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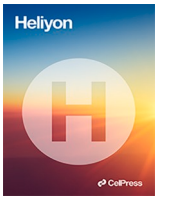

Research article

Surviving violent conflicts and climate variability: An intersectional analysis of differentiated access to diversification resources among smallholder farmers in Kuka

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A R T I C L E I N F O

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A B S T R A C T

Kuka, a sub-district in Shendam Local Government Area of Plateau State-Nigeria has been experiencing violent conflicts since 2001 amidst damning ecological stressors. Between 2001 to date, Shendam Local Government, to which Kuka belongs, has experienced 28 different violent conflicts which were fought largely along ethnic and religious lines. This has intersected with climate variability to generate various risk factors for smallholder farmers in Kuka prompting varied diversification processes. While issues of diversification among smallholder farmers have been well documented in critical literature on adaptation, the extent to which social and relational factors inform differentiated access to diversification resources among smallholder farmers in the specific region of Kuka, to the best knowledge of the researcher, has been least investigated. This study contributes to critical debate on farmers' adaptation strategies by arguing that social and relational factors of sex, age, gender, social capital, economic status, religion and ethnicity intersect to inform differentiated access to diversification resources prompting differentiated vulnerabilities to social and ecological stressors among smallholder farmers in Kuka. This was arrived at by integrating an explanatory sequential design of the mixed methods approach with the Theory of Access to develop questionnaires and interview guides which enabled the collection of field data from 330 participants. It was therefore, recommended that: (1) the relational and social mechanisms of access should be checked to reduce the alienation of smallholder farmers from access and use of community resources, (2) the traditional authorities should work with the various religious leaders to address discriminatory cultural and social practices that inform differentiated access to diversification resources among smallholder farmers, and (3) the people of kuka should engage in collective projects that would provide avenues for cross-cultural and inter-religious interactions bringing about an integration of all social groups and the consequent elimination of discriminatory social practices that inform differentiated treatment of community members.

1. Introduction

While violent conflicts appear ubiquitous across parts of Africa [1–4]; Nigeria has gained notoriety for its conflict prone nature. None of the 36 states that federate Nigeria is virgin to violent conflicts [5,6]. While much of these conflicts unfold, largely, along

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ethnically and religiously woven social identities in other parts of Nigeria, Central Nigeria battles these in a very unique manner as religion, ethnicity, and climate variability intersect to hatch violence of varying scales which do not just destroy human lives and properties but also disrupt agricultural activities and by so doing, unleash near immeasurable economic and security consequences on smallholder farmers [7]. This manifests in all states, local governments and districts of the region, creating persistent atmospheres of uncertainty and insecurity particularly for smallholder farmers who must go into the hinterland to tilt the fields [6,8].

In Plateau State, for instance, violent clashes between groups delineated along ethnic, religious and occupational lines have created an insecure and highly risky environment for Smallholder farmers [9]. Farming and other agrarian activities which, hitherto, constituted the main sources of sustenance for smallholder farmers have been destabilised [10,11]. Besides this, agrarian activities are further threatened by volatile climatic conditions [10]. These, therefore, require that smallholder farmers not just find adaptation strategies that help them evade the perilous effects of violent conflicts but also those that help them elude the ecological stressors ushered by climate variability. Smallholder farmers are, therefore, forced to diversify their sources of livelihood by adapting livelihood strategies that serve as contingencies not just against the horrendous effects of violent conflicts that spurt and ebb intermittently and sometimes contemporaneously but also against the unpredictable volatile climate that is incrementally becoming unfriendly to rain-fed agriculture [1,12]. Such diversification strategies would involve changing crops production patterns, cultivating more than one type of crop in a season, acquiring farmlands in different locations and engaging in more aggressive and climate smart agricultural practices [13,14]. In some cases, diversification could involve investing time and resources outside the agricultural production process such as trading, service provision, taking up paid jobs, buying and selling agricultural products and negotiating space in local politics [15] which is now perceived by many young men and women in Africa as the best avenue for quick riches [16].

The main objective of the study, therefore, was to understand how social and relational factors inform differentiated access to diversification resources by smallholder farmers. Specifically the study sought to understand; (1) the diversification resources available to smallholder farmers in Kuka, (2) how smallholder farmers access these resources needed for diversification and (3) what social and relational factors inform differentiated access to these diversification resources. The finding of this study could inform policy formulation towards addressing inequality in resource access among socially differentiated smallholder farmers as well as the formulation of policies and development of programmes that eradicate social and relational barriers of access so as to increase smallholder farmers' resilience to variability in agricultural production caused by violent conflicts and changing climatic conditions.

Having provided a background to the study, the remainder of the paper is divided into seven sections. The first section reviews the theory that was adopted to provide an analytical framework for the study as well as critical literature on farmer's diversification processes. The second section explains the methodology that was developed to conduct the study, the third analysis and presents the results of the field data, the fifth discusses the results in relation to existing studies and within the framework of Access Theory which guided the study, the sixth gives limitations of the study while the seventh provides a conclusion and the theoretical and practical implications of the study.

2. Analytical lens: Theory of Access

The Theory of Access proposed by Ribot and peluso [17] was largely shaped by the work of McPherson in which he linked ownership to coercive claims to a particular use or benefit sanctioned by political-legal power [12]. Ribot and Peluso [17], however, went beyond these legal principles of access to cover a wider range of other factors determining access beyond legal rights, including those that may be illegitimate and discriminatory. These can be social, relational, economic and even political factors. They therefore emphasise an interdisciplinary approach to access and understand it as a capacity rather than a right [17]. The theory strongly stresses the need to study social and cultural practices that determines access. It further indicates that while there could be formal rules governing access to community resources, agency and power play crucial roles in gaining actual access. This formulation draws attention to the broader spectrum of social relations that can limit or enable people to access and use of resources. One of the most attractive features of this theory is that it addresses both structure and agency, while combining rich empirical work with social science theory. Furthermore, due to its flexible understanding of power, the theory has a broad appeal [12]. The theory's main tenets are that (1) access to property or resources is determined not only by rights, but also by an individual's ability to access resources (2) social and relational factors determine access more than legal rights (3) while these social and relational factors increase the ability of some people to access resources, they alienate others who are poorly connected in the social system.

Situating this study within the context of the Access Theory, the researcher analysed how social differentiation among smallholder farmers in Kuka inform their access to resources that are necessary for diversification amidst social and ecological stressors. Marty et al. [12] argue that social differentiation in agrarian communities is created, recreated or perpetuated by farmers' differential abilities to access key productive resources, labour roles and decision making power among social groups. Smallholder farmers definitely share same occupation but are differentiated by ethnicity, religion and gender. On top of these, new production patterns are redefining resource use, labour roles and traditional resource allocation systems; this further informs social differentiations among smallholder farmers [2,18–21]. In a similar manner, debates about smallholder adaptation strategies in critical literature on adaptation are also indicating that historical agricultural inequalities and social structure create differential vulnerabilities to violent conflict and climate variability [12,22,23]. Ribot [24] further adds that historical inequality does not just inform variability in vulnerabilities of smallholder farmers to conflicts and climate change but also informs differential abilities to diversify means of livelihood in the face of these social and climatic stressors. Marty et al. [12] point out that even the adaptive strategies that are used by farmers in themselves could recreate inequalities among them. The analysis in this study, therefore, pays critical attention to the inclusive and exclusive mechanisms that are embedded in the process of accessing key resources for diversification among smallholder farmers by investigating how different forms of social differentiation intersect to inform smallholder farmers' differentiated access to diversification resources at the

intersect of violent conflicts and climate variability.

