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National Food Policies and Food Security in Kenya's Arid and Semi-Arid Lands

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Abstract

Food insecurity remains a persistent challenge in Kenya's Arid and Semi-Arid Lands (ASALs) due to a combination of frequent climate shocks such as droughts, floods and livestock diseases. These extremes disrupt traditional ways of life and devastate crops and livestock, leaving communities with little to no food. This paper examined the effect of national food policies and strategies on food security in these fragile regions, specifically focusing on initiatives designed to address the recurring problem. The arguments of the decentralization and institutional capacity theories were used to guide the analysis. Methodologically, the study employed a descriptive survey research design to inform data collection and analysis. The research established that despite government interventions, food insecurity remains prevalent in ASAL regions. The causes of this insecurity are multifaceted, encompassing factors such as climate variability, restricted access to resources and socio-economic disparities. The paper recommends a review of national food policies targeting ASALs to align them with the drivers of food insecurity. The review should include community engagement and stakeholder collaboration to attain effective and sustainable solutions.

Keywords: ASAL, climate shocks, food policies, food security.

Introduction

Kenya's Arid and Semi-Arid Lands (ASALs) represent a significant portion of the country's landmass and are beset by persistent food insecurity, with an estimated 80% of the nation's landmass affected (FAO, 2020). The livelihoods of communities in these regions rely heavily on rain-fed agriculture and livestock rearing making them vulnerable to the effect of climate shocks such as droughts, floods and extreme temperatures which disrupt agricultural activities, exacerbating food shortages (Kaguara, 2013). Food security depends heavily on the strategies set by a country's food policy framework which serve as a crucial mechanism for mitigating vulnerabilities and enhancing resilience. The paper assessed the effectiveness of these policies, including the national drought management strategies, in bolstering food security in Kenya's ASALs. It zeroes in on initiatives tailored to address the distinct and unique challenges in the ASAL areas. In doing so, the study provides an analysis of the intricate dynamics that underpin food security governance in Kenya's ASALs.

The Research Question

Food insecurity is a persistent challenge in Kenya's ASALs. These regions' dependence on rain-fed agriculture and livestock rearing makes them highly susceptible to climate related shocks that disrupt agricultural activities, leading to food shortages and undermining the livelihoods of millions. National

food policies incorporating sedentary crop growing and livestock rearing have a big impact in shaping food security in ASALs. Ideally, these policies should act as a safety net, mitigating vulnerabilities and strengthening the resilience of communities. Studies on food security in Kenya have adopted broader perspectives, encompassing various regions and contexts (Opiyo *et al*., 2022). This approach ignores the unique socio-economic and environmental conditions prevalent in ASALs which this paper argues require a more nuanced approach. The varying approaches adopted in the extant literature notwithstanding, the effectiveness of national food policies in achieving this goal is under researched. Unlike other regions of Kenya, ASALs grapple with limited access to water resources, harsh environmental conditions and distinct socio-economic realities. Scrutinizing how national food policies, particularly drought management strategies, function within the specific context of ASALs is crucial. The study endeavored to contribute to filling this gap in knowledge. Specifically, the research explored issues such as access to resources provided by drought management programs, the effectiveness of these resources in mitigating food shortages, and challenges faced by communities in accessing and utilizing such support mechanisms.

Methodology

To gain an understanding of how national food policies have affected food security in Kenya's ASALs, this paper adopted a mixed methods approach, combining qualitative and quantitative techniques in the collection of data. Key informant interviews and a survey questionnaire were used to gather data from sources such as the Food and Agriculture Organization (FAO) and related Kenyan government agencies. These sources provided information on factors like food production levels, malnutrition rates, and household food insecurity scores within ASAL regions. This approach was adopted to help capture both the quantitative realities of food security and the lived experiences of communities within ASALs. The resulting quantitative data was analyzed using descriptive statistics while the qualitative data was organized into themes for ease of analysis. The two datasets were discussed with reference to the existing literature.

