IMPLEMENTATION OF DISASTER RISK MANAGEMENT POLICY AND DROUGHT PREPAREDNESS IN THARAKA NITHI COUNTY, KENYA

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International Academic Journal of Arts and Humanities (IAJAH) | ISSN 2520-4688

Received: 11th August 2026

Published: 27th August 2026

Full Length Research

Available Online at: https://iajournals.org/articles/iajah_v2_i2_1_30.pdf

Citation: Machatha, S. M., Muna, W. (2026). Implementation of disaster risk management policy and drought preparedness in Tharaka Nithi County, Kenya. *International Academic Journal of Arts and Humanities, 2*(2),1-30.

ABSTRACT

One of the longest and recurring climate-related disasters that continues to hit Kenya, and disproportionately, arid and semi-arid lands (ASALs) such as Tharaka Nithi County are affected by drought. Although there have been national and county-level Disaster Risk Management (DRM) policy frameworks, drought readiness in most of these regions remain reactive, fragmented and constrained by resources. This research study discussed the DRM policy implementation and its effects on the drought preparedness at Tharaka Nithi County in Kenya, with particular objectives given to staff capacity, financial mechanisms, technology adoption, and participation of the stakeholders. The research design used was a descriptive survey that was mixed-method. The quantitative data were gathered using semi-structured questionnaires given to 184 respondents who were sampled in government institutions, community leaders, and the DRM stakeholders, among whom 163 valid responses were examined. Key informant interviews were used to get qualitative data. SPSS Version 27 was used to analyze quantitative data, and thematic analysis was done to analyze qualitative data. The study analysis was based on the stakeholder theory, human capital theory, and resource-based theory. The findings of results obtained showed that the Tharaka Nithi County drought preparedness is moderate and mainly reactive. The capacity to predict drought preparedness was strongest with staff capacity ($\beta = 0.402$, $p < 0.05$) in the presence of skills, training, and institutional competence. The researcher discovered that financial mechanisms play a huge role in drought preparedness ($\beta = 0.361$, $p < 0.05$), even though funding was generally viewed as insufficient, unreliable, and untimely. The adoption of technology influenced the effect positively and significantly ($\beta = 0.315$, $p < 0.05$), but the training lacked, and the infrastructure was poor to increase its use. Although statistically significant ($\beta = 0.214$, $p < 0.05$), the stakeholder participation was limited by the coordination gaps and political pressure and the limited inclusion of communities. The research study found that drought preparedness entails coordinated investment in human capital building, predictable funding, institutionalized application of technology, and involvement of all stakeholders. The recommendation of the study advises on intensification of ongoing employee development, isolation of the drought preparedness budget, internalization of early warning technologies, and institutionalization of community roles to transform the DRM practice to be led by responding to the disaster instead of proactively building resilience. The results of the study are policy and practice related, as they offer empirical data to create a better DRM application in the ASAL counties within Kenya's devolved governance framework.

Key Words: Implementation of Disaster Risk Management Policy, Staff Capacity, Technology Adoption and Drought Preparedness.

INTRODUCTION

Drought is one of the climatic phenomena that affect ecosystems and it is accompanied by desertification (Adamo et.al, 2020). This implies that some activities or populations will be in shortage of water, and thus the occurrence of water rationing comes because of insufficient rainfall (Zisopoulou & Panagoulia, 2021). Droughts are normally associated with other meteorological factors that include high temperatures, high winds, and low humidity, all of which worsen the situation (Hochmanet.al, 2022). Aridity is a recurrent climate phenomenon that only affects areas characterized by low rainfall and differs from drought in this respect.

Agricultural droughts are quite frequent in almost every climate region, and this defines the occurrence of the climate types (Ndayiragije& Li, 2022). Researchers in the scientific community use simple or composite indexes to study droughts. The global scale Drought Severity Index (DSI), Potential Evapo Transpiration (PET), 8-day temporal resolution Evapo Transpiration (ET), and the Normalized Difference Vegetation Index (NDVI) are some of the composite indices that are used to study drought severity (Thompson, et al., 2022).

The agriculture sector of Davao del Norte Province was reported to have suffered losses of 19.2 million USD, while 17 provinces in the Philippines were declared disaster zones (Navarro, Reyes & Francisco, 2021). While fires in Sabah, Malaysia, wiped out hundreds of hectares of crops in early 2016, 146 communities in Myanmar had water shortages (Alam, 2023). Food insecurity worsened because of a protracted drought in Timor-Leste and Cambodia (UNOCHA, 2017). Because of the three years of drought that Afghanistan experienced in a row, rainfed agriculture nearly collapsed, irrigated farm production decreased, and animal numbers plummeted, leaving five million people in 2011 with little to no food availability (FAO, 2021).

Water shortages and hunger have worsened for millions of people in South Asia due to devastating multi-year droughts. The drought that hit India in 2015 and 2016 impacted 330 million people (Algur, Patel &Chauhan, 2021). Several states saw spikes in maternal wasting, child labor, trafficking, and marriages between minors (UNICEF, 2018), making women and children some of the most hit. Pakistan saw its worst drought in half a century from 1998 to 2002. Famine, sluggish economic growth, increased food costs, disease dissemination, hunger, and the destruction of 80% of apple trees and orchards were among the many repercussions of the drought in the province of Balochistan (PDMA, 2022).

African nations are most affected by hunger because of such factors as weak, mild, and severe droughts (Shuklaet.al. 2021). Population migration, diseases, animal deaths, lower agricultural

yields, and a profound income deficiency are all contributing factors. It is a known fact that there has been a famine in the Horn of Africa because of droughts. Every year for the last three decades of the 20thcentury, approximately 15 million people have adopted lighter skin in October 2017 (FAO, 2020). Severe hunger was declared to threaten the inhabitants of Somalia who are facing severe food insecurity which needs ostensibly because of an emergency (Chaudhry & Ouda, 2021). The 'Malnutrition Score' would reach a high level, with the rates of severe malnutrition standing at 5.6 million youngsters (Sandler, 2021). It is possible to turn to definitions that are rather widespread like those offered by the FAO and the UNCCD.Between April and June 2023, around 8.3 million citizens in Somalia were predicted to experience crisis (IPC Phase 3), or severe acute food insecurity outcomes (Warsame, Frison & Checchi, 2023), amid an estimated scale-down in humanitarian aid due to inadequate funding. Five successive seasons of low precipitation, a predicted sixth spell of below-average rainwater from March to June 2023, and extremely high food costs, compounded by concurrent conflict, insecurity, and disease outbreaks, create this hitherto unheard-of degree of need within Somalia, (The World Bank, 2020).

The year 2010 Sahel droughts and in 2012 raised issues of food insecurity by increasing crop loss and the general price of food, thus worsening the cases of malnutrition (Yobom, & Gallo, 2024). Roughly 30 million individuals could not even afford food, and approximately 11.7 million people are still in a crisis(World Health Organization, 2021). This, because of natural calamities such as droughts and floods, caused a population of over 29 million people to be affected and consequently deprived of food.

Kenya typically experiences severe droughts every 10 years, and restrained droughts and floods occur every 3–4 years (Ayugi& Tan, 2018). The climax of droughts affected 1,482,964 people on average, though 11 significant droughts occurred and 70,795 people were affected as experienced in Kenya from 1964 to 2004 (Water Resources Authority, WRA). Every year, droughts are expected to cause losses of approximately 2.5% of Kenya's gross domestic product to8% (Kogo, Kumar &Koech, 2021). They recommended the amount to be 4% of the Gross Domestic Product (GDP), which is over 500 million USD. An average of 8.0% of Kenya's GDP was lost every five years due to severe droughts, which hit between 1992 and 2011(Zaveri, Damania& Engle, 2023). Reduced industrial output, hydropower generation, and agricultural losses totaled 2.8 billion USD, and around 4.4 million people needed food assistance because of the worst drought in 40 years, which occurred between 1998 and 2000.

A report by the National Drought Management Authority (NDMA) affirms that the dryer climate that Kenya is currently experiencing is probably the worst in the recent past. About 25 million Kenyans require humanitarian aid. Indeed, households have responded using new pastoralist strategies to recurrent devastating droughts such as those of 2008–2011, hoping to reduce their effects in the future (Derbyshire, Banerjee, Mohamed & Roba, 2024). The latter estimates that about 942,000 children between the ages of 6months and 59 months are affected by acute

malnutrition. There are 134,000 women of childbearing age classified as anguish from acute malnutrition, particularly pregnant and lactating mothers (Kabubo&Mariara, 2018).

Ripples International (RI), in partnership with other stakeholders, is currently implementing an emergency response program in Tharaka Nithi County (Kimaru, 2023). More than 112,000 households are receiving cash donations and seeds that are resistant to drought. Out of these, nearly 200 schools have a physical enrollment of over 70,000 children, and these schools receive support from wet feeding programs (Mekuriaw& Harris-Coble, 2021).Those who make their living in the semi-arid zone to the east of Mount Kenya, from the mountain's lowest slopes to the banks of the Tana River, in Tharaka Nithi County of Kenya, face the perennial problem of drought (County Adaptation Plan, CAP, 2020).

