Journal of the Geographical Association of Tanzania, Vol. 43, No. 1: 110–128

Effectiveness of Youth Engagement Strategies For Climate Change and Sustainable Development Agenda in Monduli District

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Abstract

This paper employed a triangulation of methods in assessing the effectiveness of youth engagement strategies in climate change agenda and sustainable development within Naitolia village, in Monduli district Tanzania. Non-probability sampling techniques were used to determine a total of 147 youthful respondents aged between 15 and 35 years from Ormang'wai and Engusero sub-villages. Qualitative data were collected using FGDs, in-depth interviews and direct field observations; while quantitative data were captured through administered questionnaires. The results reveal that 81.0% of the respondents knew of the explicit and implicit engagement strategies in the area. The binary logistic regression model showed that mixed livelihoods and education systems significantly influenced the respondents' awareness and engagement trends in priority development goals. Most engagement strategies embraced a combination of explicit and implicit strategies to enhance livelihood resilience. However, implicit strategic interventions were popular, while explicit strategies were considered ineffective and tokenistic due to mismatched execution of misaligned 'one-size-fits-all' policies. In spite of increasing awareness on climate change, existing youth engagement strategies are still misplaced, tokenistic and ineffective in guaranteeing sustainable development in a rapidly changing climate. The paper recommends proper mapping and inclusion of key stakeholders to raise public awareness and resource harmonization for enhanced youth engagement in climate change and sustainable development. Specifically, it recommends concrete paradigm shifts in governance, education systems, skills development pathways and financial accessibility to create enabling environments for effective youth engagement and empowerment in climate change, and beyond priority development goals.

Keywords: *climate change, sustainable development, youth engagement, implicit strategies, explicit strategies, Naitolia.*

1. Introduction

As a concept, climate change relates to long-term alterations of weather patterns and environmental conditions due to increasing global surface temperatures. The UNFCCC (2022) perceives climate change as a significant fluctuation of global surface temperatures associated with anthropogenic influences at a specified time. Additionally, the IPCC (2021) links climate

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 ▪ https://doi.org/10.56279/jgat.v43i1.270

change directly with changes in climatic properties recorded over decades due to anthropogenic and natural variability. The latest findings from scientific studies strongly link the consequences of unsustainable human activities with increasing global warming and exacerbated negative impacts (Ramanujan, 2021; IPCC, 2021) that threaten the survival of the poor and marginalised groups in rural livelihoods.

Climate change began as a scientific and environmental concern, and later became a global debate and a key defining factor in equity and socio-economic development policy agenda (Burleson, 2015; IPCC, 2021). Moreover, perceived knowledge and definitions of climate change lack the incorporation of local knowledge and experiences. Hence, most of it has been irrelevant and misinformed about the climate change agenda (MacKay et al., 2020). However, the current global climate change agenda enshrined in the Paris Agreement (2015) and goal number 13 of the Agenda 2030 (SDGs, 2015) has influenced the promotion of local climate actions and stakeholders' mapping to enhance resilience (IPCC, 2021). In Africa, Agenda 2063 of the AU (2015) further sets forth the climate change agenda. In Tanzania, the climate change agenda is designated by relevant policy initiatives ascribed to environmental and various sector policies (NCCRS, 2021). According to IPCC (2021), climate change mitigation strategies refer to interventions to limit and remove greenhouse gases from the atmosphere. Unlike mitigation, climate change adaptation strategies are preferable in developing countries as they combine with socio-economic activities that enhance livelihood resilience.

The sustainable development agenda dates back to the Brundtland Report (1987)—*Our Common Future*—which clearly describes sustainable development as balancing the significant needs of the present and future generations (Narksompong et al., 2015). The adoption of the sustainable development agenda received global acceptance in 1992 through the United Nations Agenda 21, and recently through the Agenda 2030, which comprise of 17 goals to mobilise global partnerships to end poverty and ensure environmental protection, peace and prosperity (UN, 2020). Africa's Agenda 2063 further extends the 17 global development goals to guarantee locally relevant socio-economic and environmental dimensions of sustainable development (Nkrumah, 2021).

The UN (2020) defines youth as persons between 15 and 24 years old. However, existing literature reveals varying concepts and definitions of youth (URT, 2007; Narksompong et al., 2015; MacKay et al., 2020), implying little consensus on best practices and overall youth engagement landscapes thereof (O'Brien et al., 2018; Ho et al., 2015). Narratively, youth is portrayed as a unique stage in human development subjected to diverse challenges and cascading influences (O'Brien et al., 2018). In Africa, specifically in Tanzania,

youth range between 15 and 35 years old (AU, 2019; URT, 2007). Despite mismatched perceptions of age, existing socio-economic strategies acknowledge youth as an energetic, well-informed, knowledgeable, skilled and innovative workforce (Narksompong et al., 2015).