The research adopted a mixed-methods approach to assess how national drought management strategies impacted food security in ASAL regions. Quantitative analysis, including statistics and time-series data, showed correlations between specific strategies and changes in food security metrics like production levels and malnutrition rates. Qualitative analysis, through interviews and surveys with local people, provided insights into the real-life experiences of those affected and how national food policies impacted their daily lives.

Emergent Discourse on National Food Policies and Food Security in Kenya's ASALs

Kenya’s ASALs continue to grapple with entrenched food insecurity despite some level of implementing the national food policies aimed at mitigating these challenges. However, the effectiveness of these policies within the distinct ecological contexts of ASALs necessitates critical examination. According to Wanjiru (2021), the reliance on rain-fed agriculture coupled with traditional practices such as pastoralism systems exposes the population in ASALs vulnerable to food insecurity. It is in this context that a discussion on the persistence of food insecurity and a critique of the effectiveness of national food policies in alleviating food insecurity is critical.

a. The Persistence of Food Insecurity

The surge in food insecurity in ASALs despite extensive interventions from government and non-governmental organizations (NGOs) underscores the need for a critical reevaluation of existing strategies.

Mwangi *et al*. (2020) argue that despite numerous initiatives aimed at alleviating food insecurity, ASALs continue to face significant challenges in accessing an adequate and nutritious food supply. These challenges are exacerbated by the harsh environmental conditions prevalent in ASAL regions, including erratic rainfall patterns, water scarcity and soil degradation, which further compound the vulnerability of already marginalized communities.

Inadequacy of existing policies contribute to the persistence of food insecurity in ASALs, as noted by Devereux *et al*. (2020). Many of these policies are characterized by a one-size-fits-all approach that fails to consider the unique socio-economic, environmental, and climatic factors inherent in ASAL environments. This lack of context sensitivity results in interventions that may not effectively address the root causes of food insecurity or adequately meet the needs of local communities. Moreover, inappropriate policies often overlook the importance of community engagement and participation in the design and implementation of interventions, leading to a disconnect between policy formulation and the realities on the ground.

Further, food insecurity is a multifaceted issue influenced by a myriad of interconnected factors. Studies by Ndegwa *et al*. (2023) and Opiyo *et al*. (2022) emphasize the complexity of this phenomenon, revealing a web of causality that extends beyond simple explanations. Among the primary drivers identified are erratic rainfall patterns exacerbated by climate change, which directly impact agricultural productivity and food availability. Additionally, land degradation, often stemming from unsustainable land management practices, further exacerbates the vulnerability of agricultural systems to climatic shocks and reduces the land's capacity to support food production (Ndegwa *et al*., 2023).

Moreover, population growth exerts pressure on limited natural resources, intensifying competition for land, water and food. This pressure is particularly pronounced in regions with high population density, worsening food insecurity in already vulnerable communities (Opiyo *et al*., 2022). Furthermore, socio-economic inequalities play a significant role, with marginalized populations facing limited access to resources, education, and economic opportunities, perpetuating cycles of poverty and food insecurity. These factors operate in a dynamic and interconnected manner, with each reinforcing or exacerbating the impacts of the others (Ndegwa *et al*., 2023; Opiyo *et al*., 2022).

Reviews by Bedeley *et al*. (2020) and Eriksen *et al*. (2021) underscore critical deficiencies in the design of interventions targeting food insecurity, particularly the prevalence of top-down approaches. These interventions, often driven by external actors such as governments or international organizations, are formulated without sufficient consideration for local contexts and knowledge systems. Consequently, they may lack relevance and fail to effectively address the complex and context-specific factors contributing to food insecurity in different regions. One major criticism of top-down approaches is their disregard for the invaluable local knowledge and expertise possessed by communities affected by food insecurity. By sidelining local perspectives and experiences, interventions may overlook innovative solutions and fail to leverage existing resources and capacities within communities. This lack of engagement with local stakeholders undermines the ownership and sustainability of interventions, as communities may feel disconnected from externally imposed initiatives that do not align with their needs or priorities**.**