Crop failures and livestock deaths due to the prolonged drought have increased instances of hunger and malnutrition (Mishra, Bruno &Zilberman, 2021). This, in turn, has contributed to a rise in poverty levels, resource-based conflicts, and the widespread of prosopis judiflora. From the time of colonization till the current day, this region of Kenya has played a minor role in Kenya's political and economic life (Yeoboah et al., 2020). Tharaka people have demonstrated resiliency that is impressive during the last thirty years in terms of the sudden macro-level changes, including landownership privatization, population growth, political decentralization, changed market conditions, environment fluctuations, and the enhancement in conflict over the natural resources (Climate Risk Profile of Tharaka Nithi County, 2019). More concurringly, the research indicates that the response to drought is increasing, which does not bode well for the long-term viability of agrarian livelihoods (Fernando, 2021).

Statement of the Problem

There is empirical evidence that over 25 million Kenyans cannot access food during droughts, and ASAL counties are most vulnerable due to the lack of institutional capacity, ineffective financing systems and frameworks, and poor coordination of the stakeholders (Kogo, Kumar &Koech, 2021). Among the most notable responses to drought in the Tharaka Nithi County area, the delayed financing, insufficient staff training, insufficient uptake of early warning technologies, and the lack of community involvement have been identified as the negative factors that can undermine long-term resilience (Kaua, Thenya & Mutune, 2022). Although national frameworks, like Kenya Vision 2030 and NDMA guidelines, focus on preparedness and resilience, the process of their implementation is top-down decision making and does not correspond to local capacities and realities (Dessie, 2022).

Current research on the management of drought risks in Kenya has been mainly based on either national-level policy analysis or the result of emergency response (CIDP, 2023). There has been little empirical evaluation of how the contribution of staff capacity, financial mechanism, technology adoption, and stakeholder involvement contribute to the county level preparedness of

drought through devolved authority (Zaki& Noda, 2022). Such a gap limits the development of evidence-based policies. Therefore, there is a lack of knowledge on why DRM policies have failed to become sustainable drought preparedness in Tharaka Nithi County.

Objectives of the Study

i. To determine how staff capacity affect drought preparedness in Tharaka Nithi County.
ii. To evaluate the effects of stakeholder participation on drought preparedness in Tharaka Nithi County.

REVIEW OF RELATED LITERATURE

This section entails an in-depth analysis of various ways on DRM policy implementation strategies and drought preparedness in Tharaka Nithi County, Kenya. It will also highlight the research gaps and offer solutions while reviewing empirical studies around the research objectives to establish a background on the research topic and to compare findings from previous studies. Moreover, it will outline theoretical reviews and their applications in regards to the research questions. The final subsection will focus on conceptual framework, which will highlight the relationship of the variables of the study.

Theoretical Framework

The basis of this investigation is the stakeholder theory and the human capital theory (HCT). We analyze the theories and how they are applicable to the research study on DRM policy implementation strategies.

Stakeholder Theory

The main theory proposed for this study is the stakeholder theory. Robert Edward Freeman presented stakeholder theory through his 1984 book, "Strategic Management: A Stakeholder Approach", which serves as the basis for this research. Business success requires enterprises to consider all influence groups affected by their operations, according to stakeholder theory (Gutterman, 2023). Financers, employees, clients, providers, neighborhood people, state officials, and sustainability concerns must be considered by the organization. Freeman's stakeholder management approach challenges business assumptions since businesses operate best when they properly manage most stakeholder needs rather than maximum financial gains.

Organizations must interact with stakeholders who have a legitimate interest in affecting results (Nguyen &Kanbach, 2024). Since one group's decisions affect the welfare of the others, stakeholder theory states that stakeholders' interests are interrelated. Organizations can create value over time by building trust with stakeholders, which benefits both parties (Gulati & Wohlgezogen, 2023). Stakeholder relationship effectiveness merges multiple groups' goals into one, improving organizational success and sustainability (Aguilera, Massis, Fini & Vismara,

2024). Critical development of stakeholder theory was divided by Donaldson and Preston (1995) into descriptive, instrumental, and normative.

The stakeholder theory illustrates the relevance of putting into consideration the interests of all the parties in respect of disaster response, which eventually leads to the benefit of disaster risk management (DRM) and drought preparedness. The corporate sector, international agencies, local governments, and NGOs take part in the DRM policies (Badawi & Abdullah, 2022). It enables various groups to participate in significant decisions leading to policies that are good for all. The theory dictates how the Kenya National Drought Management Authority stakeholder engagement activities operate in an effort to integrate government agencies with community groups and NGOs to fight drought.

The view renders climate change and other environmental problems resilient strategies of drought preparedness sustainable and all inclusive (Telwala, 2023). Basesri, Zakaria, Majid, and Yusop (2022) offer a detailed approach to the evaluation of the stakeholders in DRM and drought preparedness. The theory involves the stakeholders developing DRM measures that address their needs, making them sustainable. In building resilient drought management strategies, the stakeholder theory would enable researchers to determine the main stakeholders in drought preparedness policies and evaluate their interests.

Human Capital Theory (HCT)

Human Capital Theory (HCT) is a theory formed by Gary Becker and Theodore Schultz to explain how knowledge, skills, capacities, and health establish an economic value. Becker (1993) contributed to the notion of human capital established by Schultz (1961) by acknowledging that health is productivity just like education and experience. Training, education, and healthcare have an effect on personal productivity; hence, economic success relies on them. HCT demonstrates that training and developing skills may contribute to DRM and drought preparedness through strengthening communities and enhancing policies (Kithikii, 2023). Individual skills and competency can enhance the response to climate-related catastrophes, particularly droughts.

The primary idea that HCT upholds is that the improvement of education and the training of professionals will contribute to the increase of productivity and result in economic benefits in the future. These investments, according to Becker (1993), increase career chances, earnings, and job performance, hence making it necessary to succeed. HCT asserts that all people spend logically in human capital to enhance incomes and living standards (Adindu, 2023). The concept can be simplistic in education when the skills increase and financial prosperity is regarded as critics allege. HCT does not pay much attention to the social inequalities, market inefficiencies, and external institutions that influence educational and economic outcomes (Bowles and Gintis, 1976). Critics assert that the strategy does not consider the systemic barriers that make poor individuals inaccessible to the training and education, thus limiting their ability to experience human capital

spending. Researchers on climate resilience like Nhemachena and Hassan (2020) applied HCT to examine the effect of education and training on the responsiveness of farmers to climate change. The researchers discovered that the farmers enhanced their adaptation to drought and other climate disasters based on education and skill related programs. Kumar et al. (2021) utilized human capital theory to study Indian community-based drought preparedness programs, as it revealed that human capital development was necessary to adjust to situations of droughts.

Human capital theory shows how investing in human development improves DRM and drought preparedness programs (Damoah, 2022). Local communities, government authorities, and disaster response teams learn to evaluate risks, build effective mitigation options, and reduce drought effects through training. Drought victims learn adaptive skills like water conservation and climate-smart farming (Mizik, 2021). These abilities aid early warning system development. Using HCT in DRM requires skill development for long-term sustainability and resilience (Wang, Zhao, Gangadhari& Li, 2021). Climate change causes more severe droughts, requiring stronger drought preparedness measures.

Empirical Review

Disaster Risk Management Policy

In their work titled, "Facing the Unexpected: Disaster Preparedness and Response in the United States", (Perry, Lindell& Tierney, 2021) presented the significant worldwide research about DRM policy learning's. Their article examined the historical development of Federal Emergency Management Agency (FEMA) from its position as a premier agency in DRR and response. The researchers stressed that successful disaster preparedness depends on established cooperative arrangements between public and private entities along with state and federal governments (Shmueli, Ozawa & Kaufman, 2021). The study confirmed that disasters became less costly because organizations followed planned approaches to distribute resources while performing pre-disaster mitigation work. Global disaster management authorities now recognize FEMA's studies as the modern standard for well-structured policies that enable decision-support frameworks (Fei, Li& Ding, 2024). Their study is directly relevant to this research about implementing DRM policies and being ready for droughts because it shows how important it is to have disaster warning systems, as well as institutional coordination and stakeholder engagement, in order to lessen the effects of disasters like droughts.

Raballand, Fiebelkorn, Heidenhof and Schmidt (2022) conducted the study on "Conflict and Disaster Preparedness: Evaluating Somalia's Disaster Risk Management Policy" at the regional research stage. The study explored Somalia's DRM policy implementation obstacles amidst political turmoil and humanitarian disasters. The existence of unstable governance structures combined with inadequate institutional capacity prevents Somalia from effectively preparing for disasters, specifically droughts, and responding to them (Osman &Abebe, 2023). The research proved that humanitarian aid needed integration with DRM approaches to establish resilient

communities in regions subjected to constant conflict (Fekete et al., 2020). This study has important implications because it suggests that policies should be reviewed on a regular basis, international cooperation should be set up, and frameworks should be built that combine programs for humanitarian aid with approaches to reducing risk. This evaluation is still important for current DRM policy research on drought preparedness because it shows how government problems and limited funding affect the implementation of disaster policies in dry areas.