Engagement strategies are described as response measures taken to enhance resilience and socio-economic development (Narksompong et al., 2025). Owing to heavy reliance on diminishing livelihood assets, and increased vulnerability due to extreme weather conditions, the climate change agenda becomes relevant for rural livelihoods and the proper functioning of socio-economic systems and development (O'Brien et al., 2018; IPCC, 2021). Therefore, this study describes engagement strategies in relation to relevant livelihood activities that enhance coping mechanisms, adaptation and mitigation responses (Nkrumah, 2021).

Furthermore, youth engagement entails any inclusion or partnerships with young people in socio-economic interventions as critical stakeholders, vulnerable victims and change agents (Narksompong et al., 2015). Despite mismatched perceptions of the age range, most socio-economic strategies acknowledge contributions from the youth (MacKay et al., 2020). An effective youth engagement strategy is expected to prepare the youth to be inspired, well-informed, empowered, responsible citizens and active drivers of changes relevant to enhancing the climate change agenda (Makondo et al., 2018; Samaddar et al., 2021). However, most strategies exert mismatched impacts owing to the adoption of irrelevant socio-economic contexts (O'Brien et al., 2018; MacKay et al., 2020).

As a people in transition, the youth presents an unlimited influence on the climate change agenda and sustainable development (AU, 2019; Narksompong et al., 2015) owing to their increasing awareness and access to digital information (Ojala et al., 2017) of the undesirable impacts of climate change (IPCC, 2019). However, O'Brien et al. (2018) and Bandura et al. (2019) argue that mismatched and misplaced strategies deliberately promote youth exclusion, prolonged exposure, and vulnerability amid ongoing climate change scenarios. As such, sustained youth exclusion is thought to perpetuate a lack of confidence, misinformation, mistrust, inconsistency, inaction, dissent, resentment and anxiety amongst them (Nkrumah, 2020). These same factors also influence vulnerability and misinformation on engagement strategies in climate change and sustainable development among the youth (O'Brien et al., 2021; Ho, 2015).

Furthermore, the irrelevance of most top-down youth interventions has derided bottom-up approaches and indigenous knowledge easily accessible to most youth (O'Brien et al., 2018). Rao et al. (2016) and Mackay et al. (2020) have noted youth's growing anxiety, dissent, mistrust and passiveness on climate change and sustainable development agendas. This paper answers critical

questions on the awareness and effectiveness of strategies for rural youth engagement in these agendas using the Maasai-dominated agro-pastoral community within Naitolia village, in Monduli, Tanzania.

2. Conceptualization of the Research Gap

Youth engagement in the climate change agenda and sustainable development in rural areas has attracted low research interest (Solar et al., 2023). As such, the role of rural youth in strategic interventions that promote low-carbon development pathways and climate resilience is insignificant. Previous studies—such as Narksompong et al. (2015), Nkrumah (2021), O'Brien et al. (2015) and Zimba et al. (2021)—portrayed youth as passive stakeholders and mere project beneficiaries; instead of being active leaders, promoters, active agents and powerful actors to influence low-carbon development pathways and a climate resilient future. According to Simons (2022), vulnerable and marginalised rural youth have lacked effective strategies to influence engagement in climate change agenda and sustainable development in the face of evident adverse impacts of climate change. The role of local youth in climate change over time has also received insignificant investigation (Barford et al., 2021; Simons, 2022). Additionally, the role of policy experts, decision makers, practitioners and the general public in promoting the inclusion of local youth in the climate change agenda and sustainable development has also lacked critical investigations.