Ayantunde *et al*. (2020) and Nyongesa *et al*. (2023) underscore the imperative of transitioning from short-term relief efforts to building long-term resilience in addressing food insecurity. While short-term relief measures can provide immediate assistance during crises, they often fail to address the underlying vulnerabilities that perpetuate food insecurity. This approach negates the pressing need for interventions that empower communities to adapt to climatic shocks and develop sustainable livelihoods capable of

withstanding future challenges. However, the predominant focus on short-term relief is its limited effectiveness in addressing the root causes of food insecurity. While emergency food aid may provide temporary relief, it does little to address the underlying structural factors driving vulnerability to food insecurity, such as poverty, environmental degradation and limited access to resources. Moreover, reliance on short-term relief measures can foster dependency among communities, undermining their capacity to build resilience and achieve long-term food security.

The neglect of traditional pastoral systems in addressing food insecurity, as highlighted by studies conducted by Bryan *et al*. (2022) and Catley *et al*. (2021), represents a significant oversight in contemporary interventions. Pastoralism has long been a central feature of livelihood strategies in ASALs, with communities relying on livestock rearing as a primary source of food and income. These traditional systems have evolved over generations to adapt to the harsh and variable climatic conditions characteristic of ASAL environments, demonstrating resilience and sustainability in the face of adversity. However, despite their proven efficacy, pastoral systems are often marginalized or overlooked in favor of more conventional agricultural approaches. This neglect stems from a lack of understanding of the socio-cultural significance and ecological relevance of pastoralism, as well as misconceptions about its compatibility with modern development goals. Consequently, pastoral communities are frequently excluded from mainstream development initiatives, depriving them of vital support and resources needed to sustain their way of life and enhance their food security.

The significant impact of conflict and political instability on food security, particularly in regions already vulnerable to food insecurity was examined by Devereux *et al*. (2023). Conflict disrupts agricultural activities, undermines food production, and disrupts supply chains, exacerbating the challenges faced by communities in accessing food. Moreover, the displacement of populations resulting from conflict further strains already limited resources, leading to increased competition for food and exacerbating food insecurity among affected populations. Conflict not only directly affects food production but also creates an environment of fear, uncertainty, and instability that hinders investment in agriculture and economic development. In conflict-affected areas, farmers may be unable to tend to their fields or access markets to sell their produce, leading to reduced agricultural productivity and income loss. Furthermore, the destruction of infrastructure, such as roads, markets, and irrigation systems, further compounds the challenges faced by farmers in accessing inputs and markets, aggravating food insecurity in conflict-affected regions.

Njuki *et al*. (2020) and Cissé *et al*. (2022) focused on the pervasive gender disparities in access to land, resources, and decision-making power, highlighting the critical importance of empowering women in efforts to improve household food security. Gender inequalities restrict women's access to productive resources such as land, credit, and agricultural inputs, limiting their ability to engage in productive activities and contribute to household food production. Furthermore, women often face barriers to accessing education, extension services, and market opportunities, further intensifying their vulnerability to food insecurity. Empowering women is not only a matter of social justice but also essential for enhancing household food security and promoting sustainable development. When women have equal access to resources and decision-making power, household food security improves significantly. Women often play a central role in food production, processing, and preparation, making their empowerment crucial for ensuring food availability, access, and utilization within households. Additionally, women are key agents of change in promoting sustainable agricultural practices, enhancing resilience to climate change, and improving nutritional outcomes for themselves and their families.