3. Literature review

This section reviews critical literature on diversification processes among smallholder farmers. It is considered highly relevant to the study because it unearths current academic debates on diversification as an adaptive strategy among smallholder farmers and opens up the nuances and complexities in smallholder farmers' diversification processes thereby providing the researcher with a composite picture of the study phenomenon in a global, regional and local context.

3.1. Diversification processes among smallholder farmers

Smallholder farmers as used in this study refer to farmers who cultivate mainly food crops on a limited scale and rely mainly on family labour to meet production needs. Although their motivation for farming exceeds subsistence, they typically retain part of their produce for household consumption. Faced with years of violent conflict, smallholder farmers in Kuka are beginning to diversify their livelihood means so as to triumph over shocks in agricultural production initiated by violent conflicts amidst unstable climatic conditions. Diversification as used in this study entails an active social process in which smallholder farmers increasingly get involved in different livelihood sustaining activities not just to increase household resilience to shocks but also to spread the risks that come with cultivating food crops in an insecure and unpredictable environment [1,12]. Smallholder farmers mount this resiliency through varied adaptive strategies that require access to certain key diversification resources such as land, water bodies, farm inputs, markets and liquid capital [18,25,26]. Smallholder farmers, however, do not have equal access to these resources [1,18,20]. Although Marty et al. [18] argue that diversification is not always a response to difficult situations, in this context; it appears as a forced response to precarious social and ecological stressors.

The debate on diversification among smallholder farmers in Africa is, however, still on-going as many other scholars tend to associate it more with prevailing political and economic systems than social and ecological stressors [1,13,28,29]. Walwa [4] argues that land policies that deprive smallholder farmers of cultivable lands can create impetus for diversification among smallholder. Marty et al. [12] believes that changing economic conditions among farmers equally prompt diversification among smallholder farmers. What all this means is that diversification is predicated on shifting the use of and sometimes, access to productive resources that are considered crucial in agrarian landscape, modifying long-held adaptive strategies as well as cultural institutions to avoid stressful socio-economic, environmental and sometimes political conditions which stagnate agricultural production [12,18,30].

3.2. A socio-cultural angle to diversification

Debates in critical literature around resource access indicates that analysis of access needs to go beyond the formal rules or laws on access and investigate cultural and social practices of access [20,27]; a situation the researcher refers to as 'actual access'. Resource distribution is affected by cultural and relational mechanisms even in the face of formally enshrined distribution formulae [17,18]. This is particularly so in pseudo-democracies which are characteristic of developing states where individuals or groups tend to be more powerful than formal institutions [15,28–30]. Peluso and Ribot [31] also argue that the existence of multiple social and cultural institutions alongside state institutions and the ability of these socio-cultural institutions to exercise normative power provides a case for critical analysis of the disconnection between legal prescription of access and actual access because in such situations, relational mechanisms such as ethnicity, religion, kinship, and nationality as well as structural mechanisms such as traditions, customs and norms moderate the direct link between legal rights to access and actual access. Moreda [2] also supports this line of argument and adds that agency and power underscores people's ability to gain access to diversification resources because traditional authorities exercise large powers over resource allocation and in such cases, access is based more on relational mechanisms than it is on legal rights.

Subjecting access through socio-cultural mechanisms will bring to the fore, the differentiated access of smallholder farmers to diversification resources as well as differentials in their abilities to benefit from diversification processes [12]. Ribot [24] also shares this line of thinking as he argues that vulnerability is socially produced because in many cases relational and social mechanisms are used as measures of inclusivity and exclusivity in gaining access to diversification resources. Gaining actual access in such situations may, therefore, vary based on social positions or social connections. When strategies of diversification are structured in social and relational mechanisms, then different sections of a heterogeneous group gain access differently thereby creating, recreating or even perpetuating existing inequalities within a group [2,12,18]. This means that intersectional differentials in adaptive capacities or vulnerabilities among members of a group are products of social injustices than they are of individual abilities or inabilities to adapt.

Wood et al. [32] disagrees with this as he construes abilities to navigate change as dependent on the innate capacities of those at risks. Caravani [1], however, opposes his view and instead, tilts towards the argument of Ribot [24] when he argues that the adaptive process itself may create inequalities by offering more opportunities for diversification to some people while exposing some others to more risks. This means that the capacity to adapt is shaped by many factors including those which are social and political in nature and which may combine to hinder or facilitate people's abilities to navigate change. Marty et al. [12] equally supports this line of argument by adding that diversification as an adaptive strategy brings new opportunities to some people but could also further expose others to risks by acting as catalysts for social stratification. When this happens, more opportunities are created for the elites and more risks dispel to the already vulnerable making them even more vulnerable. Contemporary debates on diversification as an adaptive strategy, therefore, points to the fact that adaptation occurs within social contexts and by so doing, it situates individuals or groups within the

relational nature of power and suppression [20,27,33].

Having understood diversification within a social context, the researcher uses an intersectional approach to investigate how different social positions and identities among smallholder farmers in Kuka determine individuals' access to resources needed for diversification as an adaptive strategy against social instability and climate variability. Based on these arguments, the author hypothesized that age, gender, social capital, economic status, religion and ethnicity determines access to diversification resources in Kuka. Fig. 1 shows the links between social and ecological stressors, diversification processes, access to diversification resources and the different capacities of smallholder farmers to benefit from the diversification process. It shows how social and ecological instabilities provide the impetus for diversification as an adaptive strategy.

4. Methods and materials

4.1. Study setting and case description

Kuka is one of the 20 district wards in Shendam local government of Plateau State, Central Nigeria (Fig. 2). It was created in 1976 during the decentralisation process of post-independent Nigeria [34] (Fig. 2). Kuka shares boundaries with Taraba State in the South and East, Quan'paan local government in the West and Yelwa ward in the North. According to the 2010 Population census, Kuka has a total population of 15,113 consisting of 7992 men and 7121 women [35]. 80% of this population are smallholder farmers as farming was identified to be the major occupation of the area with a few people engaging in agribusiness and trading or a combination of farming and agribusiness [36]. While the Goemai ethnic group is said to be autochthonous to the area, the population of Kuka has become increasingly cosmopolitan and heterogeneous because the fertility of the land and its strategic location have attracted many people from the mountainous areas of central Plateau and others from the neighbouring states of Taraba, Benue and Nasarawa into Kuka to engage in farming activities. The market day is fixed for Sundays and experiences buzzling trading activities as people troop in from the Eastern and Southern parts of Nigeria to take advantage of the cheap and readily available farm produce particularly yams, rice and groundnuts.

While the population is segregated into varied ethnic groups such as Goemai (indigenes), Ngas, Tarok, Tiv, and Kwalla, it is also collected into two main religions: Christianity and Islam. Patriarchy is dominant as sons inherit from their parents while the daughters have little to no rights of inheritance [35]. In typical Malthusian terms, as the population of Kuka increases and differentiates, resources become increasingly scarce and competition over them intensifies [35]. Groups therefore, try to gain differentiated access to the scarce resources by exploring structural and relational mechanisms of access to outcompete those who do not have such social capital [32]. This often turns oppressive and sometimes breeds resentments that incubate to hatch violent conflicts that disrupt farming and other economic activities.