According to Ho et al. (2015 and Zimba et al. (2021), existing youth engagement strategies rely on diverse stakeholders' interventions. However, Kosciulek (2022) and Samaddar et al. (2021) observed that top-down strategies have relied on governments (public); while bottom-up strategies have relied on individuals, families and the community. Nkrumah (2021) and O'Brien et al. (2020) also observed that engagement strategies by the private sector have demonstrated both top-down and bottom-up characteristics. Most youth engagement options include philanthropy (charity), volunteering, politics, community service, economic activities, fine art, education systems, skills development pathways, employment and innovation (Nkrumah, 2021). Nevertheless, O'Brien et al. (2015) and Zimba et al. (2021) highlighted that youth engagement has experienced different socio-economic challenges influenced by natural risks. As such, the youth have faced systematic marginalisation, under-representation and exclusion; with limited capacities to influence the formulation and implementation of strategies. Also, Nkrumah (2021) has portrayed local youth as passive recipients and mere beneficiaries of policies and interventions (tokenism), rather than key strategic stakeholders (Kosciulek, 2020). On their part, Narksompong et al. (2015) and O'Brien et al. (2018) have observed the inevitable quest for a paradigm shift to facilitate and embrace effective youth-based strategies.

Additionally, Ho et al. (2015) noted that emergent engagement strategies still face several crosscutting and context-specific challenges that slow down intentions to enhance livelihood resilience and sustainable development. Kosciulek (2020) depicted that diverse variables such as biophysical attributes, exposure to disaster risks and climatic changes, historical backgrounds, socio-economic divides, democracy and local politics, education, technology and skills development pathways, as well as attitudes: all these often determine the role of youth in the climate change agenda and sustainable development. Supporting this, Barreda (2018), Nkrumah (2021) and O'Brien et al. (2018) also highlighted the role of global climate strategies in denouncing climate misinformation and promoting efficient socio-economic development.

Furthermore, Kosciulek (2020) and O'Brien et al. (2018) also postulated that the fate of young people rely on engagement strategies that directly link and influence development goals and climate change actions. Even though Rupia (2020), Kitasho (2020) and IPCC (2021) highlighted evidence of youth engagement in sustainable development, it remained unclear how local youth engaged with climate change; and whether the engagement in sustainable development was for all the 17 goals (Barreda, 2018). To bridge the identified gap, the main objective of this paper is to assess the effectiveness of youth engagement strategies in the climate change and sustainable development agenda. The guiding questions were: Are youth aware of strategic engagement in climate change and sustainable development agendas? Are existing engagement strategies effective in enhancing the role of youth in climate change and sustainable development agendas? Bridging the identified gap could be critical to eliciting anxiety and effectively implementing future youth engagement strategies in climate change and sustainable development agendas (Idowu et al., 2019; Mabhuye et al., 2021; Mackay et al., 2020).

3. Contexts of the Study Area

3.1 Description of the Study Area

This study was conducted at Naitolia village in Mswakini ward, about 75km from the Monduli district headquarters in the Arusha region, Tanzania. The village lies within the prominent Randilen Wildlife Management Area (RWMA) at latitudes -3.60246 and longitudes 36.09109 (Pearson et al., 2017). Administratively, Naitolia village consists of Ormang'wai and Engusero sub-villages, covering about 178km^2 along the Arusha–Babati–Karatu highway (Follows, 2018; TPP, 2020).

3.2 Demographic and Socio-economic Characteristics

The human population at the Naitolia village was about 1,800 (TPP, 2020) at the time of the study in June 2021. The Maasai tribe dominated the study area, with patriarchy, pastoralism and part-time crop farming as the mainstay socio-

economic activities that exclusively relied on climate-sensitive natural resources (Pearson et al., 2017). Being based on the traditional pastoralism economy, meat and milk constituted the leading staple food. However, due to increased climatic changes and immigration, most native households have slowly turned to agro-pastoralism. Rain-fed crop farming for maize and leguminous varieties such as chickpeas *(dengu)*, beans, black beans *(ngwala)* and soybeans (TPP, 2020) is undertaken on a part-time basis. Also, the residents engage in subsistence beekeeping projects, the sale of traditional handicrafts, and motorcycle transportation (*bodaboda*), among other mixed livelihood activities (TPP, 2020; Follows; 2018). On the other hand, age-based systems and initiation rites—among other firmly held traditional norms, culture and knowledge—can determine youth's stake in socio-economic activities (Kitasho, 2020).

3.3 Biophysical Resources

The study area exhibits a semi-arid Maasai steppe landscape with a bimodal rainfall pattern (TPP, 2020; Follows, 2018). The typical annual rainfall of about 400mm–800mm, and the annual temperature of 23ºC–30ºC, are suitable for drought-tolerant plant species and migrating wildlife (Pearson et al., 2017). Generally, the study area experiences unpredictable rainfall, prolonged droughts, water and food insecurities, and human-wildlife conflicts intensified by ongoing climate change crises (TPP, 2020).