Fakhruddin et al. (2020) performed an extensive analysis about "Disaster Risk Management in Kenya: Challenges in Development Planning and Policy Implementation". The analysis explored disaster risk management incorporation within Kenyan national development plans through the study of response actions to the 1997 El Nino flooding and 1998 U.S Embassy bombing events (The World Bank, 2018). The study indicated that DRM structures in Kenya have developed during multiple times and resulted in the founding of the National Disaster Operations Centre (NDOC). There are problems with putting policies into action, not enough money, and stakeholders not working together, which stops progress in drought preparedness strategies (King, Salman, Tsegai & Naqvi, 2022). These studies have demonstrated substantial value to Kenya's efforts to reduce disaster risk by showing both accomplishments and essential areas needing enhancement. This research supports DRM policy implementation through the identification of financial mechanism development and technology integration and community-based strategies for reducing disaster risk in drought preparedness.

Drought Preparedness

Sahana, Mondal and Sreekumar, (2021) did a research learning in India titled "Assessment of Drought Vulnerability Using Traditional and Technological Approaches". Their findings demonstrated how traditional knowledge systems function better when combined with satellite technology for drought preparedness improvements. The study showed baseline crisis responses were inadequate for lasting resilience in risk management plans. Drought monitoring interventions enabled communities to face climate variations through improved preparedness, resulting in reduced farming damage and insecurity about food supplies (Wens, Loon, Veldkamp & Aerts, 2022). The evidence from these studies underscores the importance of early warning systems and strategies that adapt agriculture to climate changes approaches in Kenya today.

Nur and Amarnath, (2023) studied the effects of drought on vulnerable smallholder farmers in Zambia and the effectiveness of Stuttgart Neural Network Simulators (SNNs) to evaluate drought preparedness through early warning systems and financial support allocation. Zambian smallholder farmers are still vulnerable because they don't have access to the resources, they need to adapt to climate change (World Food Program, 2023). They also need better forecasting systems and money to fund programs that help people survive drought. Recurrent food insecurity emerged as a result of the government choosing crisis-based responses instead of proactive initiatives. These

research studies demonstrate the importance of data-based decisions and financial resources for developing drought resilience.

In their research titled "Policy Implementation Gaps in Kenya: ASAL Region, Wajir County," Hajidahir and Muna (2024) examined strategies for preparing for drought and identified structural deficiencies that hinder the development of resilience. Inadequate funds, ineffective governance systems, and little stakeholder participation are the primary causes of Kenya not attaining effective drought preparedness efforts, as per their study. Such initiatives should be incorporated into the national development policies and receive sufficient funds to facilitate them (Wilhite, Sivakumar & Pulwarty, 2018). This study validates that Kenya wide drought preparedness must change to be based on reactive strategies rather than proactive and sustainable strategies that are directly beneficial to the drought prone regions of the ASAL region due to climate change (National Adaptation Plan, 2023).

Effect of Staff Capacity on Drought Preparedness

Cao and Solangi (2023) researched the particular mechanisms through which technical knowledge, planning ahead, and institutional support can be used to reduce the effects of drought in China. Implementing operational meteorological technologies became an essential aspect of this learning, and the adoption of further training of professional personnel on disaster management, in addition to technical training (FAO, 2021). The authors of the research set the fact that operational drought management systems in China worked most effectively when the staff was not only trained but also trained in technical skills. This study reveals that with more training of disaster management staff, they are able to respond quicker and perform their duties more effectively, making DRM policy systems more adaptable to drought.

Shaamhula (2021) explored risk management and priorities of development with regard to drought preparedness by local capacity-building in Namibia. This study affirmed that the management of drought risks relies on the ability of staff to a great extent. It aimed at enhancing skills together with information-sharing among regional teams addressing droughts (ESCAP, 2021). Increased capabilities were added to local teams managing drought risk with Namibian official supported training programs. This finally resulted in improved drought response capacity, especially in resource poor regions. As the staffs are able to collaborate and exchange their knowledge, it becomes easier to deal with drought occurrences and support the community to respond to changing weather conditions, which fits the DRM policy outcomes in long-term drought preparedness.

The National Drought Management Authority (NDMA) in Kenya is the necessary body that is aimed at making the country prepared to face drought scenarios. A study by Mwangi et al. (2022) on the topic of mainstreaming forecast-based action into national disaster risk management systems: Experience in drought risk management in Kenya. This investigation was to find out how

better staff development programs and inter-agency government coordination can work together to improve the results of drought management at the national level. Official training programs for government representatives and territorial administrative staff substantially increased the success rates of drought emergency plans (Nyamakura, 2021). The research provides essential knowledge for this study because it illustrates how national level staff training drives DRM policy success by improving disaster response coordination and resource administration during drought emergencies in Kenya.

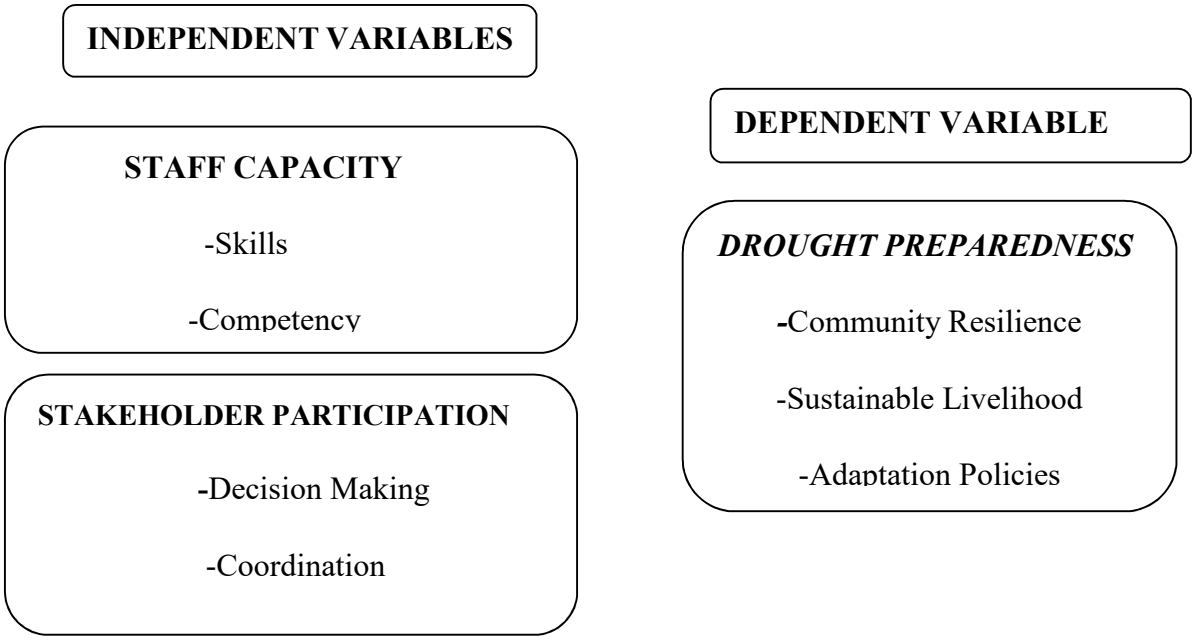
Effects of Stakeholder Participation on Drought Preparedness

Sigalla, Tumbo and Joseph, (2021) examined the involvement of stakeholders in water resource management through the lens of German multi stakeholder platforms developing decision making systems. The involvement of government bodies, local communities, NGOs, and private entities through Germany established a collaborative framework to address water resource issues. Multistakeholder platforms benefit drought risk management because they fuse specific viewpoints, which produce better decisions for policy crafting and enhanced resource usage during droughts (Ariyachandra & Wedawatta, 2023). With their DRM policy implementation, the Germans established an inclusive platform that combines various stakeholders so countries can develop comprehensive and flexible drought resilience methods.

Tshimanga et al., (2021) investigated "Local Community Engagement in Water Management" in the Democratic Republic of Congo (DRC) and showed that water management strategies benefited directly from having local participants. The people living around water catchment areas must be actively involved during water management processes to improve the sustainability of drought preparedness, particularly in an area where proper infrastructure support is not provided by the government. Through its CBOs, communities were playing a core role in providing indigenous water saving methods and local drought related information that rendered drought easier to manage (Uchiyama, Ismail & Stevenson, 2021). The DRC experience affirms the fact that successful implementation of the DRM policies requires the involvement of the community, as their collaboration ensures long-term results of the drought preparedness strategy.

Kithikii and Mugalavai (2023) examined Community Based Organizations (CBOs) to understand how they collaborate in the establishment of early warning systems and long-term land management, making Kenya more prepared for drought. According to their research paper, CBOs and Early Warning Systems in drought preparedness, community-based organizations continue to have significant roles to play in imparting responsible farming techniques and water management approaches besides giving real time information concerning droughts (Ginkel & Biradar, 2021). This study revealed that the more communities were engaged in the reading, the more they learned about the risks of drought and how to use tools to cope with it, such as rainwater collection systems and irrigation technologies (Leal et al., 2022).

Conceptual Framework



RESEARCH METHODOLOGY

This research study adopted the descriptive survey design which combines both quantitative and qualitative approaches for a comprehensive study of particular topics (Howland & Lee, 2022). The combination of quantitative statistics with qualitative in-depth data from such a mixed-methods scientific approach enables academic research of complex problems through multiple perspectives (Dawadi, Shrestha & Giri, 2021).