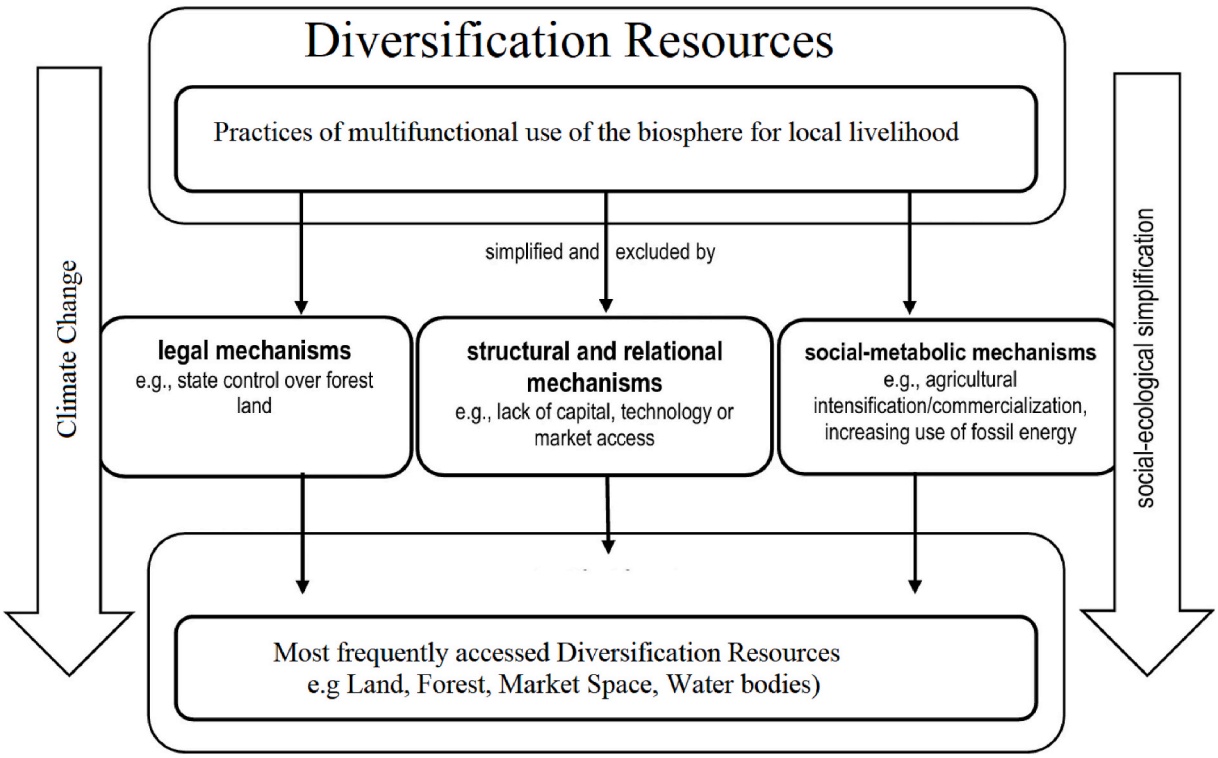

Fig. 1. Conceptual framework. *Source*: Adapted from Pichler, 2021.

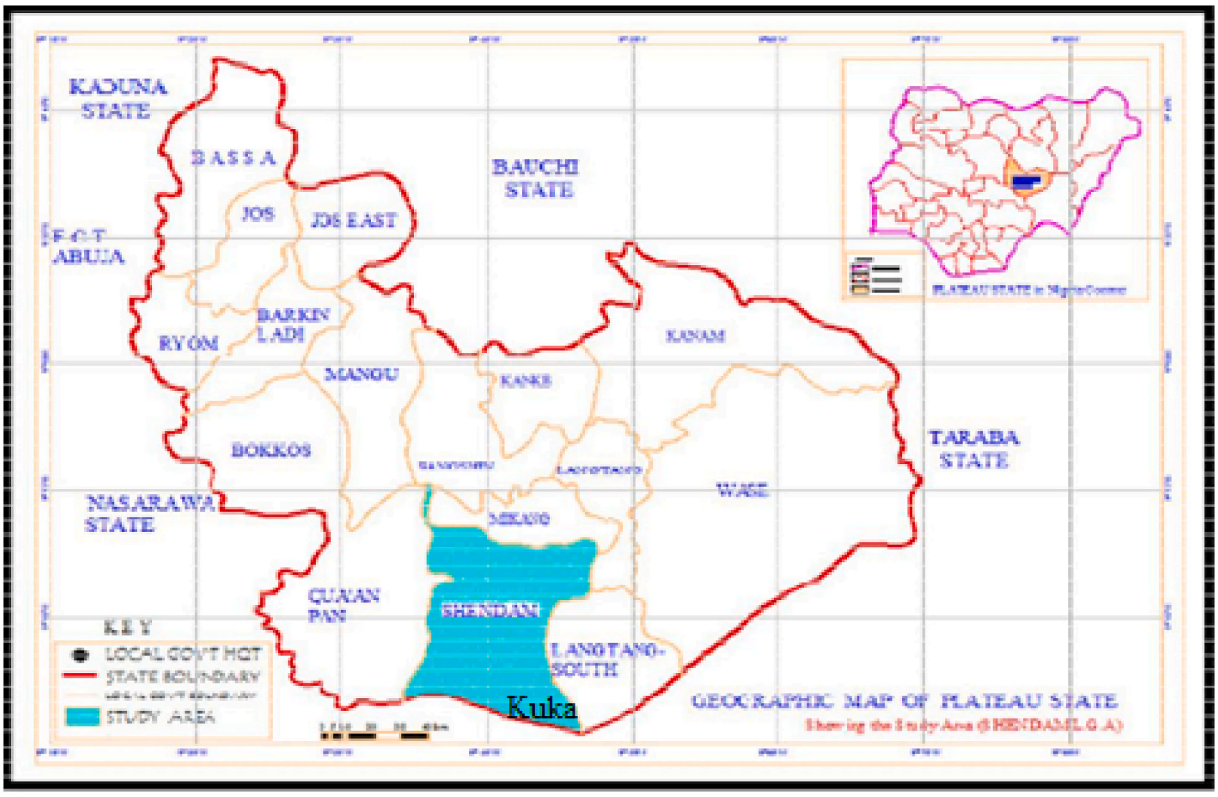

Fig. 2. Map of Plateau State showing Shendam Local Government and the Study Area. *Source:* (PSMLS), 2014.

While the people of Kuka have greatly suffered the economic, social and security consequences of violent conflicts since 2001, most of these conflicts are not fought in Kuka itself but escalate from neighbouring communities and spiral into Kuka because most of the inhabitants of Kuka are migrants who often share allegiance to one of the actors in such conflicts from neighbouring communities and so become targets. Table 1 shows the incidences of conflicts that have disrupted agricultural activities in Kuka. Such conflicts manifest differently and at different moments in kuka disrupting farming activities and creating shocks in household food security.

In the face of these social instabilities, climate variability is also affecting agricultural activities in southern Plateau [37]. Almost all smallholder farmers in Kuka depend on rain fed agriculture, natural land fertility and stable weather conditions. These have varied over the last ten years [38]. The traditional highly predictive binary rainy and dry seasons which alternated each other sequentially and which farmers depended on very much to cultivate their crops have become largely volatile and unpredictable (Fig. 3). Hitherto, the North-East dry wins which ushered in the dry seasons would begin in November and fold up in March to the extremely high temperatures which were also cooled off by the rains in April to usher in the rainy season [37]. These were so much repetitive so that they could be predicted with a 99% degree of accuracy. Things have changed; rains come and go at any time [37]. It is becoming increasingly difficult to predict with any degree of accuracy, when the rainy season starts and when it ends [39]. The cold temperatures that were characteristic of the Months of November, January and February are nearly absent. This variability in climate conditions is affecting smallholder farmers' abilities to plant certain crops like groundnuts and rice which are highly dependent on soil moistures. Staples like yam, rice and millet no longer thrive in areas that they were hitherto cultivated [37]. Farming activities have been completely altered and the risks associated with farming keep multiplying in a geometric progression [39]. All these changes are happening amidst a transitioning agrarian community which is experiencing transformation in its values, norms, customs and traditions contemporaneously due to advances in technology.