3.4 Justification of the Study Area

Compared to other villages in the district, Naitolia village was prioritised for the study because it falls under the Tanzania Partnership Program (TPP); alongside tourism value-chains and diverse stakeholder interventions aimed at enhancing climate resilience and sustainable development (TPP, 2020; Pearson et al*.,* 2017). Kitasho (2020) and NTRI (2019) opine that diverse stakeholder interventions, mixed livelihood activities, exposure to frequent human-wildlife conflicts, and perceived vulnerability to climate change: all tend to shape awareness, experiences, local knowledge, ambitions and strategies to embrace climate change and sustainable development agendas. As such, the research projected the suitability of local respondents within the prescribed age-set system for the study.

4. Methodology

4.1 Research Design

This study employed a mixed research design to assess the effectiveness of youth engagement strategies in climate change and sustainable development agendas at Naitolia village in Monduli district (Bryman et al., 2021; Dawadi et al., 2021; Creswell et al., 2020). The mixed design allowed an extensive understanding of engagement trends and promoted the voices of marginalised local youth (Barreda, 2018; Ahmadi et al., 2022; Creswell et al., 2020). Quantitative respondent questionnaires were used to collect data on the influence of youth

engagement strategies (independent variables) on climate change. and sustainable development agendas (dependent variables). Concurrently, trends of youth engagement strategies in climate change and sustainable development agendas were also explored using qualitative data collection tools administered to respondents at the study site. Furthermore, triangulation was used to merge and cross-check the validity of analyses and presentation of findings from quantitative and qualitative approaches (Bryman et al., 2018; Dawadi et al., 2021). This mixed approach resulted in a holistic comprehension of cross-cutting youth-related perspectives, while offsetting weaknesses and gaining strength associated with individual research approaches (Creswell et al., 2020). Pragmatically, the literature review revealed less application of a mixed research design as a standalone option in similar contexts; hence, it was the preferred design (Kitasho, 2020; Barreda, 2018).

4.2 Sampling Methods and Sample Size

The current study employed purposive non-probability techniques to sample out Naitolia village from other villages in Tanzania, Arusha region, Monduli district and Mswakwini ward. Dominated by the Maasai ethnicity, the study area exhibited patriarchy, age-set systems, agro-pastoral livelihoods, climate vulnerability, and diverse stakeholder interventions. Only youth aged between 15 and 35 (URT, 2007) from the village were targeted for this study. As researchers, we relied on quota and purposive non-probability sampling techniques (Bryman et al., 2018) to obtain a sample size of 147 youth respondents through active engagement in various stakeholder interventions, membership in youth groups, and contrasting socio-economic characteristics that existed during the research. The use of non-probability sampling was suitable to recruit respondents due to the lack of the total population of youth in the study area to determine a sampling frame (Bryman et al., 20218). All 147 respondents successfully participated in the questionnaire phase. Convenience and snowball sampling were used to further isolate 45 apt respondents for focus group discussions (FGDs), and 12 respondents for in-depth interviews.

4.3 Data Types, Sources and Collection

Both primary and secondary data were collected for this study. Primary data involved information on socio-economic and demographic variables, awareness levels, perceptions, experiences, and skills; as well as prospects, worries, responses, measures and contributions relevant to the engagement of youth in the climate change agenda and sustainable development journey (Barreda, 2018; Bryman et al., 2021; Creswell et al., 2020). Semi-structured questionnaires, with open and close-ended questions, were administered to 147 youthful men and women respondents during weekly group meetings at the village offices to gather specific responses on demographic characteristics,

socio-economic aspects, anxiety, perceptions and experiences on existing strategies for youth engagement in climate change and sustainable development. We also conducted three FGDs with 45 respondents and undertook informant interviews with 12 respondents to saturation levels at the village offices. Semi-structured questions were asked to reveal respondents' awareness of climate change meaning, causes, effects, prospects, anxiety and strategic measures to enhance climate resilience and sustainable development. Awareness of climate change and sustainable development was gauged based on respondents' knowledge, attitudes, behaviours, beliefs, experiences, anxieties and prospects (Barreda, 2018). Direct field observation—which involved active listening and watching additional respondents' behaviours and characteristics—was also sustained throughout the primary data collection process (Creswell et al., 2020).

Online searches and desk reviews of the most recent and trustworthy published and unpublished sources (Bryman et al., 2018) yielded secondary data to meet the study objectives. Only suitable secondary data from relevant government agencies, grassroots stakeholders and experts were prioritised. Typical secondary data on local governance, biophysical variables, socio-economic and demographic characteristics, youth engagement strategies, stakeholders mapping and global interventions provided helpful guidance to the study.