The research tool used for collecting quantitative data consists of semi-structured questionnaires for statistical financial assessment and personnel competency examination among government officials and community leaders (Banha, Flores & Coelho, 2022). The research unruffled qualitative data from stakeholder interviews to obtain their insights about community resilience building efforts (Mwangi et al., 2022). The combination of these research approaches allowed the investigator to evaluate critical contextual elements and collect detailed data for complete DRM outcome evaluation and identification of opportunities to enhance drought response.

This study research aimed at the key DRM Policies and drought preparedness in Tharaka Nithi County, Kenya. They comprise National Government officials, the County Drought Coordinator, the Climate Change Fund Board, the Climate Change Unit, and Collaborations with the NDMA, local community elders, Technical Working Groups (TWG), County Steering Group (CSG), KARLO, Agricultural Sector Coordination Unit (ASCU), Kenya Climate Smart Agriculture

Project (KCSAP), Drought Resilience and Sustainable Livelihoods Programme (DRSLP), and county and national agricultural professionals (Dupa & Cagas, 2021).
The study targeted 341 respondents out of whom a representative sample of 184 was scientifically determined using the Purposive selection helped to stratify the sample by targeting experienced DRM professionals or drought preparedness programme participants to learn about implementation policies (Tilahun, Asmare & Kassie, 2025).

Semi-structured questionnaires and Key Informant Interviews (KIIs) were used to collect numbers in detailed descriptions for this study (Jayachandran, Biradavolu& Cooper, 2023). County and government leaders, KARLO, elders, and agricultural experts got 184 semi-structured questionnaires. Both closed and open-ended questionnaires were used to evaluate DRM success by assessing staff skills, technology use, finance mechanism, and stakeholder collaboration (Holtom, Baruchi, Agumis& Ballinger, 2022). The interview guidelines helped the researcher to analyze complicated coordination, budgetary, and policy implementation challenges (Hendren et al., 2023).

The researcher used the descriptive and inferential statistics paradigm to discuss quantitative data provided by a semi-structured questionnaire using means, percentages, standard deviations, and frequency distributions (Hunziker &Blankenagel, 2021). According to Pallant (2020), the demographic traits and important DRM variables was summarized using descriptive statistics, and t-tests was used to compare various groups. The Pearson correlation coefficient was used in the study to assess the strength and direction of the interrelationship among the variables used. Variance was used to measure the association, and the chi-square test was used to show the significant relationship, which is done using Cramer.

RESULTS AND FINDINGS

In this investigation, the response rate was carefully selected to ensure that the results were reflective of Tharaka Nithi County preparedness for drought in the context of the implementation of DRM policies. Out of the 184 questionnaires that were administered to the respondents, only 163of them resulted into properly completed and returned questionnaires, yielding a response rate of 88.6%. The number of questionnaires that were not returned was only 21, which constituted 11.4% of the sample.

A review of demographic data of respondents indicated that among the 163 respondents who were examined, 85 of them or (52%) were “male” while 78 (48%) were “female”. Male dominance could be as a result of socio-cultural and institutional factors, where men are more likely to be involved in formal roles like leadership and DRM (Mwinuka & Hyera, 2022).

Data on age distribution indicated that the highest proportion of respondents (46%) was included in the age group of "18–27" years, and the next highest proportion (38%) was "28–37 years" while 14% of the respondents aged "38-47 years". Data on the level of education attained by respondents indicated a wide range of educational attainment, with the biggest proportion of the sample being the "university graduates" (48.47%). The respondents with a "diploma" constituted 19%, and those with a "high school" education constituted 17.8%. Such a distribution indicates that the respondents was relatively well-educated, which can strengthen the validity of the answers, especially in the areas that need analytical views.

Data on work experience among the respondents indicated that a majority of the respondents (47.24%) are "employed" in the Tharaka Nithi County Government directly, and 25.77% are "self-employed" individuals. The number of "unemployed" (21.47%) is also high, and it may indicate problems with the local labor market.

Effect of Staff Capacity on Drought Preparedness in Tharaka Nithi County

This study focused on the capacity of staff as an important element in the effective implementation of drought preparedness measures. Staff capacity is the knowledge, skills, experience, technical competence and capability of staff to effectively plan, coordinate and respond to drought risks in the context of a disaster (Tilli, Kauhanen, Vaskilampi & Karvinen, 2026). The research study explored staff capacity as drought preparedness relies on trained personnel who can interpret early warning information, manage emergencies, analyze data, make informed decisions and coordinate response activities before the onset of drought.

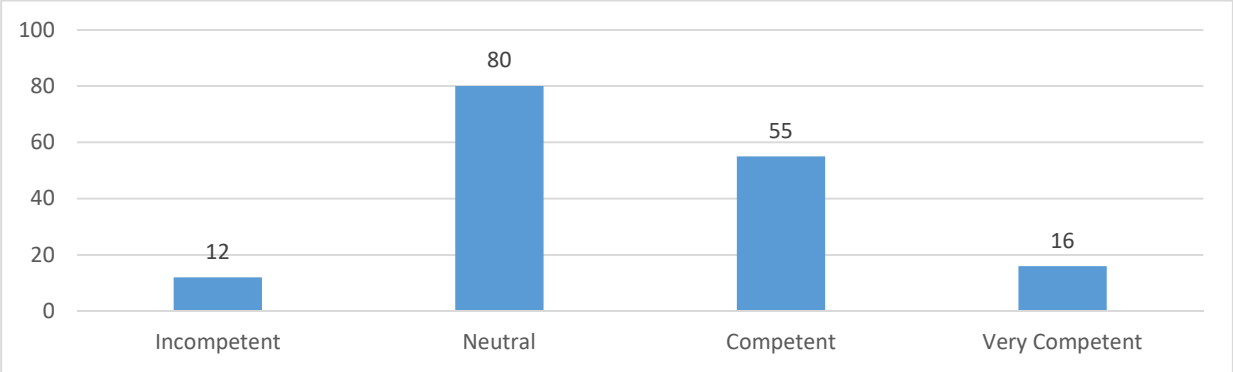
Several respondents indicated that most of their staff members are involved in DRM practices, although they lack official training in the most crucial skills related to early warning response, managing emergencies, analysis of data and decision-making processes (UNDP, 2021). One technical personnel acknowledged that "Majority of staff are aware of the effects of drought but are not well trained to understand early warnings and respond well to emergencies."The results are consistent with the findings of Eze, Petersen, and Siegmund (2024) who discovered that the capacity building programs are highly effective to enhance disaster preparedness through the enhancement of the capacity and strengths of the personnel in disaster response.

Overall Competency and Level of Experience of Staff Involved in DRM Policy

The study sought to find out the overall competency and experience of staff managing disaster risks, as their expertise is crucial for effective drought preparedness. The early warning messages need to be understood by knowledgeable and skilful personnel, ensuring they are shared with relevant actors, to guide decision making, resource mobilization and drought preparedness actions in a timely manner (Attoh & Amarnath, 2025). A substantial proportion of the respondents (49.1%) rated the competency of the staff as "neutral", which means uncertainty or divided opinion towards

the preparedness of the staff. Collectively, 33.7% of the respondents rated the staff "competent", and 9.8% rated them "very competent".

Table 1 Distribution by overall competency of staff in Tharaka Nithi County



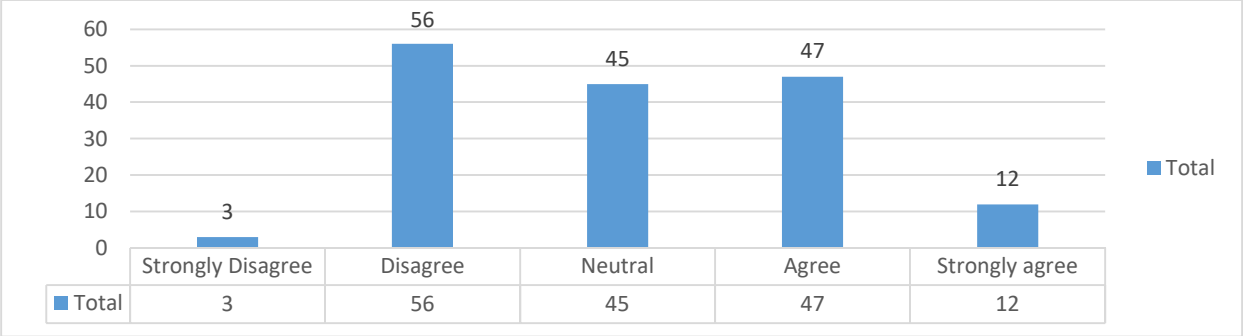
Source: Field Data 2026

Wamsler (2022) posits that scarcity of technical knowledge and drawbacks in training local actors are a major limiting factor to implementing disaster risk reduction. A worker in the agricultural department affirmed that "We have well-informed personnel, but the distribution of experience and practical skills is not even across the departments, and this influences our response time and effectiveness". These results align with the findings by Kapucu (2018), who established that the effectiveness of disaster management strongly relies on the competency and coordination ability of the personnel when a decentralized system of governance is in use.