Farmers in Kuka are, therefore, innovating ways of navigating through these multiple changes. This makes kuka a suitable setting for investigating diversification processes among smallholder farmers and the intersectional differentials in their abilities to access diversification resources.

4.2. Research design and sampling

This study targeted smallholder farmers who were eighteen years and above because they had had experiences with the social, cultural and ecological factors that put smallholder farmers at risk and could speak to issues around diversification as a coping strategy and how structural and relational mechanisms shape access to diversification resources in their community. The study adopted the explanatory sequential design of the mixed method approach because it gave the researcher the freedom to use both quantitative and

Table 1
Incidences of violence in Shendam local government.

Event Date	Year	Event Type	Actor 1	Associate Actor(s)	Actor2	Associate Actor 2	Exact Location	Latitude	Longitude
26-June-2001	2001	Armed clash	Kundum Ethnic Militia (Nigeria)		Nyeswe Ethnic Militia (Nigeria)		Shendam	8.883	9.533
27-June-2002	2002	Armed clash	Christian Militia (Nigeria)		Private Security Forces (Nigeria)	Muslim Group (Nigeria)	Yelwa	8.833	9.633
05-February-2004	2002	Armed clash	Muslim Militia (Nigeria)		Christian Militia (Nigeria)		Yelwa	8.833	9.633
22-February-2004	2002	Armed clash	Muslim Militia (Nigeria)		Christian Militia (Nigeria)		Yelwa	8.833	9.633
24-February-2004	2004	Attack	Christian Militia (Nigeria)	Tarok Ethnic Militia (Nigeria)	Civilians (Nigeria)	Muslim Group (Nigeria)	Yelwa	8.833	9.633
24-February-2004	2004	Attack	Christian Militia (Nigeria)		Civilians (Nigeria)	Fulani Ethnic Group (Nigeria)	Yamini	8.517	9.667
01-March-2004	2004	Attack	Fulani Ethnic Militia (Nigeria)	Pastoralists (Nigeria)	Civilians (Nigeria)	Christian Group (Nigeria)	Yelwa	8.833	9.633
01-March-2004	2004	Attack	Fulani Ethnic Militia (Nigeria)	Pastoralists (Nigeria)	Civilians (Nigeria)	Christian Group (Nigeria)	Yelwa	8.833	9.633
01-March-2004	2004	Attack	Fulani Ethnic Militia (Nigeria)	Pastoralists (Nigeria)	Civilians (Nigeria)	Christian Group (Nigeria)	Yelwa	8.833	9.633
15-March-2004	2004	Attack	Christian Militia (Nigeria)		Civilians (Nigeria)	Muslim Group (Nigeria)	Kawo	8.842	9.632
02-May-2004	2004	Attack	Christian Militia (Nigeria)		Civilians (Nigeria)	Fulani Ethnic Group (Nigeria)	Yelwa	8.833	9.633
02-May-2004	2004	Attack	Fulani Ethnic Militia (Nigeria)	Pastoralists (Nigeria)	Civilians (Nigeria)	Christian Group (Nigeria); Women (Nigeria)	Yelwa	8.833	9.633
03-May-2004	2004	Sexual violence	Christian Militia (Nigeria)		Civilians (Nigeria)	Muslim Group (Nigeria); Women (Nigeria)	Yelwa	8.833	9.633
05-May-2004	2004	Attack	Muslim Militia (Nigeria)		Civilians (Nigeria)	Christian Group (Nigeria)	Kawo	8.842	9.632
07-June-2010	2004	Sexual violence	Christian Militia (Nigeria)		Civilians (Nigeria)	Muslim Group (Nigeria); Women (Nigeria)	Yelwa	8.833	9.633
21-March-2013	2004	Attack	Police Forces of Nigeria (1999–2015)		Civilians (Nigeria)		Yelwa	8.833	9.633
22-July-2013	2010	Armed clash	Muslim Militia (Nigeria)		Christian Militia (Nigeria)		Yelwa	8.833	9.633
24-November-2013	2013	Attack	Tarok Ethnic Militia (Nigeria)		Civilians (Nigeria)		Shendam	8.883	9.533
18-January-2014	2013	Attack	Fulani Ethnic Militia (Nigeria)	Pastoralists (Nigeria)	Civilians (Nigeria)		Shendam	8.883	9.533
05-March-2014	2013	Attack	Fulani Ethnic Militia (Nigeria)	Hausa Ethnic Militia (Nigeria)	Civilians (Nigeria)	Tarok Ethnic Group (Nigeria)	Kuka	8.45	9.7
14-July-2014	2014	Attack	Unidentified Armed Group (Nigeria)		Civilians (Nigeria)		Yelwa	8.833	9.633
11-August-2014	2014	Armed clash	Unidentified Ethnic Militia (Nigeria)		Unidentified Ethnic Militia (Nigeria)		Yelwa	8.833	9.633
19-November-2018	2014	Attack	Fulani Ethnic Militia (Nigeria)	Pastoralists (Nigeria)	Civilians (Nigeria)		Samia	8.917	9.767
01-January-2022	2014	Attack	Fulani Ethnic Militia (Nigeria)	Pastoralists (Nigeria)	Civilians (Nigeria)		Yelwa	8.833	9.633
26-January-2022	2018	Abduction/forced disappearance	Unidentified Armed Group (Nigeria)		Civilians (Nigeria)		Shendam	8.883	9.533
26-August-2022	2022	Abduction/forced disappearance	Unidentified Armed Group (Nigeria)		Civilians (Nigeria)	Former Government of Nigeria (2015-); Labour union (Nigeria	Shendam	8.883	9.533
23-November-2022	2022	Attack	Unidentified Armed Group (Nigeria)		Civilians (Nigeria)		Shendam	8.883	9.533
14th-December-2022	2022	Violent demonstration	Rioters (Nigeria)				Yelwa	8.833	9.633

Source: ACLED, 2023.

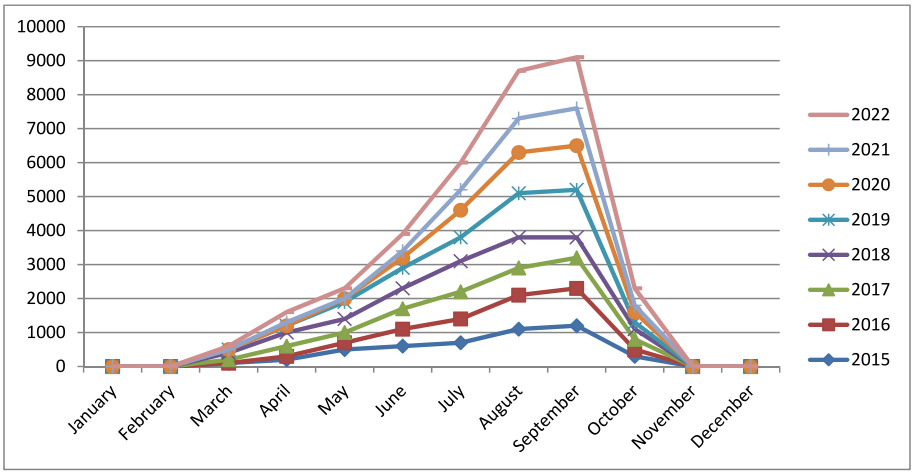

Fig. 3. Rainfall characteristics of Kuka from 2015 to 2022. *Source:* Department of Agriculture, Shendam LGA (2022).

qualitative research tools and techniques contemporaneously making the overall strength of the study higher. The design also allowed the researcher to collect data from a larger sample giving the study a higher basis for generalizability [40,41]. It further helped the researcher to unearth the not-too- obvious issues of social and cultural practices of access through in-depth interviews with key informants. In line with the mixed method approach, both probability and non-probability sampling techniques were used to recruit participants for the study [42,43]. After a sample size of 330 participants was determined from a target population of 2033 using Yamane formula ($n = N/1 + N(e)^2$), 306 participants were selected using Stratified and Simple Random Sampling techniques to respond to questionnaires while 24 others were purposively selected for Focus Group Discussion (FGD) and Key Informant Interviews (KII). In selecting those who were administered with the questionnaires, the target population was grouped into six strata based on the major ethnic groups in Kuka who were smallholder farmers. These were Goemai, Kwalla, Ngas, Tiv, Taroh and Garkawa/Montol. Simple random sampling technique was used to select 51 participants from each of these strata (Table 2).

