

# Exploring inclusiveness of vulnerable and marginalized people in the cassava value chain in the Lake Region, Kenya

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## Abstract

Vulnerable and marginalised groups (VMGs) who comprise widows, orphans, people living with disability and HIV, have not been given sufficient attention in agriculture in sub-Saharan Africa (SSA) by policy makers, development partners, research, and extension, yet they comprise nearly one-quarter of all smallholder farmers. This study explored inclusion of VMGs in cassava value chain in the Lake Region of Kenya. Formal survey, focus group discussions (FGD), and key informant interviews (KIIs) were used to collect data from VMGs, common interest groups (CIGs) and stakeholders in the cassava value chain. The results showed that the majority of VMG farmers were women, mainly widows, orphans, people living with HIV, and difficulty in mobility. Compared to CIGs, there were significant differences ( $p < 0.05$ ) in access to value chain support services. Key barriers reinforcing marginalization were policy, socio economic and technological in nature. It is argued that affirmative action that aims to reach the marginalised farmers and actors in cassava value chain should entail national and institutional policy frameworks to enhance visibility and involvement of VMGs in technology development and innovation as well as in the design and implementation of projects geared towards improving livelihoods of smallholder farmers. The findings of this study suggest the need for mapping and assessing VMGs for targeted value chain institutional support to access inputs, training, financing and market linkages in order to close gaps in cassava production and marketing. It is concluded that the cassava value chain in the Lake Region is less inclusive for VMGs. Thus, the study recommends affirmative action and establishment of a platform for VMG farmers to increase their voice in decision making.

**Keywords:** affirmative action, institutional support, people living with HIV, widows

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## 1 Introduction

Agricultural development programs in sub-Saharan Africa (SSA) – policy, research, extension, training and training have often focused on small-scale farmers over the past decades (Abraham & Pingali, 2020). Small-scale farmers are generally referred to as farmers holding less than 2 ha of land and are a heterogeneous group consisting of resource poor, youth, and female and male farmers living mainly in rural areas (AGRA, 2017). Inclusive value chain (VC) literature proposes several strategies towards inclusive VC participation of smallholders, which reveal different inclusiveness approaches (Ros-Tonen *et al.*, 2019).

The approaches include people-profit-planet inclusiveness; social inclusiveness; inclusive learning and innovation; sensitivity to diversity among farmers; and relational empowerment (Ros-Tonen *et al.*, 2015; Taghikhah *et al.*, 2017; Kilelu *et al.*, 2017; Bassett *et al.*, 2018). Other approaches are gender inclusive value chains; resource use efficiency and sustainability; and policy inclusiveness. This study adopted the inclusive innovation and learning approach which targets the use of knowledge co-creation and best practices through participatory monitoring and evaluation (Ros-Tonen *et al.*, 2015). Inclusive innovation and learning recognizes that most smallholder farmers are marginalized either based on socio-economic or physical abilities. The global development agenda that birthed the sustainable development goals

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(SDG) highlights the needs of inclusive development that does not leave anyone "behind" (UN, 2020). Nonetheless, interventions designed to address poverty and other development goals may result in unintended negative consequences such as social divisions that determine vulnerability and ability to adapt to climate change as a source of vulnerability (Magnan *et al.*, 2016; Pearse, 2017; Work *et al.*, 2019). Social divisions that determine vulnerability include age, gender, disability, ethnicity, and class. At the global level, one billion people or 15 % of the world's population, experience some form of disability and the disability prevalence is high especially in developing countries (World Bank, 2021). Barriers to social and economic inclusion to persons with disabilities include unavailability of appropriate devices and technologies, means of communication, gaps in service delivery, discrimination, and stigma in society. These barriers may inhibit VMGs from meaningful participation in society, asserting their rights in accessing opportunities and resources leading to marginalisation, hunger and malnutrition (Gupta & Pouw, 2017; Reardon *et al.*, 2012).

The 2030 Agenda for Sustainable Development and the 17 SDGs provide a powerful framework to guide local communities, countries, and the international community towards the achievement of disability-inclusive development (UN, 2020). Whereas literature on social and gender inclusion is available (Malapit *et al.*, 2019; Olumeh *et al.*, 2021; Quisumbing *et al.*, 2021), nevertheless, empirical data on participation of VMG farmers in agriculture in SSA in general, and Kenya in particular, is scanty.