Adequacy of Resources for Effective Staff Performance in Drought Preparedness

Resources are needed to assist staff in disaster risk management to act on early warning information, coordinate stakeholders and carry out drought preparedness plans (Sakic Trogrlic et. al., 2022). Staff capacity is a crucial factor in this study because staff must be well equipped to carry out activities which involve having adequate resources, financial, technical, logistical and institutional. The study assessed and found out that most of the respondents (34.36%) "disagreed" and reported that there were inadequate tools, funding, and support systems, whereas (27.61%) respondents were "neutral" in their response. Nevertheless, 28.83% of the respondents "agreed" and 7.4% out of the respondents strongly agreed that resources were sufficient and that they were strongly affirmed with some positive response.

Table 2 Distribution by beliefs of staff on adequate resources



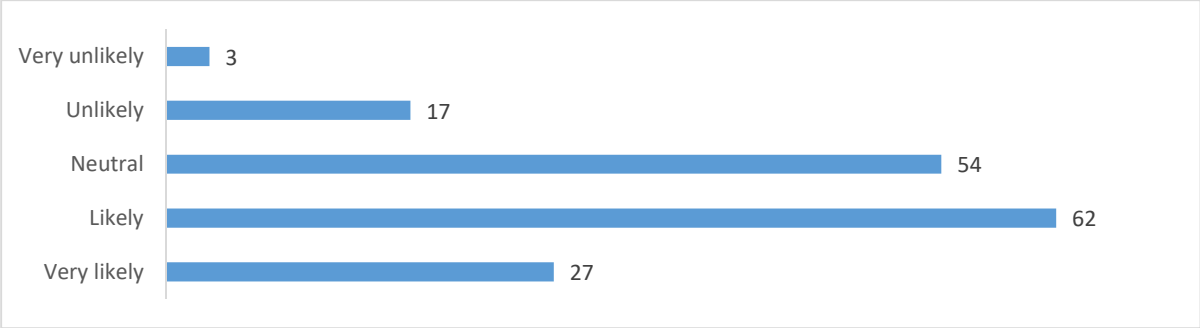
Source: Field Data 2026

Wilkinson and Peters (2019) discovered that the issue of weak financial and institutional support systems is a major challenge to the ability of local governments to execute disaster preparedness strategies effectively. Indicatively, one of the program managers was quoted saying, "Financial constraints are a major hindrance because the available budget cannot provide staff members with the resources required to effectively respond to droughts."These conclusions are rational with the arguments of Benson and Twigg (2017), who justified that inadequate and unreliable funding, is a significant limitation to successful disaster risk reduction.

Likelihood of Staff Effectively Managing Future Droughts

The study sought to determine the likelihood of staff capacity on the effective management of future droughts and the ability to implement disaster risk management (DRM) policies (Haque & Fatema, 2022). This is because drought preparedness relies not only on the existing staff capacity but also on staff's capacity to respond to future droughts. The findings of the study affirmed that 38% of the respondents responded that the "likelihood" was high, 33.13% were "neutral" in their response and 16.56% believed that it was "very likely" that the staff could manage future droughts. Nevertheless, 10.43% of the respondents reported that it was unlikely, and only 1.84% of them reported that it was "very unlikely". Drought-related staff responsibilities include use of technical knowledge, coordination of stakeholders and use of early warning information, mobilizing resources, and applying DRM policies in a timely and effective manner, which will increase with the frequency and severity of drought events.

Table 3 Distribution by likelihood of staff to manage future droughts



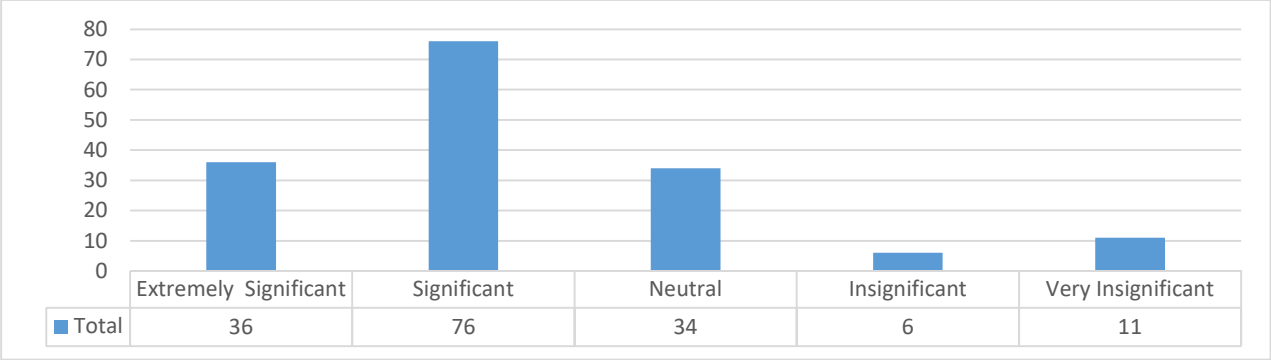
Source: Field Data 2026

Notably, the outcome of the study is an unsure opinion as to whether the present capacity of staff is capable of dealing with future droughts. One of the team leaders mentioned that, "Although current staff might be able to cope with the current circumstances, climate risks are emerging with greater frequency and intensity, and more vigilance strategies are needed to guarantee their ability to respond and adapt to these changes."These findings are in line with the study of the IPCC (2022), which highlights that the number and severity of droughts are increasing because of climate change and hence the need to enhance institutional systems level of governance.

Extent to which Improving Staff Capacity Would Enhance Drought Preparedness

The study sought to establish the level of preparedness of staff to address drought in Tharaka Nithi County. Staff capacity is fundamental to the effectiveness of officers in interpreting early warning information, as well as their capacity to coordinate stakeholders, mobilize resources, support communities and to implement drought preparedness policies (Attoh & Amarnath, 2025). Importantly, the findings established that 46.63% of the respondents believed improving staff capacity would be "significant" while 22.1% thought it would be "very significant". The remaining 20.86% of respondents were "neutral", suggesting that they were unsure, or had mixed opinions, perhaps due to differences in institutional support, operational capacity or involvement in DRM policy practices.

Table 4 Distribution of improving staff capacity to drought preparedness



Source: Field Data 2026

Mwangi et al. (2022) found out that disaster response in various counties of Kenya is enhanced by capacity building and training of staff. One key informant appropriately noted, “Skilled staff enhances coordination between government, NGOs, and communities important in responding to drought preparedness. The results, therefore, suggest that there is need for continuous training, practical skills development, and institutional support to increase the capacity of the individuals involved to be well prepared for drought and better implement DRM policies.

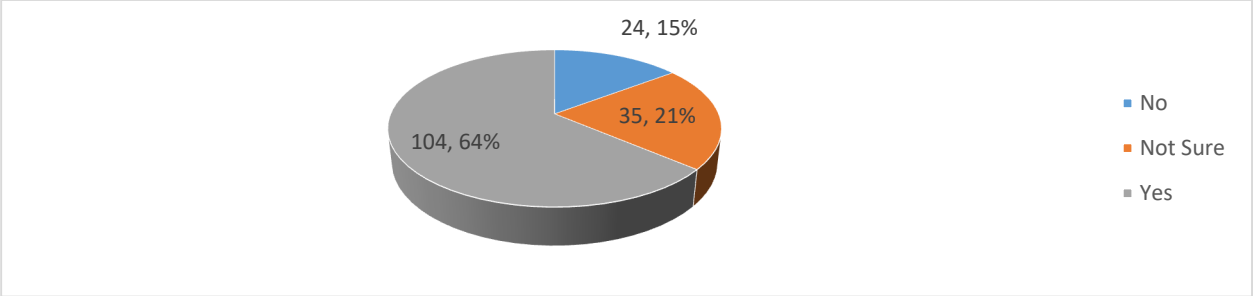
Evaluating the Effects of Stakeholder Participation on Drought Preparedness in Tharaka Nithi County

Stakeholder participation is the involvement of various actors in the planning, implementation and evaluation of disaster risk management (DRM) strategies. These actors include government agencies, non-governmental organizations (NGOs), community-based organizations (CBOs), actors in the private sector, and local communities (Sigalla et al. (2021). Active engagement is essential to make the local knowledge essential because it requires coordination, integration, and inclusiveness to increase preparedness outcomes. This issue is a specific concern that was raised by one of the program officers who whispered, "The community members are consulted at times, but they are hardly systematically involved in the decision-making processes, especially on issues that are critical such as budgeting and use of technology.”

Awareness of Stakeholders Involvement in Drought Preparedness

The study sought to examine awareness of stakeholders’ involvement because effective drought preparedness requires the participation of different actors in Tharaka Nithi County. These included county government departments, national agencies, non-governmental organizations, community leaders, farmers, and local residents (Abiddin, Ibrahim & Abdul Aziz, 2022). Stakeholder involvement is important in disaster risk management since it supports coordination, resource mobilization, information sharing, early warning communication, and implementation of preparedness activities.