For those who participated in the FGD, a maximum variation purposive sampling technique was used to select ten participants each from the two major religions in Kuka-Christianity and Islam-for Focus Group Discussion (FGD) so as to gather nuanced perspective on how diversification resources were accessed at the community level. An expert purposive sampling technique was used to select two key informants each from the Traditional Council and the Agricultural Department of the Shendam Local Government Secretariat for personal interviews bringing the total of participants who were purposively selected to 24 (Table 3).

4.3. Data collection

To generate evidence on how climate change and conflicts intersect to prompt diversification processes among smallholder farmers, a review of critical literature on smallholder farmers' adaptation was carried out. Data on resources needed for diversification, methods of accessing diversification resources and the harnessing or hindering factors of diversification among smallholder farmers were collected using questionnaires, Focus Group Discussion (FGD) and interview guides. Questionnaires were used to gather data on the experiences of smallholder farmers on diversification processes at the household levels while Focus Group Discussions were used to gather data on the lived experiences of smallholder farmers at the community level or as a collective social group. Data from the Key Informant Interview were used to triangulate those collected at the household and community levels.

All these processes were undertaken in line with the ethics of conducting empirical studies in Nigeria. The study was approved by the Ethics and Research Committee of the University of Jos (UJ/ERC/SR/263). Informed consents of participants were obtained while

Table 2
Summary of Selected Respondents who participated in the Survey.

Stratum	Sample Frame			Sample Size		
Goemai	Male	Female	Total	Male	Female	Total
	421	344	765	31	20	51
Ngas	531	433	946	33	18	51
Kwalla	132	700	1002	34	17	51
Tiv	360	239	599	29	22	51
Tarok	287	201	488	30	21	51
(Garkawa/Montol)	302	267	569	32	19	51
Total	2033	2184	4369	189	117	306

Source: Field Data, 2022.

Table 3
Summary of Selected Participants who took Part in Focus Group Discussions and Key Informant Interviews.

Category	Instrument Used	Number	Time
Officials of the Christian Association of Nigeria (CAN)	Discussion Guides	10	9:00am- 10:25 a.m.
Officials of Jama'atu Nasril Islam (IJN)	Discussion Guides	10	11:am-12:32pm
Kuka Traditional Council	Interview Guide	2	9 a.m.-9:45am, 10:00am-11:00am respectively
Department of Agriculture, Shendam LGA	Interview Guide	2	13:00–13:45, 19:00–20:07 respectively
Total	–	24	–

Source: Author's Compilation from Field Data, 2020.

issues of confidentiality and anonymity were adequately considered. To protect the identity of the participants, no data were gathered around participants' personal identity such as name or family name. Again, those who were purposively selected for interviews and FGD were given unique codes labelling from K_1 to K_{24}. Table 4 summarises the issues that were of interest in the research, the data needed, methods and tools used to collect data and the type of analyses that were carried out.

4.4. Validity and reliability issues

To ensure the validity of the items used to collect quantitative data, reliability estimates were carried out to determine the extent to which items in the various subscales in the questionnaire were related to each other [44]. This was done using Cronbach's Alpha since it is the best measure of internal consistency [42,44]. Table 5 shows the estimates obtained for each of the three subscales on the questionnaire. As indicated in Table 5, the Cronbach's alpha reliability coefficients for the subscales ranged from 0.85 to 0.98. These values were considered to be good since they showed that within each subscale, the items had shared covariance and, therefore, fairly measured the same underlying concept. The validity of the Focus Group Discussion and interview guides was also ensured using pre-test and peer review methods. The instruments were first of all shared with senior colleagues in the research field for their review and inputs. They were subsequently pre-tested using six discussants and four key informants before they were used to collect the main data. The aim of the pre-test was to detect any malfunctions in the instruments and recalibrate them before going to the field. No malfunctions were, however, detected so the instruments were considered valid and fit for the study.

4.5. Data analysis

4.5.1. Quantitative analysis

Quantitative data that were collected were analysed using descriptive and inferential statistics. Data around the first objective were analysed using frequencies and percentages to discover trends and patterns about what participants considered as diversification resources. Mean Item Scores (MIS) were used to describe responses of participants on the methods of accessing diversification resources in Kuka which was the second objective of the study. In examining the factors that inform differentiated access to diversification resources, the researcher employed the binary logistic regression model because the outcome variable -Access-was measured using only two indicators where respondents were supposed to indicate either yes or no if they had access to diversification resources. This model was considered the best for this study compared to an Ordinary Least Square regression or multinomial logistic regression which can model scenarios where there are more than two possible discrete outcome measures. The model is represented as

$$Y = \beta_0 + \beta_1 x_1 + \beta_{2x2} + \beta_3 x_3 + \ldots\ldots + \beta_k X_k \ldots + U \quad (1)$$

where Y represents the outcome variable, β_0 represents the intercepts, $\beta_1 \ldots\ldots\ldots \beta_k$ represents the effect on Y by a unit increase in x; k represents total number of explanatory variables and u margin of error. The model is specified empirically in this study as follows

Table 4
Summary of data collection and analysis.

Issues	Data Needed	Data Collection Method/Tools	Type of Analysis
Social and relational mechanisms of access among smallholder farmers	Evidence of how social and relational mechanisms inform differentiated access in agrarian communities	Literature review	Content analysis
Diversification resources	Various resources needed for diversification processes among smallholder farmers	Questionnaires, Focus Group Discussions and Key informant Interviews	Descriptive analysis using the SPSS software version 26.0
Methods of accessing diversification resources	Various means through which smallholders are able to get access to the resources they need for diversification	Questionnaires, Focus Group Discussions and Key informant Interviews	Mean Item Scores (MIS) using the SPSS software version 26.0 and qualitative coding using NVivo
Factors informing differentiated access to diversification resources	Harnessing or hindering factors of access to diversification resources	Questionnaires, Focus Group Discussions and Key informant Interviews	Binary logistic regression analysis using the SPSS software version 26.0

Source: Author's Compilation, 2022.

Table 5
Reliability statistics.

Subscale	No. of Observed Items	No. of Retained Items	Alpha after Refinery
Access to Diversification Resources	9	9	0.96
Diversification Resources	9	8	0.98
Methods of Accessing Diversification Resources	10	9	0.85
Factors Informing Differentiated Access to Diversification Resources	10	8	0.94

Source: Field Data, 2022.

$$SMAC = \beta_{0+} \beta_1 \text{ Age} + \beta_2 \text{ GENDR} + \beta_3 \text{ SFLED} + \beta_4 \text{ SFST} + \beta_5 \text{ SMEG} + \beta_6 \text{ SFHR} + \beta_7 \text{ ECST} + \beta_8 \text{ SHFSC} + U \quad (2)$$

The definition of the variables are presented in Table 6.