In Kenya, 66 % (2.93 million) of the people living with disability are in rural areas and are mainly involved in smallholder agriculture which is their mainstay economic activity (KNBS, 2019). The Government of Kenya's Vision 2030 has provided for a policy framework towards addressing the critical issue of vulnerability in the agricultural sector. Irungu *et al.* (2009) argued that although there were convergence of agricultural promotion policies and social protection intervention programs in Kenya, the synergies between the two have been unexplored and poorly conceptualized. This study was informed by the knowledge gap on specific entry points for institutional and policy support to enhance equal participation of VMGs in the cassava value chain. The scope of VMGs in this study included farmers who are widows, widowers, people living with HIV and orphans as defined by Kenya National Bureau of Statistics (2019). Targeting, incentives and integration of VMG farmers in smallholder agricultural programmes can enhance their participation as lead farmers on new technologies and innovation, marketing, policy dialogue and hence improve their position. The lake region of Kenya has large numbers of VMGs due to high

prevalence of HIV which has led to increased numbers of orphans and widows who are involved in agriculture yet live in economic exclusion. The lake region is also the leading producer of cassava in Kenya (Ministry of Agriculture, Livestock and Fisheries [MoALF] 2015), grown by small scale farmers, including VMGs. Focusing on the case of Busia and Kisumu Counties, this study explored inclusion of VMGs to inform institutional and policy discourse.

## 2 Materials and methods

### 2.1 Study area

The study focused on Busia and Kisumu counties since cassava (*Manihot esculenta*) is a priority value chain in these two counties. Busia County lies between latitude 0° and 0° 45' North and longitude 34° 25' East and is the leading cassava producer in Kenya (County Government of Busia, 2018; MoALF, 2015). The total land area under cassava is estimated to be 20,000 ha. Cassava is one of the most important staple crops in Busia County contributing to household food security and income, but has not been fully exploited despite growing consumer and industrial demand, and relatively low cost of production compared to maize and sorghum (Githunguri & Njiru *et al.*, 2020; Wang *et al.*, 2022). The total number of VMGs in Busia County is estimated to be 39,196 which is 5 % of the county population (KNBS, 2019). Kisumu County is located on the shores of Lake Victoria and serves as the main commercial and transport hub for the western part of Kenya and the east African region. It lies between longitudes 33° 20' and 35° 20' E and latitude 00° 20' and 00° 50' S (County Government of Kisumu, 2018). The number of VMGs according to the 2019 Kenya National Population and Housing Census was more than 52,517 which accounted for 5.4 % of the total population (KNBS, 2019). The total land area under cassava is estimated to be 3,000 ha. Cassava is an important staple crop for subsistence in this County.

### 2.2 Research design

Kisumu and Busia Counties in the lake region are implementing the Kenya climate smart agriculture project (KC-SAP) which is aimed at increasing uptake of improved varieties and productivity of resilient crops such as cassava (KCSAP, 2020). This study compared common interest groups (CIGs) and vulnerable and marginalised groups (VMGs) participating in the project, with a special focus on the status of inclusiveness of VMGs in the cassava value chain. The VMGs consisted of farmers who were registered by the County government either as widows, orphans, handicapped persons, or persons living with HIV. The overlaps

across groups (i.e. a person living with HIV also being a widow or orphan) was ignored since such profiling was considered to be sensitive to the respondents. The CIGs comprised existing registered groups of cassava farmers working together for common economic and social interests in the KCSAP project areas (KCSAP, 2020). KCSAP worked with both CIGs and VMGs to scale up technologies, innovations, and management practices (TIMPs) for adoption by farmers.

Lists of farmers were obtained from leadership of CIGs and VMGs which formed the sampling frame. Systematic random sampling was used to obtain a sample size of 400 farmers: 192 VMG farmers and 208 CIG farmers. The sampling procedure was performed in Microsoft Excel application using the RAND function as described by Juster (2013). Probability proportional to size (PPS) sampling method was applied to ensure that the sample was a representation of the two groups of farmers and counties. Quantitative (survey of individual farmers) and qualitative methods (focus group discussions and key informant interviews) were used to collect data on the following parameters: VMG domains, demographics, production and marketing, costs and gross margins, production partners, and access to support services. Consent was sought from VMGs to use profile data for knowledge sharing.

### 2.3 Analytical framework

Qualitative data were analysed using measures of central tendency (mean), dispersion (standard deviation) and proportions (frequencies and percentages). The differences in distribution of variables by type of group were tested for significance using independent sample t-test and chi-square test of independence. Independent sample t-test was used to measure whether there existed systematic difference in continuous variables of interest, while chi-square test of independence measured differences in categorical variables between VMG and CIG farmers. Thematic approach was used to analyse qualitative data.

