%) of the sampled beneficiaries affirmed that the formation of VSLA has provided them with social capital (see Table 1). The beneficiaries viewed the VSLA as a form of social capital that provides collateral for accessing credit facilities and loans in events of crop failure and other shocks. This is essential in fostering resilience among the peasant women, especially where lack of access to credit as a result of lack/inadequate

Fig. 4 A picture illustrating the animals (Sheep) distributed to project beneficiaries in Dagbambia. *Source* Authors' Field Survey February 2017

collateral remains a major challenge to female households in agriculture (Varangis 2015). Likewise, the findings reiterated the vital role of physical capital in fostering resilience through effective production. This is manifested through enhanced access to inputs (here referred to as physical capital). Accordingly, 9.1% (4.6%) of the sampled women asserted that the receipt of farm implements, and household utensils (hand gloves, wellington boots, machetes, hoes, and head pans) have improved their farming activities.

Also, the inclusion of natural capital and financial capital as focal areas in fostering resilience was alluded to as helpful. According to Tobergte and Curtis (2013), these components are necessary for achieving sustainable resilience because they help the households accumulate wealth to serve as a 'safety net' in times of crisis. This ensures a greater chance of reducing vulnerability and enhancing the capacity to recover in events of shocks among women. Besides, these focal areas facilitate the acquisition of other essential livelihood building blocks that are required to resists and recover from or adapt to the effects of risks. About 28.6% of the sampled women in Stage One mentioned that the small ruminants (e.g., sheep) given to them served as an alternative means to rely on in times of crop failure (see Fig. 4). Similarly, 33.3% of the women received seedlings such as soya beans and/or sweet potato to help diversify their dietary needs and supplement the staple crops in events of poor yield or failure. On the other hand, 64.3% of sampled beneficiaries in Stage One reported that their savings at the VSLA served as a means of helping them to meet their basic livelihood when their farm produce failed.

The perceived outcomes of the RING project on peasant women resilience

After the analysis, we failed to reject the null hypothesis (H_o) that there are no significant differences in the findings obtained in both stages regarding the

beneficiaries' perceived project outcomes. In other words, the true probability distribution observed in stage two agrees with the earlier distribution in stage one. This is because the P-value of the test statistic is greater than 5% [i.e., $P = 0.095 > 0.05$] (see Table 3). See Table 3. Moreover, the analysis showed a very strong correlation [$R = 0.986$, $P = 0.002$] between the perceived project outcomes stated in stage one and those cited in Stage Two with statistical significance (see Table 3). This further indicates the homogeneity of the perceived and experienced project outcomes across the beneficiary women. The latter also shows that the most commonly noted project outcomes cited by beneficiaries in Stage One were also likely cited by those in Stage Two and vice versa. Therefore, we concluded that the findings from stage one is externally valid and maybe the general characteristics among beneficiaries in Northern Ghana (see Fig. 4).

From the field interactions, the peasant women indicated that they were able to minimize the challenges of poor sales during bumper harvests to increase their income through the project intervention. For example, 9.5% of the beneficiaries in Stage One attested that the project provided them access to improved markets and offered an opportunity for better sales. This advantage was mostly cited by women engaged in picking shea nuts and cereal farming. They explained that the project component focused on group savings had prevented the situation where produce is sold cheaply in the bumper period when they are in dire need of money to meet other livelihood objectives. Accordingly, the group savings serve as a source of credit to support members at periods of low prices whilst the farm produce is stored in wait for better prices (see Table 4). Also, 16.2% of the respondents indicated that the project support in soya beans and orange flesh potato, as well as the animals (sheep) rearing, serve as alternative sources of income at different seasons within the year. The diversified farm production helps beneficiaries to rely on other produce at a particular time of the year when they are experiencing low prices. One respondent shared her experience that;

> *My ward's school fee is GhC50. First, I used to sell seven bowls of groundnut during the harvest in September for about GhC8 per bowl. This is because that was the only means of raising money to pay the fees at that time. But now I can borrow the money from the VSLA and pay in March when a bowl of groundnut increased to GhC15. Now I would only have to sell four bowls to pay the fees and GhC10 of VSLA interest. This will enable me to use the remaining three bowls for other household needs as well* (interview with a beneficiary, Kpolo, February 2017).

Clearly, from the case study (shared by four other respondents), the respondent can now save about 42.9% of her income (a gain of Gh₵45) through the project intervention. On the other hand, the peasants stated that the project interventions have put them in a better position to avoid seasonal food insecurity during the lean season. Thus, the VSLA helped the women to rely on credit to meet financial obligations in the events of low prices in the bumper harvest during which the food crops are often sold cheaply and subsequently increasing vulnerability to food insecurity. Also, about 23.8% of the peasant women mentioned that this intervention has helped restore their social dignity as they no longer go from house to house in search of

money to borrow from neighbors during the lean seasons. Efforts are equally made toward the scale-up of dry season gardening through drip irrigation kit installations, enabling nearly 5800 of the communities to cultivate nutrient-rich vegetables for household consumption and sale. This is aimed to ensure all-year farming and availability of food during the long, six-month, dry season.