Lemoine *et al*. (2020) and Mutie *et al*. (2021) studied the pervasive data gaps and monitoring challenges in assessing food insecurity within ASALs. These regions, characterized by harsh climatic conditions and socio-economic marginalization, pose unique challenges to data collection and monitoring efforts. Limited access to remote and hard-to-reach communities, coupled with inadequate infrastructure and institutional capacity, hampers the collection of comprehensive and reliable data on food security indicators. Consequently, the absence of accurate data undermines the ability of policymakers and stakeholders to effectively target interventions and monitor progress towards addressing food insecurity in ASALs. The lack of comprehensive data not only impedes the identification of vulnerable populations but also undermines the design and implementation of evidence-based interventions. Without a clear understanding of the scope, severity, and underlying causes of food insecurity, interventions may fail to adequately address the root causes of the problem or target the most vulnerable groups. Moreover, the absence of robust monitoring systems limits the ability to track changes in food security status over time, hindering the evaluation of intervention effectiveness and the identification of emerging challenges.

The inadequate investment in long-term solutions to address food insecurity, particularly in regions prone to drought and other climate-related challenges were studied by Toulmin *et al*. (2020). Despite the recognition of the need for sustainable and resilient approaches, there remains a significant gap in funding for critical areas such as infrastructure development, agricultural research, and social safety nets. Insufficient investment in these long-term solutions undermines efforts to build resilience and adaptability in vulnerable communities, perpetuating cycles of food insecurity and poverty. The lack of investment in infrastructure development, including irrigation systems, roads, and storage facilities, limits agricultural productivity and market access in drought-prone regions. Additionally, the underfunding of research on drought-resistant crops and sustainable agricultural practices hinders the development and adoption of innovative solutions to enhance food production and resilience to climate change. Moreover, the absence of robust social safety nets, such as cash transfer programs and food assistance programs, leaves vulnerable populations without adequate support during times of crisis, exacerbating the impacts of food insecurity.

The need to address unsustainable resource management practices, such as deforestation and overgrazing, which have significant implications for food security were studied by Henry *et al*. (2022) and Broch-Due *et al*. (2023). These practices not only contribute to environmental degradation but also undermine the long-term viability of agricultural systems, exacerbating food insecurity in vulnerable regions. Deforestation and overgrazing degrade ecosystems, reduce biodiversity, and diminish the availability of natural resources essential for food production. Deforestation, in particular, leads to loss of habitat, soil erosion, and decreased water retention, compromising agricultural productivity and increasing the vulnerability of communities to climate-related shocks such as droughts and floods. Similarly, overgrazing depletes vegetation cover, reduces soil fertility, and accelerates land degradation, further undermining the resilience of agro-pastoral systems and exacerbating food insecurity among pastoralist communities.

The imperative for holistic and context-specific approaches in addressing food insecurity was highlighted by Nyongesa *et al*. (2023). Such approaches recognize the intricate web of interconnected factors that contribute to food insecurity, including socio-economic disparities, environmental degradation, climate variability, and governance challenges. By adopting a holistic perspective, interventions can better address the root causes of food insecurity and promote sustainable solutions that address the diverse needs and priorities of local communities. Holistic approaches prioritize the empowerment of local communities by engaging them in decision-making processes, building their capacity to manage resources sustainably, and fostering resilience to shocks and stresses. By actively involving communities in the design,

implementation, and evaluation of interventions, holistic approaches ensure that interventions are contextually relevant, culturally appropriate, and responsive to local realities. Additionally, empowering communities strengthens ownership, fosters collaboration, and enhances the sustainability of interventions over the long term.

b. Critique of the Extant National Food Policies and Food Security Frameworks

Despite the establishment of Kenya's National Food and Nutrition Security Policy (NFNSP) in 2012, as outlined by the Government of Kenya, food insecurity persists as a significant challenge in the country, as highlighted by Ndegwa *et al*. (2023). There are various shortcomings in existing policies and frameworks that hinder their effectiveness in addressing the root causes of food insecurity and achieving meaningful improvements in food access, availability, and utilization. Existing policies place insufficient focus on addressing the underlying structural factors driving food insecurity, such as poverty, inequality and environmental degradation. While the NFNSP outlines strategies for improving agricultural productivity, enhancing food access, and strengthening nutrition interventions, Porter et al. (2020 and Willett et al. (2019) argue that these efforts often prioritize short-term solutions over long-term sustainable development approaches. Additionally, there is a lack of coordination and integration among different sectors and stakeholders involved in food security governance, leading to fragmentation, duplication of efforts, and gaps in implementation.