## 3 Results

### 3.1 Status of VMGs in cassava production and marketing

#### 3.1.1 VMG domains

The domains of VMG farmers shown in Table 1 indicate that the majority were widows (51%), followed by orphans (15%) and people living with HIV (12.5%). Difficulty in mobility, seeing and hearing were the main disability domains.

**Table 1:** Vulnerable and marginalised group (VMG) domains of sampled population.

VMG domain	n=192	%
Widow	98	51
Widower	7	3.6
Orphan	29	15
Living with HIV	24	12.5
Mobility	12	6
Seeing	9	4.7
Hearing	8	4.1
Cognition	1	0.5
Communication	2	1.6
Self-care	1	0.5
Albinism	1	0.5

#### 3.1.2 Demographic characteristics of VMG farmers

Table 2 compares demographic characteristics of farmers of CIG and VMG groups. Nearly 75% and 80% of CIG and VMG farmers respectively were female. There was a significant ( $p < 0.01$ ) difference in household headship between the two groups, with about 51% and 29% belonging to VMGs and CIG farmers' households being female headed, respectively. The results also showed significant differences ( $p < 0.05$ ) between the farmer groups in terms of household sources of income.

The results showed that most of VMGs were women, came from female headed households, were widows with primary education as the highest level of education, and mostly involved in crop production. The higher percentage of women than men in VMGs confirm observations made in literature that women are more vulnerable than men (Botreau & Cohen, 2020).

### 3.2 Production parameters

The results in Table 3 compared cassava production parameters of CIG and VMG farmers. The average farm size owned by CIG farmers was 1.1 ha while for VMGs was 1 ha with no significant differences. There were also no significant differences in the land area allocated to cassava production by VMG farmers (0.35 ha) and CIG farmers (0.33 ha). The percentage of VMG farmers that planted improved cassava varieties (55%) was marginally significantly higher than that of CIG farmers (44%). One ha of cassava yielded 2479 kg and 2698 kg for VMG and CIG farmers respectively. There were no significant differences in yields between the two groups.

**Table 2:** Comparison of demographic characteristics of vulnerable and marginalised group (VMG) and common interest group (CIG) farmers in the study.

Variable	VMG (n = 192)	CIG (n = 208)	p - value
Sex of respondent (%)			
Female	79.7	74.5	0.331
Male	21.4	25.5	
Female-headed HH (%)	51.0	28.9	0.007
Average age of HH head (Years)	52.2	50.4	0.183
Average no. of persons per HH	3.9	4.1	0.059
Educational attainment (%)			
No formal education	12.5	11.5	0.832
Primary school	46.6	51.0	
Secondary school	32.3	29.8	
Tertiary	8.9	7.7	
Main source of HH income (%)			
Crop production	69.3	67.3	0.047
Self-employment	17.7	15.4	
Casual labour	5.2	12.0	
Salaried employment	4.5	1.9	
Remittances	2.6	1.0	
Livestock production	0.5	1.9	

Note HH: household

**Table 3:** Comparison of production parameters for vulnerable and marginalised group (VMG) and common interest group (CIG) farmers.

Parameter	VMG (n = 192)	CIG (n = 208)	p-value
Farm size (ha)	1.0 (0.7)	1.1 (0.8)	0.271
Land area under cassava (ha)	0.3 (0.3)	0.4 (0.2)	0.402
Cassava varieties planted (%)			
Local	39.6	48.6	0.090
Improved	54.7	43.8	
Both	5.7	7.7	
Cassava yield (kg ha <sup>-1</sup> )	2479 (1631)	2698 (2069)	0.519

Note: SD provided in parenthesis.

### 3.3 Marketing parameters

There was a statistically significant ( $p < 0.01$ ) difference in percentages of VMG (54 %) and CIG (68 %) farmers that sold cassava product in local markets, suggesting low market participation among VMGs compared to CIG farmers, possibly attributed to their physical challenges. More VMGs (73 %) sold cassava in dry form compared to CIGs (66 %). Although VMGs participated less in the market, they sold larger quantities of cassava than CIGs. Both VMGs and CIGs used the same channels, and their main channel was local markets.