Figure 5 Distribution on awareness of stakeholder's involvement in DRM



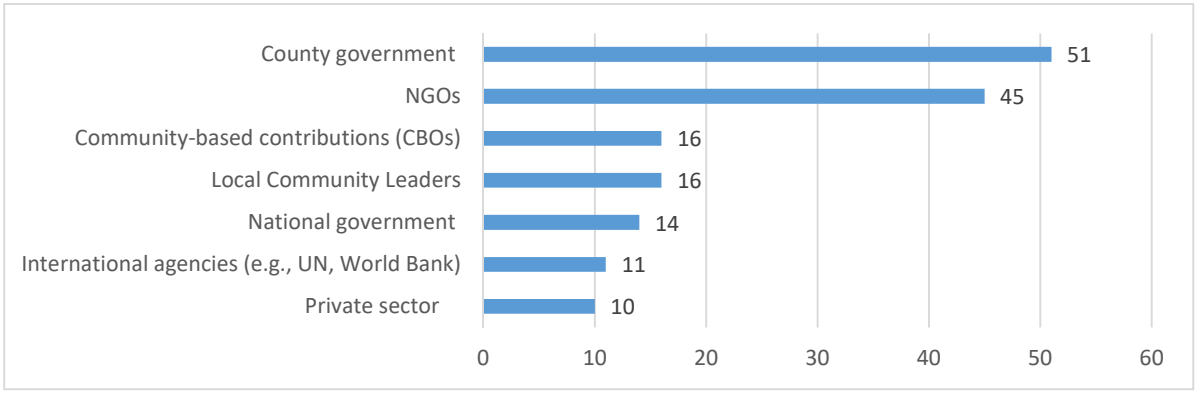
Source: Field Data 2026

Results of this learning indicated that the majority of respondents 64% knew about the involvement of the stakeholders in the drought preparedness whereas 21% "were unsure" of the stakeholder involvement in the drought preparedness. This means that despite the rather high level of awareness, a good percentage 15% of the stakeholders involved in the DRM lack a clear understanding of the roles and contributions that various actors have on the DRM. One of the community leaders was quoted saying, "I am aware that there are stakeholders involved, but I am not certain how such stakeholders are directly involved in the drought preparedness activities."This study is comparable to that of Kithikii and Mugalavai (2023), who established that even though communities are well aware of the stakeholder participation in drought preparedness, the lack of understanding about the role and responsibility undermines successful collaboration.

Stakeholders Involved in DRM and Drought Preparedness

The study sought to identify the key stakeholders involved in disaster risk management and drought preparedness is important, as effective DRM depends on the collaborative work of diverse actors. Institutions require policy guidance, resource mobilization, and early warning communication, sensitization of communities, emergency response, and implementation at the local level (Attoh & Amarnath, 2025). The findings indicated that the most dominant parties in the DRM activities include the "county government" (31.29%), non-governmental organizations "(NGOs)" (27.61%), the involvement of the "national government" (8.59%), "international agencies" (6.75%), community-based organizations "(CBOs)" 9.8%, and the "local community leaders" (6.13%), whose involvement remains relatively low.

Table 6 Distribution by which stakeholders are involved in DRM



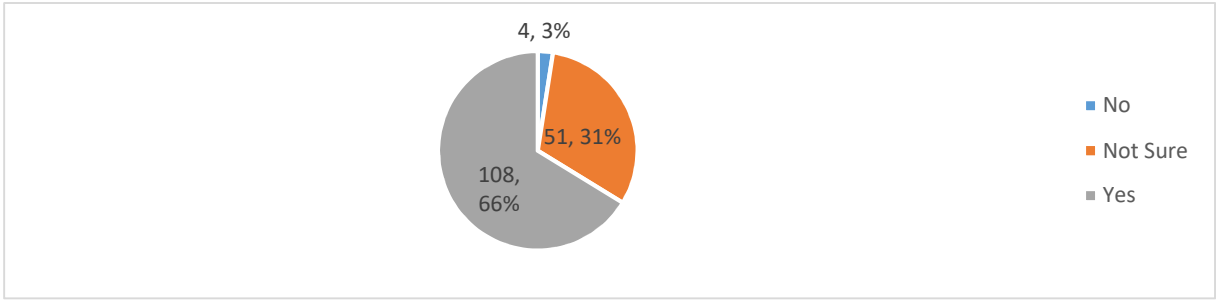
Source: Field Data 2026

One of the local participants highlighted this situation by saying, "Drought management activities are undertaken by the county government and the NGOs, but less perceived is the community-based approach." These results are matched to those of Okyere et al. (2024) who initiated out that disaster risk management efforts are often dominated by state agencies and NGOs. But the role of local populations and actors in the non-government sector is quite insignificant. Poor involvement of CBOs, local leaders, and private sector stakeholders, as was experienced in this study, is an indication of poor stakeholder integration that would compromise the coordination, accountability, and local ownership of the drought preparedness strategies.

Barriers to Stakeholder Participation in DRM and drought preparedness

This study sought to establish the existence of any form of barriers that hinder stakeholder participation in disaster risk management (DRM) and drought preparedness in Tharaka Nithi County. The barriers to the participation of stakeholders were studied since different stakeholders play a crucial role in effective disaster risk management and drought preparedness (Abderhalden, Scolobig, Lachmann, & Calvello, 2025). Planning, coordination, resource mobilization, communication, and implementation of preparedness activities should involve stakeholder groups including county government departments, national agencies, non-governmental organizations, community-based organizations and local leaders.

Figure 7 Distribution by barriers to stakeholder participation in DRM



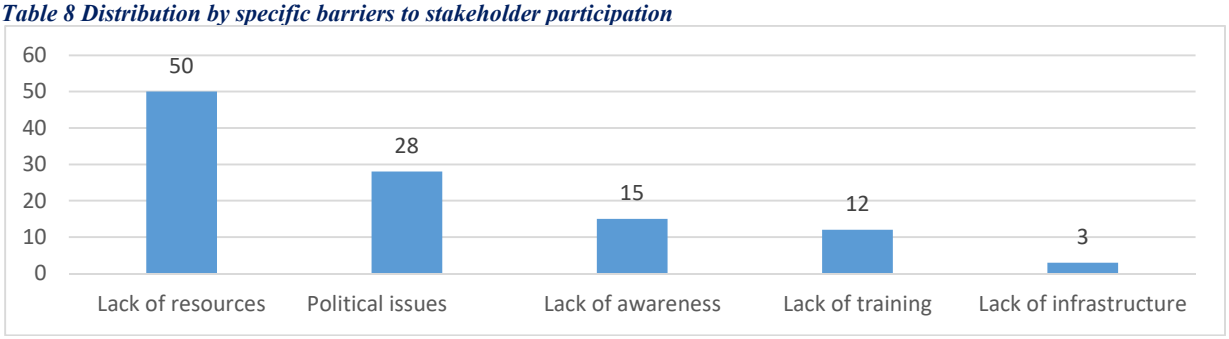
Source: Field Data 2026

The results of statistics showed that most of the respondents 66% "agreed" that there were significant barriers to stakeholder participation, with 31% of the respondents being "unsure" and only 3% of the respondents indicated the lack of any barriers. One of the policy makers pointed out these constraints, indicating that, "Among other components, poor coordination and budget constraints are some of the determinants that weaken participation making it difficult to be involved in all activities." This observation highlights the practical issues of stakeholders, especially with regard to the coordination, financial constraints, and logistical constraints. These findings are in line with those of Teshome et al. (2022) who established that insufficient funding, poor institutional coordination, and lack of stakeholder engagement are some of the major challenges in effective management of disaster risks in developing regions.

Major Barriers to Stakeholder Participation in DRM and Drought Preparedness

The study aimed to find out the major issues facing the stakeholders' participation and their type, as this is essential to make disaster risk management and drought preparation more effective. Several factors can influence stakeholder participation, including available resources, political support, stakeholders' awareness levels, training, infrastructure, and coordination (Prebanic & Vukomanovic, 2023). Stakeholders might not be able to be fully engaged in drought preparedness planning, decision making and monitoring under limited conditions.

Table 8 Distribution by specific barriers to stakeholder participation



Source: Field Data 2026

The findings showed that "lack of resources" (46.3%) is perceived as the most significant barrier, followed by "political issues" (25.93%), "lack of awareness" (13.89%), "inadequate training" (11.11%), and "poor infrastructure" (2.78%). One of the county officials highlighted this problem by saying, "The greatest challenge is the lack of political commitment and funds for drought preparedness." These results are also in line with those of Benson and Twigg (2017) who found that inadequate financial resources and insufficient political commitment are significant limitations to reducing the risk of disasters in developing countries. Strengthening resource mobilization, political accountability, stakeholder awareness, and capacity building is essential to overcome these issues.