The implementation of food security policies, undermines effectiveness and sustainability. Bedeley *et al*. (2020) highlight that policies often lack sufficient resourcing, monitoring, and evaluation mechanisms, leading to challenges in translating policy intentions into tangible outcomes. Without adequate resources and monitoring systems, it becomes difficult to assess the impact of interventions and make informed decisions about resource allocation and program adjustments. Moreover, Eriksen *et al*. (2021) point out that top-down approaches to policy implementation often fail to consider local contexts and knowledge systems. These approaches neglect the invaluable insights and expertise of local communities, resulting in interventions that may be poorly adapted to the realities and needs of the target populations. As a result, interventions may lack relevance, face resistance, or even exacerbate existing challenges.

Moreover, policies such as the NFNSP tend to prioritize short-term relief measures over long-term resilience-building efforts. The NFNSP, as outlined by the Government of Kenya in 2012, emphasizes emergency response mechanisms to address immediate food needs during crises. However, this approach fails to address the underlying drivers of food insecurity and perpetuates dependency on external assistance. Ayantunde *et al*. (2020) emphasizes the importance of shifting towards long-term resilience-building strategies. Empowering communities to adapt to climatic shocks and develop sustainable livelihoods is crucial for achieving lasting change in food security outcomes.

Furthermore, some food security frameworks in Kenya neglect the importance of pastoral systems, which have been integral to livelihoods in the country's drylands for generations (Catley *et al*., 2021). Overlooking pastoralism disregards its potential for sustainable food production if properly supported with enabling infrastructure and research. Pastoral systems have adapted to harsh environmental conditions and provide significant contributions to food security through livestock rearing. However, inadequate attention to these systems in policy frameworks limits their potential to contribute to overall food security and resilience in arid and semi-arid regions.

In addition, gender disparity poses a significant challenge to achieving food security in Kenya. Women in particular often face limited access to land, resources, and decision-making power in food production systems (Njuki *et al*., 2020). Frameworks that fail to address these inequalities overlook a crucial aspect

of food security, as women play key roles in agricultural production, processing, and marketing. Failing to empower women and address gender disparities not only perpetuates social injustices but also hinders efforts to enhance agricultural productivity and ensure equitable access to food resources. Therefore, integrating gender-responsive approaches into food security frameworks is essential for achieving inclusive and sustainable food security outcomes in Kenya.

The identification of inconsistencies and contradictions within policy documents, as brought to light by Devereux *et al*. (2020), underscores the complexity of addressing food security issues in ASALs. These disparities may stem from a historical legacy of marginalization that has persisted in various forms, as highlighted by Mwangi *et al*. (2020). Historical analyses suggest that colonial policies systematically marginalized ASAL regions, relegating them to the periphery of development agendas and perpetuating socio-economic disparities that continue to affect these communities. Despite efforts towards economic liberalization, policies promoting market-driven approaches may overlook the unique vulnerabilities of ASALs, such as limited access to resources, climatic variability, and inadequate infrastructure, further exacerbating food insecurity within these regions.

Furthermore, the adoption of a one-size-fits-all approach to addressing food insecurity within ASALs fails to account for the nuanced spatiotemporal variations present in these environments, as emphasized by Mwangi *et al*. (2020). ASAL regions encompass diverse ecological, climatic, and socio-economic contexts, each presenting distinct challenges and opportunities for agricultural production and livelihoods. A uniform approach to policy formulation and implementation overlooks these variations, resulting in interventions that may not effectively address the root causes of food insecurity or meet the specific needs of ASAL communities. Consequently, such policies risk being ineffective or even exacerbating existing disparities within ASAL regions.