4.4 Data Analysis

Qualitative and quantitative data were analysed separately. Thematic content analysis was used to analyse qualitative data from FGDs, in-depth interviews and direct observations (Creswell et al., 2020; Ahmadi et al., 2022). The thematic content analysis allowed the researchers to interact deeply and familiarise themselves with collected qualitative data (Creswell et al., 2020). The IBM SPSS (Statistics) software, version 20, was used to perform statistical analysis for categorical datasets from respondent questionnaires (Kitasho, 2020; Capsticka et al., 2022). Descriptive statistics provided the summary and simplification of primary data for interpretation and discussion. The binary logistic regression model analysed the awareness of strategic youth engagement in climate change and sustainable development agendas (Barreda, 2018; Ahmadi et al., 2022).

5. Results and Discussion

5.1 Socio-economic and Demographic Characteristics of Respondents

Most respondents (97.1%) were youth aged 25–35, while only 2.9% were aged between 15–24 years. Men constituted the majority of the respondents at 54.3%, compared to passive and vulnerable women at 45.7%. Most respondents (84.8%) were married, with only 13.3% being unmarried; while as few as 1.9% were divorced. Most youth had early active marital relations and

unquestioningly engaged in family-related socio-economic responsibilities (Theodory, 2014; Rao et al., 2016; Mabhuye et al., 2020). Depending on local weather and climatic conditions, most respondents engaged in mixed livelihood activities (56.7%) and farming (12.5%), compared to about 20.2% who relied on pastoralism as a core activity. This is consistent with Kabote (2018), Kitasho (2020), Yanda et al. (2021), and NTRI (2021); who highlighted voluntary transitions from core pastoralism to engagement in diversified activities as a means to enhance livelihood resilience in the area.

Most respondents (85.6%) had attained various levels of formal education (primary education (42.9%), secondary education (14.3%), certificate (20%), diploma (6.7%), and degree level (1.9%)), compared to about 14.3% respondents with no formal education (illiterates). Formal education is linked to increased awareness and engagement in climate change and sustainable development among the respondents (Barreda, 2018; Corner et al., 2015). However, additional findings indicated that formal and informal education systems favoured men. As a result, most men appeared better informed than female respondents. Furthermore, most respondents (93.3%) were natives born in the study village, compared to a small minority (6.7%) who migrated into the village from elsewhere. The importance of local inclusion in climate change related studies as a means to acquire first-hand local knowledge and pertinent experiences on interconnecting variables was also uncovered by Narksompong et al. (2015) and IPCC (2019). Additionally, Zimba et al. (2021) and UNFCCC (2019) opined that including local youth in climate change and development studies offer respondents an opportunity to discuss the relevance of strategies, policies, and interventions.

Since this study involved youthful male and female respondents with prior knowledge, exposure and experiences on the topic, analysing the socio-economic and demographic variables provided insights on significant social processes, perceptions, anxieties and progress influencing awareness of engagement strategies in climate change and sustainable development.

5.2 Awareness of Climate Change and Sustainable Development

Most (90.6%) of the questionnaire respondents confirmed awareness of climate change, its impacts and response measures in the area, compared to 4.7% unaware respondents; while 4.7% did not know what to say. Additionally, the majority of focus group and interview respondents linked development challenges—such as water insecurity, food insecurity, low livestock productivity, invasion of weeds and diseases, reduced pasture, unreliable onset and cessation of rainfall, droughts and increased human-wildlife conflicts—with the impacts of ongoing climate change in the area (Kimaro et al., 2018). The presence of stakeholders' interventions at various levels indicated typical

response measures taken to address the climate change and sustainable development agendas (Barreda, 2018). Researchers noted that increased knowledge and exposure influenced awareness, engagement attitudes and the roles of youth in the area. Kimaro et al. (2018), Makonnen (2018), and Yanda et al. (2021) supported the findings of the present study by highlighting the influence of increased awareness on climate change regardless of the lack of scientific explanations. One focus group discussant explained:

> *"We do not know the scientific definitions of climate change and sustainable development. These are relatively new terminologies that are not well explained to us. However, we use our local experiences, exposure and indigenous knowledge to understand and integrate."*

Additionally, most interview respondents exhibited a mastery of local knowledge relevant to locally-led adaptation interventions in a changing climate; as affirmed by another respondent:

> *"Out here, we are entirely dependent on rainfall for pasture, crops and water. So, it is easier for us to understand what climate change means. It directly retards our development, so it is a part of our greetings whenever we meet."*

Makondo (2018) and Tabuti et al. (2018) also correlated comparable findings, highlighting the influence of indigenous knowledge on rural livelihoods. Furthermore, the researchers noted that increased awareness levels enhanced livelihood diversification and maximised local resilience. This indicates the potential and absolute necessity of incorporating local knowledge in stakeholders' strategic interventions to enhance awareness and youth engagement in climate change and sustainable development (Barreda, 2018).