4.5.2. Qualitative analysis

Qualitative data that were gathered for the study were analysed using inductive thematic analysis. The thematic approach allowed for a systematic structuring of responses into related and easily identifiable patterns that helped in answering the research questions. The results of the FGD and the interviews were transcribed into text with the help of the research assistance. The transcript was presented to three independent persons who were very competent in the Hausa language to read and validate the transcription. The transcribed text was read severally by the researcher for text familiarisation. The researcher then identified recurrent themes and developed them into easily identifiable codes. These codes were further developed into subthemes which were later organised into main themes as indicated in Table 7.

5. Results

5.1. Participants characteristics

The study participants were numbered 330 and out of this there were 192 men constituting 58.2% of the total respondents while females constituted 42.8% of the total participants numbering 138. Participants were of varied age groups with some being as young as 18 years and others as old as 67 years. Participants were largely youthful and constituted a larger part of the active labour force. There

Table 6
Definition of variables Used in the Study.

Variable	Definition	Measurement	Expected Impact
SMAC	Smallholder farmers' access to diversification resources	Yes = 1 No = 2	+
Gender	Sex of Smallholder farmers who access diversification resources	Female = 1 Male = 2	+
Age	Different ages of smallholder farmers who seek access diversification resources	18-29 = 1 30-39 = 2 40-49 = 4 50-59 = 5 60+ = 6	+
SFLED	smallholder farmer's highest level of education	None = 1 Primary = 2 Secondary/Middle School = 3 Tertiary = 4	+
SFSC	Smallholder farmer's social capital	Related to influential persons = 1 Know someone/persons who is/are influential = 2 Have close contact with politicians = 3 Have many friends and relatives = 4 In contact with most community members = 5	+
SMEG	Ethnic group smallholder farmers belong to	Kwalla = 1 Tiv = 2 Goemai = 3 Tarok = 4 Ngas = 5 Garkawa/Montol = 6	+
SFHR	The religion of smallholder farmers	Christianity = 1 Islam = 2 African Traditional Religion = 3	+
ECST	Smallholder farmers economic status	Rich = 1 Poor = 2 Average = 3	+

Source: Author, 2022.

Table 7
Qualitative analysis.

Initial Coding	Axial Coding	Main Themes
• Water • Land • More land • Land rights • Fishing • Education • Employment • Councillor • Politics • Appointment • Shops • Stores • Yam stores • Transportation	• Water for fishing • More land for farm expansion • White-collar jobs • Participation in Politics • Market Space	• The main diversification resources are Water bodies, land, Skills, political offices, market space
• Purchase, • Buying • Leasing • Renting • Gifting • Court • Connection • Social network • Bribery • Birth rights • Natural right • Communal ownership • Inheritance	• Diversification resources are bought • Diversification resources could be leased, rented or even gifted • People can get diversification through social networks • Diversification resources could be obtained through inheritance • Diversification resource could be obtained by belonging to a particular group or family	• The methods through which smallholder farmers obtain resources for diversification are through purchases, gifts, social relationships, authority, birth rights and legal rights
• Ethnicity • Tribe • Indigenes • Religion • Muslim • Christian • Ankwai • Male • Female • Children • Adults • Money • Chief • Elders • Wealth • Education • Political connection • Foreigners • settlers	• Muslims have easier access to resources • Men have easier access to resources • Chiefs can easily access resources • People with money can easily access resources • People with social connection can easily access resources • It is difficult for settlers to access resources • Being a Goemai makes access easier • People from within Plateau State easily access resources • It is difficult for younger people to access land	• Gender, social network, age, ethnicity and religion are the factors informing differentiated access to diversification resources among small holder farmers.

Source: Field Data, 2022.

were 77 participants (23.3%) who were between 18 and 20 years, 78 of them (23.6) were between 28 and 37 years as 59 (17.9%) fell within the age range of 38 and 47. There were 57 (17.3%) and 49 (14.9%) participants who were within the age brackets of 48–57 and 58–67 respectively. All participants were smallholder farmers but cultivated different acreages of land. Majority of the participants (41.8%) cultivated between 4 and 6 acres of land. A good number of them (111) constituting 33.6% of the total participants cultivated 7–9 acres of land and 81 (24.5%) of them cultivated 1–3 acres of land. They also cultivated varied food crops but majority of them 142 (43.0%) prioritised yam cultivation as their major food crop while integrating it with other cereals like maize and sorghum. Some (93) representing 28.2% of the participants cultivated groundnuts as their major food crops while others (27.0%) were mainly into rice farming. All farmers, however, were not restricted to the cultivation of a single food crop but prioritised one over the others.

5.2. Diversification resources

The first objective that guided the study was to identify the resources used for diversification process by smallholder farmers in Kuka. The analysis of the data collected to achieve this objective indicated that persistent incidences of violent conflicts couple with changing climatic conditions pushed farmers to devise different ways of surviving these social and ecological stressors. Participants indicated the various resources that they used for diversification (Table 8). There were 97 of them, constituting 27.6% of the total participants who mentioned active politics as one of the diversification resources. This means that apart from cultivating the fields, famers could become actively involved in local politics as a means of livelihood. A good number of them (27.6%) also mentioned market space as one of the diversification resources. This implies that farmers may engage in trading as an adaptive strategy to be able to cope with the shocks that are accessioned by disruptions in farming activities. Some of the participants (23.3%) also indicated that gaining access to employment opportunities in the public sector was one of the major diversification means in the area. This means that farmers or their relatives would need to get some skills apart from farming so that they could be employed in the public sector since farming activities are becoming increasingly risk ridden. Water bodies were also mentioned by some of participants (29.4%) as one of the resources needed for diversification. Aquatic foods are highly consumed in the district and farmers who want to diversify their livelihoods may engage in the harvesting and selling of these aquatic foods as a means of diversification.

5.3. Methods of accessing resources for diversification

One of the aims of the study was to identify the methods used in accessing diversification resources by smallholder farmers in Kuka. The quantitative data that was gathered to answer this question was analysed using Mean Item Scores (MIS). Six subscales were generated to gather data around the construct (Table 9). The mean item scores were obtained by dividing the mean of each subscale to the number of items in each subscale. Table 8 shows the various methods that are used in accessing diversification resources and their coded scores on each subscale of all the 306 participants who responded to the questionnaire. The mean scores were between 3.14 and 4.26. This shows that for all subscales, participants indicated that the methods were used "regularly" or "sometimes" in accessing diversification resources because they were meant to indicate if the methods were used "all the time," "regularly", "sometimes" or "never at all" in accessing diversification resources in Kuka. The relatively small standard deviation indicated that variability among smallholder farmers on the methods of accessing diversification resources in Kuka were quite minimal. The mean item score for the subscale of 'legal rights' was the lowest among the five subscales (3.15) indicating that legal rights were 'sometimes' used or at best 'regularly' used to acquire diversification resources among smallholder farmers in Kuka. The mean item score for "birth rights" was 3.64 approximated to 4.0 and shows that birth rights were 'regularly' used to gain access to diversification resources. Gift and use of authority had item scores of 3.77 and 3.98 respectively which when approximated to two decimal places gave a value of 4. This means that diversification resources were regularly acquired through gifts and the use of traditional authority respectively. Purchasing had the highest item score of 4.26. This means that diversification resources were mostly acquired through purchases by smallholder farmers. What all these imply is that access to diversification resources were gotten largely through purchases but could also be gotten through gifts, connection to traditional authorities, birth rights and legal rights in that order. This was corroborated by key informant K_3 as this:

> "When we first came here land was free, the first to clear and cultivate a piece of land owned the land. Due to continuous conflicts, we had to run for our lives, when we return, things had completely changed. Land had been commoditised, you either pay for it or you leave it. If you want a piece of land, you have to pay for it, if you are lucky, the traditional authority gives you a piece or a friend but gifts are rare these days particularly when it comes to land." (Interview with a 47-year old male farmer at Nzam-Kuka, 2022)

Another Key informant: K_7 also explained

> "Farming is no longer promising. It is either you are chased away after harvest, your harvest gets burnt, or you are prevented from accessing your farm by the fear of being killed. We now have to find other things doing in addition to farming but it is hard getting access to the means of engaging in other livelihood activities because everything has been hijacked by the 'owners of the land'. If you need more land, you pay, water to fish, you pay, jobs you pay, to be allowed to contest an elected position, you pay, my brother everything now is about money" (Interview with a 36 year old male farmer at Marke-Kuka, 2022)

This responses indicate that while there are available resources for diversification, smallholder farmers who have more purchasing

Table 8
Diversification resources.