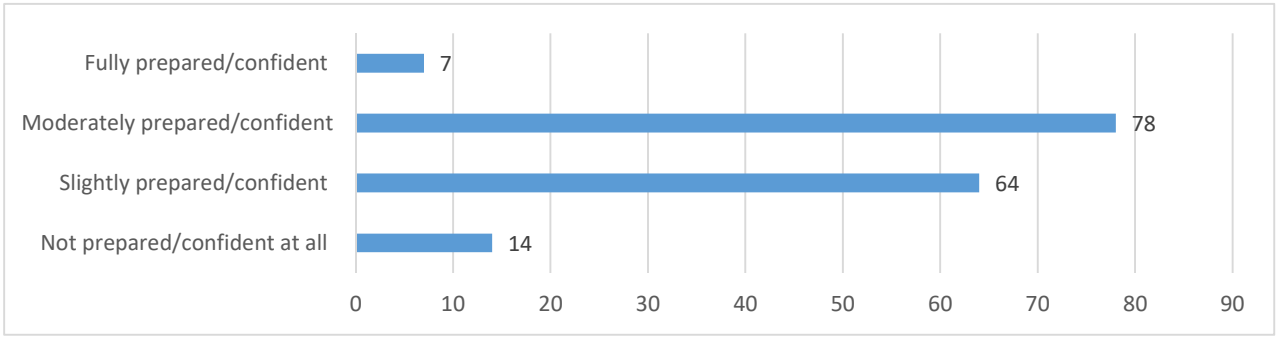
Drought Preparedness

The study was to assess the overall level of county's drought preparedness and the role played by enabling and constraining factors in implementation of DRM Policy. Drought preparedness was chosen as the principal outcome measure studied as it is part of an ability to plan, coordinate, fund and implement drought related activities in advance of peak drought conditions developing (Tsegai, Adaawen & Girault, 2022). The findings revealed that there were drought preparedness strategies but limited because of other institutional and operational challenges in Tharaka Nithi County. Financial resources were not sufficient to prepare for drought, many respondents were not sure and lack of clarity in communication. One of the communication officers summed up this challenge by stating, "Financial constraints and political factors are some of the major challenges in this regard." These findings are in line with a study by Wilkinson et al. (2017), who discovered that financial limitations and governance issues greatly restrict the effectiveness of these programs.

Level of Drought Preparedness in Tharaka Nithi County

The study sought to determine the drought readiness of Tharaka Nithi County on a scale of 1 to 5, based on stakeholders' views. Drought preparedness was studied, as it provides a lens into how well the county is prepared to anticipate, plan for, respond to, and lessen the effect of drought before it occurs (Haigh, Wickham, Hamlin & Knutson, 2023). Funds, personnel, coordinating the various partners, technology, early warning and implementing policy are all necessary for drought preparedness. These findings suggest that most of the respondents believe that the county preparedness is moderate-low. This problem was pointed out by one of the key informants who mentioned, "We are yet to reach the next stage of being fully prepared in case of the next drought, yet we have done a few things, which are the work of local authorities and NGOs." This implies that although there are some preparedness mechanisms, there is still a lack of confidence in the county to effectively manage drought.

Table 9 Distribution by the level of drought preparedness in Tharaka Nithi County



Source: Field Data 2026

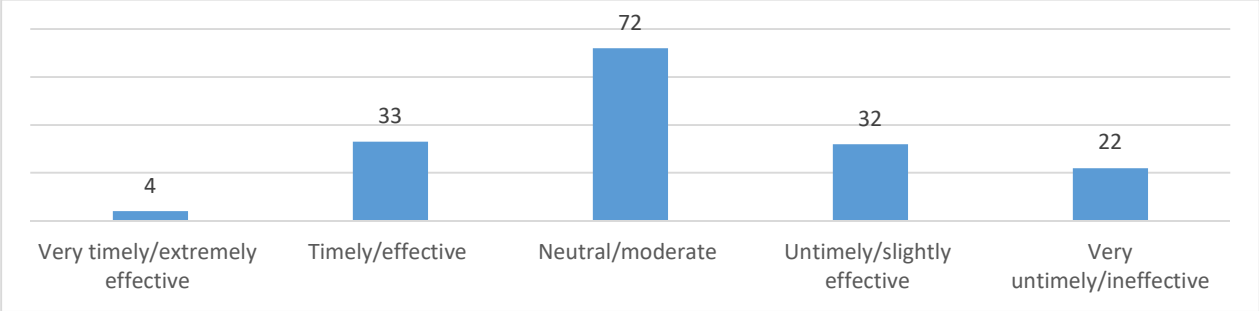
The findings established that the biggest proportion 47.9% of the respondents indicated that they were "moderately prepared/confident". A further 39.3% of the respondents felt "somewhat ready/confident". Only 4.3% felt absolutely "prepared/confident" and 8.6% experienced no preparation/confidence at all. These findings can be compared to the outcomes of a study done by

Sahana et al. (2021), who also observed that moderate preparedness is the characteristic feature of the drought prone areas due to the discontinuous implementation of the policies.

Sufficiency and Timeliness of Financial Support for Drought Preparedness Activities

This learning intended to establish the level of satisfaction of the respondents with the financial support received for activities related to drought preparedness in their communities and when it was received. The adequacy and swiftness of financial resources were explored, as drought preparedness depends on the availability of financial resources at the time, they are most needed (Wens, Van Loon, Veldkamp & Aerts, 2022). The results indicated that most respondents viewed financial support for drought preparedness as low. The systems should be enhanced to be more responsive and well-coordinated especially in regard to the punctual disbursement of funds to the agencies involved in disaster response and the effective communication among the agencies involved in disaster response.

Table 10 Distribution by effectiveness of response mechanisms during drought



Source: Field Data 2026

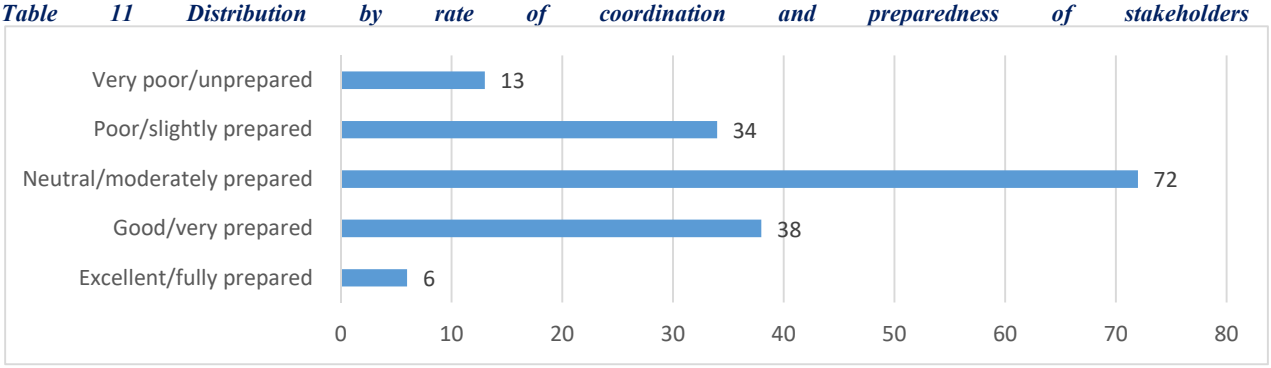
Outcomes showed that most of the respondents consider the financial support to be moderate and inconsistent with 44.17% rating it as “neutral”, which means that there is uncertainty as to whether it is adequate and timely. Only 20.25% of the respondents perceived the support as being “timely and effective” and 19.63% saw the support as partially or “untimely effective”. The percentage of the respondents who rated it as very effective is comparatively low (13.5%). This issue was pointed out by one of the service providers who affirmed, “The response to a drought is not fast and in most cases it is too late to assist the most affected regions.”The findings are consistent with those of Kellett and Caravani (2013) who established that the delays and unpredictability in disaster funding significantly reduce the effectiveness of preparedness activities, particularly in vulnerable areas.

Coordination and Preparedness of Stakeholders

The study aimed to determine the perception of the level of coordination and preparedness of the stakeholders in Tharaka Nithi County. Across the various stages of drought preparedness, it is necessary for different drought actors to coordinate and respond in a timely, organized, and complementary way, which is why the coordination and readiness of these actors have been examined in this study. Nevertheless, recent studies have paid more attention to the presence of

coordination structures and models of stakeholder engagement, without properly addressing how coordination works in the actual cases of disaster.