5.3 Emerging Anxiety about Climate Change in the Area

Approximately 90.5% of the questionnaire respondents confirmed anxiety, compared to 9.6% of non-anxious respondents. This indicates that increasing climate change awareness increases anxiety and the drive to respond. One focus group discussant precisely asserted:

> *"Everyone in this village is worried due to the prevailing drought and the lack of pasture. Last year, and even this year, we lost so many livestock. We have lost our relatives due to stress, migration and reduced livestock economy."*

Another discussant highlighted the risks associated with the diversification of socio-economic development:

> *"Most of us no longer rely on pastoralism alone. We are trying to explore different livelihood activities in order to diversify our income. In the process, we expose ourselves to so many unexpected risks – the wildlife, diseases, divorces, deaths: but what else should we do?"*

These findings are also consistent with Narksompong et al. (2018), IPCC (2021), Greene et al. (2020), Barford et al. (2021) and O'Brien et al. (2018): all echoed despair, resentment and dissent among the youth as a result of climatic change that weaken adaptive capacities and livelihood resilience.

5.4 Respondents' Contribution to Climate Change

About 95.2% of the questionnaire respondents confirmed factors contributing to local climatic changes. Specifically, the majority of FDG and interview respondents linked uncontrolled farming, improper livestock husbandry, charcoal production, deforestation and land degradation with the ongoing climate changes. One focus group discussant narrated:

> *"Unsustainable socio-economic activities like overstocking, shifting cultivation and deforestation cause drought and excess heat."*

An increased understanding of the role of human activities in climate change among the youth due to interventions from existing stakeholders was also elucidated by Mung'ong'o et al. (2016), Barreda (2018), UNFCCC (2019) and IPCC (2021).

5.5 Awareness of Strategic Youth Engagement in Climate Change and Sustainable Development

Descriptive analysis showed that most respondents (81.0%) confirmed awareness of local strategies for youth engagement in the area, compared to 19% who lacked awareness. Additionally, focus group discussants highlighted poverty eradication, food security, health and well-being, quality education, gender equity and water security as substantial goals for local resilience. This indicates that the local youth are prioritised among the 17 global sustainable development goals (Nkrumah, 2021).

Furthermore, the binary logistic regression model (Table 1) showed that the level of youth awareness of engagement strategies in climate change and sustainable development was significantly predicted by mixed livelihoods activities ($p = 0.048$), primary education ($p = 0.015$), secondary education ($p = 0.019$), certificate ($p = 0.039$), diploma ($p = 0.028$) and non-formal education ($p = 0.020$) at 5% significance levels. These findings are consistent with the findings by Corner et al. (2015), Partey et al. (2020), Kitasho (2020) and Marie et al. (2020); who also reported the influence of livelihood diversification and education on the knowledge, attitudes, behaviours, beliefs, experiences, anxiety and prospects held by respondents on engagement strategies in climate change resilience and sustainable development. The findings also supplement Ojala et al. (2017) and Makondo et al. (2018), who highlighted the influence of formal and informal education on access to climate messages, increased awareness, and engagement in diverse livelihood activities.

Table 1: Logistic Regression on the Level of Awareness of Youth Engagement In Climate Change and Sustainable Development

Variables[a]	B	S. E	Wald	df	Sig.	Exp(B)
Occupation			2.043	5	0.843	
Pastoralism	21.780	20.445	0.050	1	0.999	1.190
Crop farming	20.820	20.445	0.450	1	0.999	5.149
Mixed livelihoods	*1.542*	*0.950*	*0.564*	*1*	*0.048**	*5.135*
Employment	41.442	269.234	1.010	1	0.999	5.149
None	21.115	20.445	0.073	1	0.999	2.682
Level of Formal Education			3.409	5	0.637	
Primary	*0.357*	*0.787*	*0.206*	*1*	*0.015**	*4.134*
Secondary	*-20.974*	*51.837*	*0.160*	*1*	*0.019**	*1.481*
Certificate	*21.542*	*60.347*	*0.017*	*1*	*0.039**	*1.055*
Diploma	*-1.027*	*0.852*	*1.453*	*1*	*0.028**	*2.973*
Degree	-0.059	0.725	0.007	1	0.935	4.717
None	*1.636*	*2.330*	*0.100*	*1*	*0.020**	*0.195*
Constant	-17.204	48488.877	0.000	1	1.000	0.000