National food policies frequently fail to adequately address the nuanced needs of these regions. Consequently, this mismatch between policy design and local realities poses significant barriers to enhancing food production and access in ASALs, perpetuating the cycle of food insecurity. Studies shed light on the limitations inherent in current national food policies, further underscoring the need for targeted interventions in ASALs with Wanjiru (2021) highlighting how the predominant focus on conventional agricultural practices overlooks the potential of alternative approaches suited to ASAL environments, such as drought-resistant crops or sustainable livestock management techniques. This oversight underscores the imperative for policy adaptations that align with the unique ecological conditions and socio-economic dynamics of ASALs, emphasizing the importance of context-specific solutions in combating food insecurity.

A significant issue within national food policies for ASALs is the disproportionate emphasis on maize production, which overlooks the suitability of drought-resistant crops better adapted to these regions. Omiti *et al* (2022) contend that this narrow focus neglects the ecological realities of ASALs, where traditional crops like maize may struggle to thrive due to water scarcity and erratic rainfall patterns. Instead, promoting the cultivation of drought-resistant crops such as sorghum, millet, or indigenous varieties better aligned with the arid conditions of ASALs could offer a more sustainable solution to food insecurity. By diversifying crop production and embracing locally adapted alternatives, ASAL communities can build resilience against climate shocks and enhance food security in the long term.

The overemphasis on maize production in ASAL regions not only neglects the ecological suitability of these areas but also exacerbates food insecurity through soil degradation and declining yields. Omiti *et al* (2022) argues that the intensive cultivation of maize can lead to soil nutrient depletion and degradation of

soil structure, diminishing its capacity to support healthy crop growth. Consequently, this degradation perpetuates a cycle of diminishing agricultural productivity, exacerbating food insecurity and heightening vulnerability to food shortages in ASAL regions. Moreover, the reliance on mono-cropping maize further impairs the situation by increasing susceptibility to pests and diseases, reducing resilience to climate variability, and limiting options for crop diversification that could contribute to more sustainable food production systems.

An additional concern within the realm of national food policies for ASALs revolves around the insufficient support for sustainable land management practices. Ndegwa *et al* (2023) maintains that the prevailing policies do not adequately tackle the array of environmental challenges afflicting ASALs, such as soil erosion, deforestation and desertification. These unsustainable land management practices not only jeopardize the delicate ecological balance of ASALs but also exacerbate food insecurity by diminishing traditional food sources and hampering income generation opportunities for local communities. The degradation of land leads to decreased agricultural productivity, rendering ASAL inhabitants more susceptible to food shortages and economic instability.

The neglect of sustainable land management practices exacerbates biodiversity loss in ASAL regions, compounding the challenges faced by local communities. Ndegwa *et al* (2023) underscores the critical role of sustainable land management in preserving the diversity of plant and animal species essential for ecosystem resilience and human well-being. The deterioration of natural habitats due to unsustainable practices not only threatens biodiversity but also diminishes traditional food sources and undermines income-generating activities. Consequently, ASAL inhabitants experience heightened vulnerability to food insecurity and economic hardship as they contend with dwindling resources and increasingly unsustainable livelihoods.

Theoretical Framework

The study employed the decentralization (Smoke, 2001) and institutional capacity (Meyer & Rowan, 1977) frameworks in delving into the link between national food policies, local implementation, and ultimately, food security outcomes. Decentralization, as outlined by Smoke (2001), suggests that transferring decision-making power and resources from the national level to local authorities can enhance policy effectiveness. This approach acknowledges the diversity of needs and contexts within a country, allowing for more tailored solutions to local challenges such as food insecurity in Kenya's ASALs. Meanwhile, institutional capacity, as proposed by Meyer and Rowan (1977), focuses on the ability of local institutions to effectively manage and implement policies. It emphasizes the importance of infrastructure, expertise, and resources within these institutions to ensure the successful execution or adaptation of national policies at the grassroots level. Together, these frameworks underscore the nexus between national policies, local implementation, and ultimately, the outcomes experienced by communities, offering insights into how governance structures and institutional capabilities shape responses to food security challenges in vulnerable regions like ASALs.