Moreover, the project has helped diversify the dietary needs of the peasant women toward improving well-being to effectively undertake their livelihood activities. Thus, about 21.6% of the sampled respondents had affirmed that the project had enhanced their diet through the consumption of the soya beans and orange flesh potato provided. Besides, 4.1% of the sampled households asserted that the project support in soya beans and orange flesh potato, as well as the animals (sheep) rearing helped provide extra food to the household in addition to diversifying dietary needs. This finding is consistent with the study by Sarvimaki (2006) that human well-being is most effectively improved through health, education, food, and individual satisfaction.

The beneficiary respondents reported that the RING project provided alternative sources of livelihood outcomes through the project intervention to aid in reducing vulnerability to shocks (e.g., climate variations, disaster, pests, and diseases). So, 16.2% of the sampled women specified that the project provided alternative sources of livelihood strategies that cushion them in terms of certain crop failures or pests and diseases (see Table 4). One of these sampled respondents reported during an interview:

> *I don't know what I would have done had it not been because of the RING support in the soya beans farm. My groundnut farm did not yield well this particular year due to the poor rains.*
> (Interview with a beneficiary, Kitoe-Nkwanta, February 2017)

The alternative livelihood outcomes provided by the project helped the peasant farmers cushion their vulnerability amid the current climate variabilities in the savannah ecosystem. The findings align with earlier studies that farmers engaged in diverse alternative livelihood outcomes are less vulnerable to climate change and food insecurity.

The respondents indicated that mortality among the small ruminants distributed was one of the persistent challenges. This was mostly reported by beneficiaries in Dagbambia, where two beneficiaries had lost all their sheep. Inadequate water for the animals was stated by 27.0% of the sampled households as a major challenge. This situation was identified as a critical challenge to communities with limited access to water, especially during the dry season when the main water bodies dry up. Another challenge reported by about 16.2% of the sampled beneficiaries was the emergence of misunderstanding and acrimony among their household members. This was mostly noted in polygynous households. This occurred because the project selected only one beneficiary (of childbearing age) from each household, irrespective of the number of women in the household. Hence, in a situation where a man has more than one wife, only one of them got selected to benefit from the project. Consequently, this creates misunderstanding and acrimony in the household as to who benefits and who does not. The

planning unit also indicated that the difficulty in accessing communities across the Volta Lake, erratic rainfall pattern, and delays in the release of funds to the district were the major challenges facing successful implementation.

Conclusion

This research used the RING project to understand and provide field-based empirical evidence on how the project fosters resilience in achieving sustainable livelihood in efforts to sustainably reduce poverty and improve nutrition. It emerged that the RING project did target peasant women farmers considered as vulnerable households, in EGD through efforts to foster resilience in their agriculture activities. The beneficiary women perceived that the project outcomes have helped in this regard particularly: through increased access to improved commodity market, reduced vulnerability to seasonal food insecurity, and diversification of diet. These they explained have been achieved by improving their capacities to undertake livelihood activities. It provided alternative sources of income to reduce vulnerability and serve as safety net to shocks. The results further showed that these assertions were consistent in the two samples.

This research recommends for the integration of technology into the project activities. For instance, there is a need to explore the possibility of integrating the VSLA into the mobile money sphere. The project stakeholders should explore the possibilities of personal contributions and loan payment through mobile money account rather than physical cash collection. This is to ensure that contributions of the savings are deposited in a mobile money account to earn additional interest aside from members' loan repayment interest. Besides, efforts should be intensified toward explaining selection criteria through rigorous household consultation and sensitization in selecting beneficiaries. The RING is also argued to incorporate into its operations capacity building in environmental-related issues to help ensure climate-smart adaptation among peasants amid recurrent climate risks (Niang et al. 2014; Serdeczny et al. 2016). This should include practical demonstrations and sensitization of the peasant women to adopting environmentally friendly ways of farming. Lastly, proactive extension and veterinary services should be made readily available to help reduce mortality among the animals.

Notwithstanding the inevitable challenges of resilience research, this paper argues that resilience fostering provides a better alternative to sustainable livelihoods and poverty reduction, especially for the world's poorest, many of whom are dependent on the natural environment for their survival. Strengthening resilience ensures that peasant women are better placed to manage risks, accumulate wealth, diversify their diet, and become more resource-efficient while reducing their dependency as shown in the empirical evidence. Finally, fostering resilience among peasant women would help strengthen the adaptive capacities necessary for bridging long-existing gender inequalities, ensure equal economic participation, and poverty reduction.

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