### 3.4 Production costs, revenues and gross margins (GMs)

Costs of production, revenues, and gross margins of cassava production per ha are shown in Table 5. The average total variable costs per ha for VMG and CIG farmers were \$1178 and \$1106 respectively. VMG farmers incurred significantly higher costs on cassava planting material ( $p < 0.05$ ), weeding ( $p < 0.1$ ), harvesting ( $p < 0.01$ ) and chipping ( $p < 0.01$ ) than CIG farmers. The higher costs incurred by the VMGs could be attributed to the physical challenges they are facing and hence low yields and revenues (\$1735 per ha compared to their CIG counterparts with \$1889 per ha. The higher costs of production resulted into

**Table 4:** Comparison of marketing parameters for vulnerable and marginalised group (VMG) and common interest group (CIG) farmers in cassava marketing.

Parameter	VMG (n = 192)	CIG (n = 208)	p-value
Market participation (%)	54.2	67.8	0.005
Form of cassava sold (%)			
Dry cassava	73.2	66.0	0.397
Raw cassava	8.65	8.51	
Both	18.3	25.5	
Quantity of dry cassava sold in kg year <sup>-1</sup>	20,900 (596.5)	24,256 (388.1)	0.135
Cassava buyers (%)			
Local market	43.4	43.1	0.567
Neighbours	32.5	35.5	
Local trader	15.1	14.1	
Broker	5.4	6.1	
Distance trader	2.4	1.2	
SME	1.2		
Cassava marketing arrangements (%)			
Individual	94.8	98.6	0.194
Group aggregation	4.7	1.4	
Cooperatives	0.5		

Note: SD provided in parenthesis. SME: Small and medium enterprises.

**Table 5:** Comparison of annual costs, revenues, and gross margins of cassava production by vulnerable and marginalised group (VMG) and common interest group (CIG) farmers.

Variable	VMG (n = 192)		CIG (n = 208)		p-value
	Mean	Std. Dev.	Mean	Std. Dev.	
<i>Variable costs (USD per ha)</i>					
Planting material	65.0	63.8	52	45.5	0.019
Land preparation	180.0	99.0	176.5	82	0.687
Planting	135.8	69.5	129.3	64.3	0.315
Weeding	235.5	120.8	212.5	137.5	0.079
Harvesting	155.5	81.0	135.0	64.3	0.005
Transportation to house	66.8	45.0	59.0	54.5	0.123
Peeling	84.3	47	86.5	221.3	0.898
Chipping	70.3	45.5	57.5	47	0.006
Drying	80.8	51.3	86.5	114.3	0.520
Purchasing storage bags	52.5	54.5	58.5	77.8	0.378
Transportation to market	52.0	40.3	53.3	65.5	0.812
<i>Total variable costs</i>	1178.3	410.0	1106.0	598.5	0.157
<i>Revenue</i>					
Yield (kg per ha)	2479.0	44.5	2698.0	96.0	0.520
Price (USD per kg)	0.7	0.2	0.7	0.2	0.822
Revenue per ha	1735.3	1276.0	1888.6	1225.0	0.486
<i>Gross Margin (USD)</i>	557.05	375.0	782.6	312.5	0.038

Note: 1 USD = KES 106.771 as of June 2021.

significant ( $p < 0.05$ ) difference in gross margins between VMG (\$ 557) and CIG farmers (\$ 783).

### 3.5 Cassava production and marketing partners

The results of organisations supporting CIGs and VMGs in cassava production and marketing are presented in Table 6. Nearly 33 % and 46 % of CIG farmers and VMG re-

**Table 6:** Comparison of partners supporting vulnerable and marginalised group (VMG) and common interest group (CIG) farmers in production and marketing.

Parameter	VMG (n = 192)	CIG (n = 208)	p-value
Production partners (%)			
Farmer group	45.8	32.7	0.007
Neighbours	28.7	37.5	0.060
Research institute	5.7	29.3	0.021
NGO	3.1	3.9	0.025
County government	8.9	1.9	0.002
None	50.0	21.6	0.045
Marketing partners (%)			
Neighbours	45.8	56.3	0.037
Farmer group	19.3	14.4	0.195
None	52.1	34.6	0.017

spectively received support from farmer groups while 38 % of CIGs and 29 % VMGs were supported by neighbours. Research institutions (KALRO) supported more CIGs (29 %) than VMGs (6 %). 50 % of VMGs do not have production partners compared to 22 % of CIGs. The main marketing partner for both CIGs and VMGs were neighbours. Additionally, about 34 % CIG and 52 % VMG farmers had no partners in cassava marketing. The types of partners that supported cassava production and marketing significantly ( $p < 0.01$ ) differed by membership to the two groups.