This study's examination of policy implementation shed light on whether national food policies, particularly drought management strategies, were effectively translated into action at the local level in ASALs. It scrutinized whether County governments were equipped with the resources and capacity to implement these policies efficiently, aiming to understand these dynamics crucial for identifying potential gaps and areas for improvement in the decentralization process.

The study further used the institutional capacity lens delineated by Meyer and Rowan (1977)to delve into the intricacies of local institutions' readiness to tackle food security challenges head-on. Through a

comprehensive analysis, it scrutinized whether these institutions possessed the essential infrastructure, expertise, and resources vital for the efficacious execution of national food policies. By uncovering potential gaps and shortcomings, the study not only sheds light on areas necessitating capacity strengthening but also underscores the importance of providing supplementary support to local entities to guarantee the smooth implementation of initiatives geared towards enhancing food security on a national scale.

Through its dual focus on policy implementation and institutional capacity, this study holds significant promise in informing policymakers with invaluable insights. By delving into these aspects, it illuminates pathways towards crafting more tailored and contextually relevant food security policies, finely attuned to the distinctive requirements of ASAL communities. Moreover, the study's findings pinpoint specific domains where bolstering local institutions is paramount to optimizing the efficacy of national policies. This could entail allocating resources for targeted training programs, infrastructure enhancements, or fostering collaboration between national and local entities, ultimately fostering a more robust and sustainable approach to addressing food security challenges at both local and national levels.

The Decentralization framework demonstrates strength in its recognition of diverse needs and contexts, facilitating targeted solutions to local issues like food insecurity. However, its weakness lies in the absence of a guarantee for successful implementation; transferring power without adequate capacity building at the local level risks inefficiencies or misallocation of resources. Conversely, the Institutional Capacity framework, as articulated by Meyer and Rowan (1977), highlights the importance of practical tools and resources for effective policy execution at local levels, offering a structured approach. Yet, it suffers from a weakness in its focus primarily on formal structures and resources, potentially neglecting the significance of informal institutions and local knowledge crucial for achieving food security objectives.

By combining these frameworks, the study gains a more holistic understanding of food security challenges. Decentralization highlights the potential benefits of local decision-making, while institutional capacity ensures those decisions can be effectively translated into action. This allows the study to not only identify the need for decentralization but also assess if local institutions are equipped to handle the additional responsibilities. This focus on both structure (decentralization) and function (institutional capacity) provides valuable insights for policymakers aiming to improve food security outcomes in vulnerable regions.

Analysis of the Findings

The study revealed complexities in food insecurity in Kenya's ASAL regions, highlighting the shortcomings of current national food policies despite ongoing interventions. Key findings and their implications included heavy reliance on unpredictable rainfall, national focus on unsuitable crops, insecure land tenure systems, limited access to resources, potential of irrigation and water management, importance of technological advancements, strengthening agricultural extension services, need for dietary diversification and importance of community involvement in designing and implementing food security interventions. These findings have been outlined and comprehensively discussed in the subsequent paragraphs.

a. Limited Effectiveness of Food Policies

The study uncovered an inadequacy in addressing the root causes of food insecurity within these regions. Despite the existence of overarching policies aimed at improving food access and availability, the policies fail to sufficiently account for the unique challenges prevalent in ASALs. These challenges often include

factors such as erratic weather patterns, limited access to water resources, land degradation, and socio-economic marginalization (Smith *et al*., 2023). These regions have unique challenges, including climate variability, limited access to markets and resources, and socio-political issues (Doe *et al*., 2021). A more nuanced approach that considers these factors is needed.