Variable	Frequency	Percentage
Market Space	91	27.6
Employment in the Public sector	77	23.3
Water Bodies	65	19.7
Active Politics	97	29.4
Total	330	100

Source: Field Data, 2022.

Table 9
Methods of accessing diversification resources by smallholder farmers in Kuka-Jiban.

Sub-scales	Mean	Standard Deviation
Purchases	4.26	0.56
Use of Authority	3.98	0.60
Gifts	3.77	0.63
Birth Rights	3.64	0.67
Legal Rights	3.14	0.53

Source: Author's Compilation from Field Data, 2022.

power could easily access these resources and others may acquire them base on the fact that they were born in that community and have right to such diversification resources through communal ownership or inheritance. Some Smallholders too access these diversification resources through their relationship with the traditional authority in the district or the district officials. Few who are informed about their legal rights too may insist on accessing diversification resources through the legally provided means and a few others are given these as gifts by friends and relatives. The analyses, therefore, indicate that the cultural and social practices of access in Kuka take precedence over formal or legal rules of access.

5.4. Determinants of differentiated access to diversification resources by smallholder farmers

A binary logistic model was employed to measure the factors that inform differentiated access to diversification resources by smallholder farmers. The results of the model as shown in Table 10 indicate that all the factors were statistically significant in explaining access to diversification resources. At a confidence level of 95%: gender, age, level of education, social capital, ethnicity, religion and economic status were found to be significant in determining smallholder farmers' access to diversification resources.

The results in Table 10 indicate that F = 1.00, which means that the model used was suitable for the analysis. R^2 was 0.739, indicating that the independent variables explained 74% of the total variability in the dependent variable. At 95% confidence level, age was strongly associated with access to diversification resources (Ratio = 4.53, P = 0.00 < 0.05) and middle-aged individuals were 17.9% more likely to access diversification resources than younger or older persons. Gender (GENDR) was also found to be significant in explaining access (Ratio = 8.38, P = 0.00 < 0.05) and that men were 83.8% more likely to access diversification resources than women. Smallholder farmers' level of education (SFLED) was however not significant in explaining access to diversification resources (Ratio = 7.54, P = 0.56 > 0.05). A strong association was, however, found between farmers' social capital (SHFSC) and access to diversification resources (Ratio = 8.53, P = 0.00 < 0.05) and that those who were close to the chiefs were 55.2% more likely to have

Table 10
Factors determining access to diversification resources among smallholder farmers in Kuka.

Variable	Odds Ratio	df	Sign.
Age	45.251	4	.000
Age(1)	.006	1	.937
Age(2)	4.138	1	.042
Age(3)	17.963	1	.000
Age(4)	7.373	1	.007
GNDR(1)	83.835	1	.000
SFLED	7.546	3	.056
SFLED(1)	2.546	1	.111
SFLED(2)	3.609	1	.057
SFLED(3)	1.253	1	.263
SHFSC	85.308	3	.000
SHFSC(1)	55.259	1	.000
SHFSC(2)	49.558	1	.000
SHFSC(3)	3.522	1	.061
SMEG	159.312	5	.000
SMEG(1)	86.707	1	.000
SMEG(2)	2.236	1	.135
SMEG(3)	56.768	1	.000
SMEG(4)	18.099	1	.000
SMEG(5)	24.313	1	.000
SMHR	68.945	2	.000
SMHR(1)	27.325	1	.000
SMHR(2)	56.239	1	.000
ECST	17.974	2	.000
ECST(1)	16.761	1	.000
ECST(2)	9.380	1	.002
F = 1.00			
Pseudo R^2 = 0.739			

Source: Field Data, 2022.

access to diversification resources than others. Smallholder farmers' ethnic group (SHFEG) also played a significant role in determining access (Ratio = 15.9, P = 0.00 < 0.05) and those belonging to the Kwalla ethnic group were 86.7% more likely to access diversification resources than other ethnic groups in Kuka. Smallholder farmers' religion (SMHR) was also significant in determining access to diversification resources (Ratio = 6.89, P = 0.00) and that Muslims had 65.2% more chances of accessing diversification resources compared to Christians or traditionalists. Economic status of smallholder farmers (ECST) was equally significant in determining access to diversification resources (Ratio = 18.0, P = 0.00) and those who were considered rich were 16.7% more likely to access diversification resources compared to those who were considered poor or middle class.

The analysis of the qualitative data as shown in Table 7 also indicates that age, gender, ethnicity, social network, economic status and religion came up strongly during the interviews and FGD as determinants of smallholder farmers' access to diversification resources while age was rarely mentioned. A key informant K_5 explained:

> "It is quite true that one's sex determines how much access one can have to diversification resources. We are a patriarchal society and role differentiation is still very much a part of our culture. Women are expected to play different roles from men. Women therefore may not have the same need for diversification resources as do men." (Interview with a 45-year old female farmer in Kuka, 2022)

This means that the gender of a smallholder farmer determines how much access the farmer could have to diversification resources. Another key informant K_4 also explained as this:

> "People who are respected in the society may have leverages in accessing resources in the community. For instance you cannot deny a chief access to market space. Besides this, issues of ethnicity and religion are very important to this community. The in-group out-group dichotomy is very much pronounced here so people in authority are more likely to favour their in-group members in resource distribution than they will do to out-group members. Religion and ethnicity are, therefore, very key determinants of farmers' access to diversification resources" (Interview with a 36-year old female farmer, Kuka, 2022)

6. Discussion

The study found that market space, public sector employment opportunities, water bodies and political offices were the major diversification resources that were available for smallholder farmers in Kuka. This is consistent with the finding of Marty et al. [12] when they investigated diversification processes of massaai farmers in Southern Kenya. This finding implies that farmers needed market spaces to erect shops or construct tents that will enable them engage in trading activities either as middle persons or direct dealers of mainly agricultural products. This was particularly significant to them because trading in farm produce was yielding huge proceeds for those who engaged in it. In the yam market for instance, people erected tents to either store their yams or rent the space out to multiple users who wanted to store their yams or offer them for sale. Marty et al. [12] found a similar situation among the Massaai farmers of Southern Kenya. In such situations, anytime a buyer purchases produce from one's tent, the owners of the tents are entitled to a commission of 1% of the total sales. It was revealed that proceeds from renting tents have become very significant and are improving farmers' livelihood. Unfortunately not everyone who wanted to venture into this source of livelihood was given access to the market space.