### 3.6 Bottlenecks limiting VMGs in cassava value chain support services

Table 7 presents results from a survey which was further triangulated using FGDs on bottle necks limiting VMGs regarding access to support services. Themes that emerged from the discussions were policy, socioeconomic, technological, institutional, and impact of climate change on VMGs.

#### 3.6.1 Policy bottlenecks

There was a statistically significant difference ( $p < 0.01$ ) between CIGs and VMGs regarding participation in policy debates. The findings showed that VMGs participated less (8 %) in policy debates compared with CIGs (27 %), indicating low representation in policy formulation. Policy framework has been reported to be important in providing strategic direction and in drawing attention of other stakeholders to fostering inclusiveness (Malek et al., 2017). Policy conversations need to be extended to supporting VMG farmers to secure access to diverse technical, institutional, and economic opportunities in agriculture.

#### 3.6.2 Socio-economic bottlenecks

Both CIGs and VMGs had low access to formal credit. Even though access to financing is necessary in improving the scale of farm enterprises, formal credit such as bank loans and micro finances was disliked by smallholders due to high interest rates. Focus group discussions revealed that smallholders, particularly VMGs had established self-governing internal and informal financing in the form of table banking and merry-go-round which sometimes was used to support farm activities such as land preparation, purchase of inputs and weeding.

#### 3.6.3 Technological bottlenecks

Most of the bottlenecks limiting VMGs in cassava production and marketing were technological in nature, namely, access to modern inputs, mechanization, smart phones, innovations from research institutions, extension services, and training and testing of new innovations. VMGs had lower access to modern inputs compared to CIGs (37 %) and this was significant ( $p < 0.0$ ). Both CIGs and VMGs had lower access to mechanization. CIG farmers had more access to smart phone (21 %) than VMGs (5 %). Overall access to smart phones by both groups was generally low. CIG farmers had more access to innovations (23 %) than VMGs (6 %). Overall, access to innovations by both groups was generally low. A significantly ( $p < 0.01$ ) higher percentage (66 %) of CIGs had access to extension services compared to VMGs (30 %). In addition, a significantly ( $p < 0.01$ ) higher percentage (53 %) of CIGs participated in training and testing of new innovations as compared to VMGs (15 %). Both CIGs (0 %) and VMGs (3.6 %) had low awareness of climate-smart agricultural practices.

**Table 7:** Comparison of vulnerable and marginalised group (VMG) and common interest group (CIG) farmers' access to cassava value chain support services.

Parameter	in percentage		p-value
	VMG (n = 192)	CIG (n = 208)	
Access to formal credit	1.3	4.9	0.115
Access to modern inputs	15.4	36.7	0.003
Access to mechanization	1.6	8.0	0.317
Access to ICT (smartphone)	5.3	20.6	0.041
Access to innovations from research institutions	5.7	22.6	0.047
Access to extension services	30.3	66.0	0.000
Participation in training and testing of new innovations	15.6	53.4	0.000
Participation in policy debates	7.7	27.5	0.000
Awareness of climate-smart agricultural practices	3.6	4.0	0.072

## 4 Discussion

This study explored inclusion of VMGs to inform institutional and policy discourse in the cassava value chain in the lake region of Kenya. The study revealed the following key findings:

### 4.1 Majority of vulnerable and marginalized farmers are women

The demographic characteristics of VMG farmers revealed that the majority were women (79 %). Further profiling showed that widows (51 %), orphans (15 %) and people living with HIV (12.5 %) were the dominant domains. These findings underscore the importance of empowering gender in agriculture, particularly the inclusion of women and other vulnerable groups in development which leaves no one behind (Malapit *et al.*, 2019; Quisumbing *et al.*, 2021). These groups live in rural areas and, in the lake region where the study was conducted, the main source of livelihood for these groups was crop production (69 %). Therefore, purposive targeting of these groups will not only improve their socio-economic wellbeing but also spur the overall growth of the cassava industry.