Table 11 Distribution by rate of coordination and preparedness of stakeholders



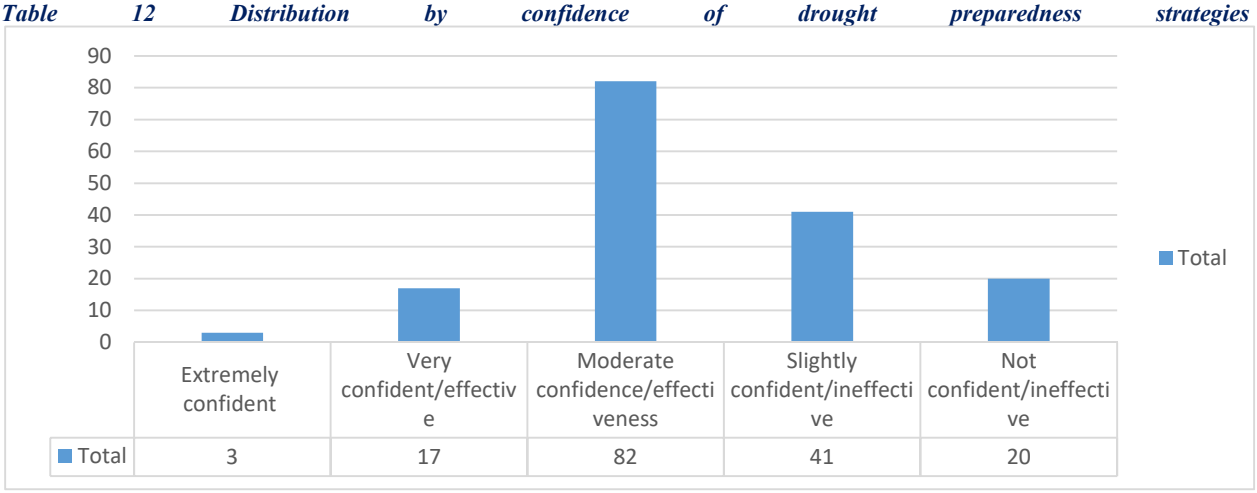
Source: Field Data 2026

The results showed that the highest percentage of the respondents (44.17%) rated the stakeholder coordination as "moderate or neutral". The other 23.31% found coordination to be "satisfactory" and only 3.68% perceived stakeholders as "highly prepared". Conversely, 7.98% rated preparedness as "poor", pointing to the lack of coordination, communication, and operational efficiency. These challenges were constant as highlighted by one of the program managers who added, "Although some agencies may appear ready, there is always a delay in mobilizing resources and the stakeholders do not move in unison during crises, which leads to confusion and slow response." These results are consistent with Aitsi-Selmi et al. (2016), who concluded that successful disaster preparedness would involve a coordinated multi-stakeholder involvement and that a weak collaboration would lead to inefficiencies and slow responses.

Confidence in the Long-Term Effectiveness of Drought Preparedness Strategies

In this context, the study set out to establish the confidence level of various stakeholders of the effectiveness of the existing drought preparedness strategies in the Tharaka Nithi County. The issue of long-term effectiveness of drought preparedness strategies was assessed in this study because they are linked to the viability of drought management over time, which depends on maintenance of the use of these strategies. Continued monitoring is key to long-term effectiveness, as are being proactive, having enough funding, institutional support, coordinating stakeholders, applying technological solutions, and staff capacity. This is an expression of a critical opinion that current strategies are not looking ahead with long term planning and sustainability but rather more short term reactions.

Table 12 Distribution by confidence of drought preparedness strategies



	Extremely confident	Very confident/effective	Moderate confidence/effectiveness	Slightly confident/ineffective	Not confident/ineffective
Total	3	17	82	41	20

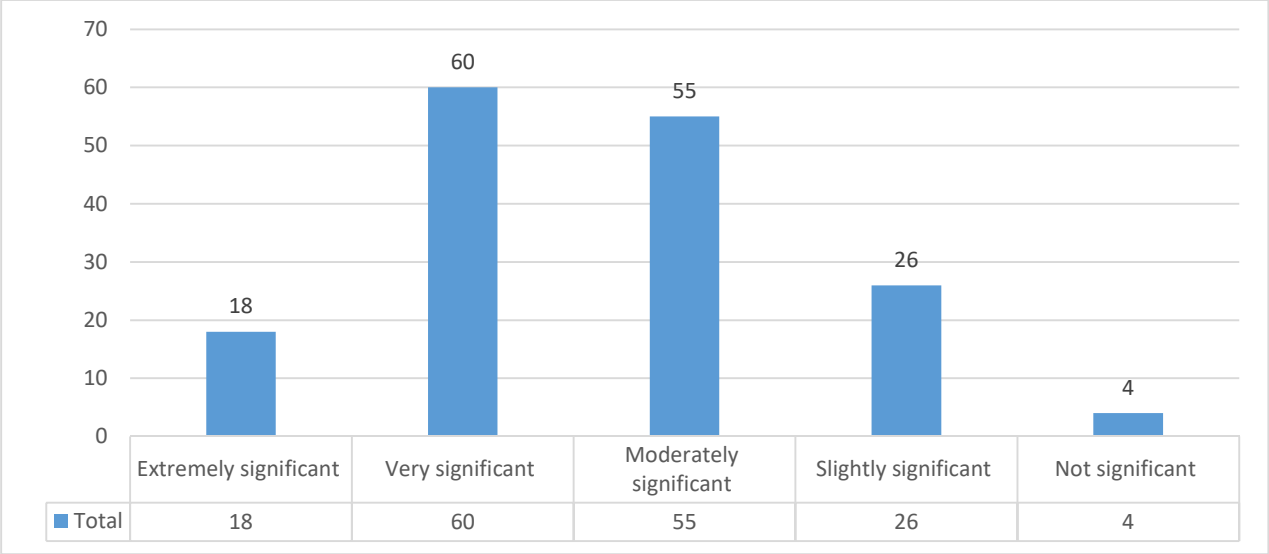
Source: Field Data 2026

The findings demonstrate that the overall confidence level is "moderate" with 50.31% of the participants supporting it. Only a smaller percentage (10.43%) expressed a "high confidence" whereas 25.15% expressed a "low confidence". Moreover, 12.27% of the respondents said that they were "not at all confident" and only 1.84% of the respondents said that they were "very confident". One of the respondents pointed this issue out by saying, "The measures that have been implemented are more of reactive and not proactive although some progress has been made." These findings are in line with Eriksen et al. (2021), who revealed that the strategies of climate adaptation are not likely to provide the long-term resilience when reactive and not supported by long-term investment and institutional commitment.

Significance of the challenges Affecting DRM Policy Implementation

The study sought to evaluate the perception of the respondents regarding the severity of the challenges that hinder the implementation of the DRM policy and drought preparedness in Tharaka Nithi County. The importance of challenges to implementing disaster risk management was investigated as a prerequisite for drought preparedness to be built on the capacity of institutions to make these policies work in practice. Despite the existence of DRM policies, their effectiveness may be hindered by a lack of coordination, insufficient resources, weak institutional capacity, limited stakeholder involvement, political interference, and communication gaps.

Table 13 Distribution by significance of implementing DRM challenges



Source: Field Data 2026

The findings showed that the majority of the respondents consider these challenges to be very significant with 36.81% of the respondents rating them as "very significant" and 33.74% as "moderately significant". Another 11.04% of the respondents considered the challenges to be "extremely significant", and 15.95% considered them to be "slightly significant". A small percentage (2.45%) perceived the challenges as being "insignificant". These findings indicate that there is almost universal acceptance that there are significant obstacles in the successful application of DRM strategies. This was one of the issues that one of the respondents raised by stating, "Lack of coordination between local and national stakeholders is a significant setback." These results are in line with those of UNDRR (2019), which determined that the main barriers to effective disaster risk management in the world are the challenges in governance, lack of resources, and poor institutional coordination.

CONCLUSION AND POLICY RECOMMENDATIONS

Conclusion

It was concluded that the success or failure of Disaster Risk Management (DRM) policy implementation is a vital factor that determines the readiness for drought in Tharaka Nithi County. The study provides empirical evidence that the capacity of staff, financial mechanisms, use of technology, and stakeholder involvement have a great effect on the level of preparedness of the county individually and collectively. Staff capacity turned out to be the strongest predictor of these among them, and the role of human skills, experience, and institutional knowledge in implementing policy frameworks in operational preparedness is highlighted as essential.

Based on the Human Capital Theory, the results confirmed that institutions are better prepared for droughts when they invest in continuous trainings, professional growth, and technical skills. Yet, the moderate levels of preparedness are most important, which means that currently, the institution of DRM is mostly reactive with little specialization, inadequate early warning information usage, and uneven institutional preparedness. The resource availability, strategic financial use, and stakeholder integration are the basic determinants of drought preparedness.

In regards to the Stakeholder Theory, the research highlighted that the DRM policies will work best when the decision-making processes are inclusive, transparent, and based on the local realities. The average self-evaluation of the respondents with respect to long-term preparedness as such is an indication that policy changes are necessary so that positive planning, centralized resource management, and long-term stakeholder partnership can be established to develop resilient and responsive drought preparedness frameworks in Tharaka Nithi County.

Recommendations

From the study findings, the researcher recommended that Tharaka Nithi County should be improved in the application of the Disaster Risk Management policies by putting emphasis on the capacity building, proper and timely funding, use of improved technology, and the participation of all the stakeholders. Specifically, the county government should consider investing in the continued training of the staff, institutionalizing the use of early warning and climate-related information technologies, and presenting credible financial approaches toward proactive drought preparedness rather than reactive responses. Moreover, enhanced coordination arrangements should be actively involved with community actors, NGOs, and the private sector to ensure that drought preparedness plans are locally based, sustainable, and resilient to regular occurrences of climate shocks.

Recommendations for Practice

- Increase staff capacity through training and specialization: County and national DRM institutions should focus on continuous professional training in the field of drought risk assessment, interpretation of early warnings, and emergency coordination. For instance, the county officers and ward administrators should regularly educate about the drought early warning system to ensure the response in the case of timely decision-making and preparedness for droughts.
- Enhance coordination among stakeholders and increase community participation: The implementation of DRM must use multi-stakeholder platforms to ensure the involvement of community elders, non-governmental organizations, community-based organizations, and the corporate sector. Ownership, trust, and integration of indigenous knowledge on drought preparedness strategies can be improved by inviting local community leaders to DRM planning forums.

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