It was also revealed that water bodies were equally becoming very significant resources for diversification as smallholder farmers were beginning to combine crop production and fishing at the same time. This means that more and more access was needed to water bodies for fishing purposes. Again, not everyone could access these water bodies because permissions are required to be obtained from *Long-Ha'am* (chief of water bodies) who reports to the *Longjiban* (Chief of Kuka). While there were formal rules of accessing these, sometimes social relationships, money and ethnicity determined access. This finding is consistent with the finding of Wood et al. [32] when they investigated diversification processes among farmers in Ghana and found that water bodies, forest and mineral deposits were becoming more and more significant diversification resources for smallholder farmers in the Ashanti Region. Turner and Ayantunde [26] also found that farmers were continuously engaging in trading and fishing as household coping strategies in West Africa due to variations in agricultural production.

Employment into public the sector was found to be another means of diversification as Smallholder farmers were acquiring technical, vocational and literary skills to seek employment into the public sector or were encouraging their children or relatives to do so. This is consistent with the findings of Turner et al. [11] when they investigated farmers' adaptation strategies in Ghana and found that smallholder farmers were seeking white collar jobs as a form of diversification. This study also found that farmers were becoming more politically active as a form of diversification; farmers were looking for opportunities in the political space and wanted to contest and win elections to represent their wards at the Local Legislature and earn salaries as elected representatives. What all this means is that the key diversification resources in Kuka for smallholder farmers are market space, water bodies, public sector employment opportunities and election into political offices, Marty et al. [12] also found that agro-pastoralists in Southern Kenya diversified by cultivating variety of crops, gaining education and taking up employments and also engaging in active politics as a form of diversification. Groenewald and Van Den Berg [46] however found that farmers in Mexico, rather than change to other sectors, intensified the cultivation of maize as an adaptive strategy. The geographical differential between this study and that of Groenewald and Van Den Berg [45] probably accounts for the difference in the findings.

The study further found that smallholder farmers use various methods such as purchasing, connections to traditional authority, birth rights and legal rights to access diversification resources. This is consistent with the findings of Martel et al. [12] when they found that access to land and market spaces was obtained mainly through leasehold, rents or outright purchases. Mwena et al. [46] also found

that smallholder farmers who were connected to influential persons such as chiefs, family heads, clan heads and members of the traditional council did obtain land based on their relationships with such persons.

The Traditional Authorities control and manage the lands in Kuka even though the 1978 Decree vested all lands in each federating state in the hands of the governors of the states. People who are born into families may exercise ownership on the lands that belong to their families. This means that access to land; water bodies and market space could be obtained by birth rights through inheritance. Gaining opportunities for employment into the public sector was also largely through connections with the appointing authorities or traditional authorities even though the rule prescribed that recruitment should be based on merits. This is consistent with the Theory of Access as argued by Ribot and Peluso [17] that social and cultural factors determine access in specific contexts. What all these imply is that diversification resources are in high demand due to the risks associated with crop production. Smallholder farmers are either shifting away from farming or are complementing farming with other economic activities. This diversification process takes the form of trading, fishing, gaining employment and getting involved in active politics. Accessing diversification resources is therefore by means of purchases, gifts, birth rights, legal rights or accessing through social network with distributing authorities. This is consistent with the finding of Marty et al. [12] who found that agro-pastoralists Maasais in Southern Kenya used similar methods in accessing diversification resources. Mwema et al. [46] also found that smallholder farmers purchased, leased and were gifted lands and other resources for diversification in Kenya. Nyantakyi-Frimpong and Bezner Kerr [20], however, found that smallholder farmers in Northern Ghana rather migrated from the North to the South to pick up various jobs rather than purchase or rent market spaces for diversification in the north because they could not afford any. This means that diversification among smallholder farmers does not necessarily occur within their environment but could also happen outside smallholders' original locations.

Finally, the study found that smallholder farmers in Kuka had differentiated access to diversification resources and this was informed by gender, age, social capital, ethnicity, religion and economic status. This is consistent with the tenet of the Theory of Access which argues that social and relational factors influence access to community resources. In kuka, it was revealed that more males than females were likely to access diversification resources and that younger and older people were less likely to get access to some diversification resources than middle-aged persons. One's social network and economic status also determined access. Muslims were more likely to get access to diversification resources than Christians. While everyone respected the Goemai ethnic group as the owners of the land, ethnic groups that were of Plateau origin such as Kwalla were prioritised in resource distribution than those who emigrated from neighbouring states. The researcher observed that while immigrant smallholder farmers obtained land largely through leasehold or gifts from friends or traditional authorities, commercial farmers obtained lands through purchases and at some point, could buy off the lands that were being cultivated by smallholder farmers if such smallholder farmers were not strongly connected to the traditional authority or any influential persons. This is similar to the argument advanced by Ribot and Peluso [17] in their Theory of Access that access is determine by a number of factors including political, economic and cultural. Marty et al. [12] also found that social relations, gender and education intersected to determine access to diversification resources among Masaai pastoralists in Olkiramatian. Cultural-structural mechanisms and social identities such as role differentiation, social position, ethnicity and religion influence resource distribution in agrarian communities [46].

7. Limitations of the study

While the study developed rigorous mythological processes to conduct the study, it was limited in many ways. Theoretically, the study was limited to understanding the social and relational mechanisms of access; other studies could broaden this to include legal and even moral determinants of access to diversification resources. Again, this study was centred on diversification resources; other studies could expand this scope to include factors that inform differentiated access to community resources as a whole. Geographically, the study was limited to Kuka which is a small community in Shendam Local Government of Plateau State thus limiting the generalizability of the finding. Other researchers could investigate the phenomenon at a larger level by considering the entire local government or the entire state of Plateau so as to ensure higher levels of generalizability.

8. Conclusion and implication of the study

In the face of prolonged conflict and an increasingly unstable climate, crop production has dwindled and farmers are becoming increasingly vulnerable to food insecurity and difficult economic conditions. To avoid these situations, smallholder farmers are seeking alternative livelihoods to farming, as agriculture is severely affected by conflict and climate change. Farmers are now moving into agribusiness, trade, service provision, fishing and active politics in other to survive any shocks to food supply or livelihoods. However, this process is often affected by social and relational factors that hinder or constrain smallholder farmers' access to diversification resources, resulting in differentiated capacities of smallholders in the diversification process, creating and recreating vulnerabilities and inequalities at higher levels. As long as these social and relational determinants of access to resources are not taken into account, some farmers will be left worse off in the diversification processes.

Theoretically, this study nuances the debate on smallholder diversification processes by including social and relational determinants of access to diversification resources. The results also nuance the debate on farmers' diversification processes by including sociological processes of resource distribution, especially in rural settings where issues of social identities are still very pronounced and significant in accessing resources. In practical terms, the results of the study could be used as a basis for the development of strategies and programmes by local government authorities to address social and relational mechanisms such as gender norms, heteropatriachy, age, clientelism, economic status, ethnicity and religion that seek to prevent others from accessing diversification resources. This study could also encourage the people of Kuka to work with their traditional authorities, religious leaders and opinion leaders from different

ethnic groups to develop resource distribution formulas that are neutral, non-discriminatory and equity-sensitive so that farmers can have equal access to diversification resources. Finally, the results of the study could contribute to the development of inter-religious and inter-ethnic dialogue that would allow the people of Kuka to socialise and exchange ideas, cultures and norms and, in so doing, relate to people of all social identities on an equal level, thus eliminating the social differences that often cause discrimination in resource distribution.

Author contribution statement

Tobias Tseer: Conceived and designed the experiments; Performed the experiments; Analysed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Data availability statement

Data will be made available on request.

Additional information

No additional information is available for this paper.

Declaration of competing interest

The author declare that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

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