Notes: [a]Variables entered on step 1: Occupation and Level of Education.
* Significant variables are in italics

5.5.1 Types of Youth Engagement Strategies

Further findings from FGDs and interviews revealed two distinct local engagement models: explicit, and implicit strategies that worked separately or combined to accomplish priority development goals. Most respondents associated the popularity of implicit strategies with bottom-up, lenient, voluntary, affordable, resilient and flexible priorities to enhance climate change resilience and sustainable development. On the contrary, explicit strategies were regarded as well-structured governance systems with top-down policy guidelines imposed directly by the government to enhance climate actions and sustainable development. These findings are consistent with O'Brien et al. (2018), Pandve et al. (2019), Nkrumah (2021) and Simons (2022); who also highlighted the presence of top-down and bottom-up intervention approaches.

Repeatedly, most respondents exhibited limited awareness and inability of the youth to replicate most of the explicit strategies for youth engagement in global climate change and sustainable development goals. These findings are corroborated by findings by Rupia (2020), Kitasho (2020) and O'Brien et al. (2018), who reported the engagement of local youth in priority development goals such as poverty eradication (goal 1), food security (goal 2), health and wellbeing (goal 3), quality education (goal 4), gender equity (goal 5) and water security (goal 6). This research realised that both strategies aimed at enhancing adaptive capacities, local climate resilience and local development, as underscored by Gharabaghi and Natte (2018), Kosciulek (2022) and Samaddar et al. (2021).

5.5.2 Implicit Engagement Strategies

Researchers noted that all daily socio-economic interventions in the area promoted age-sensitive and gender-blind implicit youth engagement strategies. As such, individuals engaged heterogeneously in the climate change agenda and priority development goals. Focus group respondents highlighted that the *Moran* age-set determined specific socio-economic roles in the area. One focus group discussant asserted:

> *"In our culture, youth falls in the Moran age-set who are between* nyangulo *and* korianga *young men, recruited through circumcision and initiation rites every 12 to 15 years. Now, this group engages in socio-economic activities uniquely different from other age-sets.*

These findings are consistent with Kabote (2018), Kitasho (2020) and O'Brien et al. (2018), who highlighted how definitions of the youth tend to influence implicit interventions in agro-pastoral livelihoods. Respondents insisted that implicit interventions were gender-biased since young women received unequal recognition, roles and responsibilities. One interview respondent said:

> *"The way young people are groomed is different. The Moran are rigorously prepared to take on warriors' responsibilities, while young girls involuntarily assume housewives' responsibilities."*

Respondents also hinted at polygamy and early marriages as strategies to enhance resilience and development due to the perceived increase in manpower and economic gains from dowries. These findings are consistent with Allegretti (2014), Mung'ong'o et al. (2016), Kabote (2018) and Kitasho (2020); who highlighted the influence of implicit local knowledge, initiation rites and gender-blind systems on youth engagement in socio-economic development.

5.5.3 Explicit Engagement Strategies

The FGD and interview findings revealed that explicit intervention involved self-help, micro-finance (soft loan) services, and business incubation schemes under the district government in an attempt to implement the national youth policy (NYP, 2007). The presence of active NGOs and CBOs in the area also complemented government efforts to enhance local resilience and sustainable development. Researchers observed that most private interventions aimed at wildlife conservation, tourism promotion, crop protection, rangeland management and alternative income-generating activities. Notably, establishing the RWMA and raising awareness on land use rights influenced the role of youth in wildlife management, tourism and resource utilisation (Follows, 2018; TPP, 2020). One interview respondent asserted the following:

> *"Several NGOs work closely with the local government within this area to facilitate wildlife, crop protection, water availability, range land conservation, land use rights; and [reducing] human-wildlife-conflicts mostly under donor-funded projects."*

Furthermore, researchers noted that private interventions focused on capacity building on credit financial services (micro-finance) and alternative income-generating activities. One focus group discussant stated:

> *"Women and youth groups here receive support from NGOs to enhance handicrafts, honey processing and livestock productivity. They sell most of their products in the local market (at Makuyuni) and to transiting tourists."*

Notably, the researchers observed diverse and misaligned interventions by private stakeholders and practitioners within the study area, characterised with competing and duplicated efforts. These findings concur with reports by Narksompong et al. *(*2015), Barford et al. (2021), Zimba et al. (2021) and Mugeere et al. (2021); which emphasise significant challenges with mismatched and competing explicit interventions.