### 4.2 Low participation of marginalised farmers in input and output markets

The results on production parameters between CIGs and VMGs revealed that there were no significant differences between the two types of farmer groups. However, findings indicated that technology demonstrations and testing of innovation trials were usually carried out mainly on CIG farms (53 %) than VMG farms (16 %). The results also revealed that although VMGs planted more of improved varieties (55 %), their yields were slightly lower than that of

CIGs (44 %). This could be attributed to the fact that yields are a function of several farm operations (ploughing, planting, fertiliser application, weeding, management of pests and diseases) which VMGs may not effectively perform because of being physically challenged. VMGs were disadvantaged because some of these operations are laborious and require too much physical movement and energy. VMGs technical ability (low levels of education, access to training and extension) further limit their use of good agricultural practices (GAPs) since they are sometimes segregated during selection of farmers to participate in such activities as revealed during FGDs. Ros-Tonen *et al.* (2019) argued that a farmer-centred approach that recognizes smallholders differentiated and gendered realities, as well as their knowledge and innovation capacity, is key to making agricultural production more inclusive. The findings also revealed that VMGs participated less in marketing (54 %) compared to CIGs (68 %). Nevertheless, market behaviours in terms of types of cassava products sold, types of buyers, and marketing arrangements were similar between VMGs and CIGs. Further, the findings showed that 52 % of VMGs did not have marketing partners compared to 35 % of CIG farmers. Thus, these findings reinforce the view advocated by several authors that smallholder farmers should be integrated in commercial value chains either through farmer organisations which provide collective action or lead firms for meaningful inclusivity (Kelly *et al.*, 2015; AGRA, 2020; Mwambi *et al.*, 2020). Inclusiveness would help address institutional failure experienced by many smallholder farmers as well as bottlenecks that reinforce marginalization and exclusion of VMGs as also reported by Gatzweiler & Von Braun (2016).

### 4.3 Affirmative action needed to reduce marginalization

Focus group discussion results revealed that VMGs face insurmountable challenges stemming from inadequate ac-

cess to support services which undermine their participation in cassava value chain. VMGs had low access to credit services and low participation in testing of innovations. Ashby & Polar (2021) argued in the case of plant breeding programs that they need be demand-driven through capturing and including socially differentiated trait preferences to increase uptake by different social groups of farmers. The low participation of VMGs in testing of new cassava innovations is pointer to the possibility that technological needs of women, widows, and disabled persons such as ease of peeling or processing were not adequately captured in new cassava varieties. Even so, when such technology is available, the varieties are unaffordable (Table 6) to VMGs who have low access to financial support. Based on these findings, the KCSAP project, helped to reveal the inequalities that exist between CIGs and VMG farmers with regard to institutional support services.

#### 4.4 Opportunities for inclusion of vulnerable and marginalised farmers

The results in this study present opportunities for enhancing inclusiveness of VMG farmers. The evidence in this study calls for the need to map, assess and target VMG farmers. Inclusiveness should target support services namely; mechanization, financing, market inclusion, policy dialogue, inclusive research and extension services.

First, since most farm operations in cassava production are done manually access to VMG-sensitive machines for peeling, washing, grading, and drying can reduce drudgery, enhance quality of cassava products. Second, strengthening access to credit through formal and informal credit lines at grassroot could overcome limitations experienced by smallholder farmers, especially VMGs. Financial inclusion in terms of affordable credit call for institutions such as the Agricultural Finance Corporation in Kenya to provide incentives to VMGs and CIGs to enhance their participation in cassava value chain. Third, participants in focus group discussions strongly advocated for market inclusion. This could be done through federation of CIG and VMG groups in cassava production to connect them with large buyers or lead companies. This initiative could be driven by local actors with support from industry stakeholders and development agencies. Strong farmer organisations have been reported to enhance economies of scale, bargaining power, access to value chain support services and social well-being (Rahaman & Abdulai, 2018; Bijman & Wijers, 2019). But whether all farmers of such an association, especially VMGs, benefit equally is a question that requires further research. Finally, these findings indicated low access to research innovations (6%) and extension services (30%) by VMGs. While

assessing institutional support for smallholders, Rice *et al.* (2019) also argued that inclusive research and extension can be used to challenge processes of exclusion and marginalization. This could be done, for example, through a platform for VMG farmers to improve access to technologies, innovations, and learning, and to accelerate outreach activities and policy dialogue.

## 5 Conclusion

This study examined the involvement of VMG farmers in the cassava value chain in Busia and Kisumu Counties in the lake region of Kenya. The results showed that the majority of VMG farmers were women, mainly widows, orphans, people living with HIV, and difficulty in mobility. Compared to CIGs, there were significant differences ( $p < 0.05$ ) in access to value chain support services. The main barriers reinforcing marginalization were policy, socio economic and technological in nature. This study recommends affirmative action and the establishment of a support system, such as platform for VMG farmers, to increase their voice and participation in the cassava value chain.

#### Conflict of interest

The author declares that they have no conflict of interest.

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