5.6 Effectiveness of Existing Engagement Strategies

The descriptive analysis indicated that most respondents (78.2%) preferred implicit interventions to explicit strategies (21.8%). Further analysis showed that only as few as 16.2% of the respondents benefited from explicit strategies, while the majority (83.8%) did not. These findings are consistent with FGDs, interviews and direct observations, which highlighted passiveness, despair, resentment and dissent among the respondents due to insignificant benefits realised from explicit strategies. One focus group discussant itemised the following:

> *"The amount of loan money that the district government allocate for a group of twenty youth is insufficient to invest in anything tangible and economically viable. As a result, most youth in my village dislike the arrangement."*

Interviewed respondents linked explicit strategies with potential flaws in the allocations of funds due to corruption, nepotism, bureaucracy, divisive politics and the lack of transparency. Such findings cohere with reports from Amsler et al. (2017) and Gandure et al. (2013); further highlighting the inadequacies of explicit financial schemes to enhance climate change actions and sustainable development. Zimba et al. (2021) and Nkrumah (2021) also highlighted increasing passiveness, resentment and dissent among the youth due to the prevalence of mismatched strategies and tokenism. Inefficient engagement was also linked with mismatched skills development pathways and climate change communication (Corner et al., 2015; Ojala et al., 2017).

Kitasho (2020), Narksompong et al. (2015), O'Brien et al. (2018), and Nkrumah (2021) also echoed similar findings, highlighting the inefficiency of explicit stakeholder interventions due to misplaced priorities and poor governance. The findings of this study are consistent with those of the studies by Pandve et al. (2019), Nkrumah (2021), Barford et al. (2021) and Mugeere et al. (2021): that the ineffectiveness of most government interventions owed to misplaced explicit roles of the youth in climate change and sustainable development.

Furthermore, respondents thought that emerging non-state actors embraced implicit and explicit strategic interventions to enhance youth engagement in sustainable development and climate change agendas (Kitasho, 2020; O'Brien et al., 2018). However, FG discussants revealed that climate misinformation, competition and duplication of efforts among actors negatively influenced the implementation of priority development goals. These findings complement the findings in the literature that highlight substantial inefficiencies due to misinformation; and mismatched, delayed, and unsystematic youth engagement strategies (Nkrumah, 2021; O'Brien et al., 2018).

6. Conclusion and Recommendations

Most of the study respondents had significant awareness and experiences on what climate change means, what is at stake, and what should be done. Also, most youth (81.0%) were aware of existing engagement strategies in climate change and sustainable development within the area. However, the level of awareness was heterogeneous owing to mixed livelihoods and educational levels that influenced diverse knowledge, attitudes, behaviours, beliefs, experiences, anxiety and prospects held by the respondents on priority development goals. Implicit strategies were popular among respondents compared to explicit strategic interventions by the government. Explicit strategies were ineffective and tokenistic due to bureaucratic and mismatched execution of misaligned policies. Interventions from non-state actors also exhibited miscommunication, competition and duplication of flawed efforts.

This paper recommends sustained inclusion and participation of key actors in the mapping of local priorities, climate communications and resource mobilisations. It also recommends active awareness campaigns across local government authorities, education systems, skills development pathways and fiscal platforms to enhance the capacity of actors to create enabling environments for effective youth engagement and empowerment. Additionally, policymakers and local actors should mainstream gendered participation in policy formulation, and enact relevant climate actions to enhance local youth's resilience and sustainable development beyond priority goals.

The fact that this study was conducted in a specific geographical context with homogenous cultural characteristics presents a possible bias to the generalizability of the final findings to youth in other contexts. The study also concedes typical limitations associated with time and resource constraints, the choice of methodology, sampling and data analysis techniques. Future studies should address these limitations and seek alternative methodologies to attain valid and reliable outcomes replicable in different locations and cultural settings.

Acknowledgements
The authors wish to thank the Tanzania Partnership Program for funding the initial fieldwork that led to the production of this paper. Special thanks to all individuals who seamlessly participated at various stages of this study, especially all the respondents, local leaders and anonymous peer reviewers.

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