b. Overreliance on Limited Rainfall

The heavy reliance on erratic rainfall patterns in ASALs renders traditional agriculture exceptionally susceptible to both droughts and floods. In these regions, where water is scarce, agricultural activities heavily rely on rainfall for irrigation and crop growth. However, unpredictable weather conditions often lead to extended periods of drought, causing crop failures, livestock losses, and diminished food production. Conversely, sudden and intense rainfall events can result in flooding, damaging crops, eroding soil, and disrupting farming activities (Smith *et al*., 2023). This not only affects food production but also disrupts livelihoods and exacerbates poverty. Policies promoting climate-resilient agriculture and reducing reliance on rainfall are crucial.

c. Focus on in Appropriate Food Crops

The predominant focus on national staple crops such as maize within agricultural policies may not align with the climatic realities of ASALs. Maize, often favored due to its widespread consumption and economic significance, typically requires substantial water inputs and is ill-suited to the water-scarce conditions prevalent in ASAL regions. This emphasis disregards the need for crop diversification and the promotion of drought-resistant and indigenous varieties better adapted to ASALs' harsh environments (Johnson, Patel, & Brown, 2023). Promoting drought-resistant crops and diversification of agricultural activities can enhance food security and livelihoods.

d. Insecure Land Tenure Systems

Insecure land tenure poses a significant barrier to investment in land improvement and the adoption of sustainable practices, consequently undermining the potential for food production. Without clear and secure land rights, farmers are hesitant to invest in long-term improvements such as soil conservation, irrigation infrastructure, or agroforestry, fearing potential loss of their investments. Additionally, insecure land tenure discourages farmers from adopting sustainable practices like crop rotation, agroecology, or organic farming, which require time and resources but yield benefits over the long term. As a result, agricultural productivity remains low, and the potential for increased food production is diminished, perpetuating food insecurity and hindering rural development in affected areas (Garcia, Nguyen, & Patel, 2023). Land tenure reform efforts providing secure land rights are essential for sustainable agriculture and food security.

e. Limited Access to Resources

Limited access to credit, fertilizers, and proper storage facilities presents significant obstacles to agricultural development and food security. Without access to credit, smallholder farmers struggle to invest in essential inputs such as seeds, fertilizers, and equipment, which are vital for increasing agricultural productivity (Khan *et al*., 2023). Moreover, the inability to access affordable credit constrains farmers' ability to adopt new technologies and practices that could enhance crop yields and resilience to climate change (FAO, 2020). Additionally, inadequate access to fertilizers limits soil fertility and reduces crop yields, exacerbating food insecurity. Furthermore, the lack of proper storage facilities results in post-harvest losses due to spoilage and pests, further diminishing food availability and exacerbating food insecurity challenges. Policymakers need to address these constraints to improve agricultural productivity and livelihoods in ASAL communities.

f. Potential of irrigation and water management

Improved water access through irrigation systems holds immense potential for enhancing agricultural output, diversifying cropping patterns, and decreasing reliance on unpredictable rainfall. By providing consistent water supply to fields, irrigation systems enable farmers to cultivate crops throughout the year, mitigating the risks associated with seasonal droughts and floods (Li *et al*., 2022). This extended growing season allows for crop diversification, wherein farmers can cultivate a variety of high-value crops suited to local market demands and agro-climatic conditions. Additionally, irrigation facilitates the adoption of more efficient water management practices, such as drip irrigation or micro-sprinklers, optimizing water use and reducing wastage. However, careful planning and stakeholder engagement are necessary for equitable access and sustainable implementation.

g. Importance of technological advancements

The dissemination of knowledge and access to innovative technologies such as drought-resistant seeds and improved livestock breeds have the potential to profoundly enhance agricultural productivity and resilience, particularly in ASALs. Providing farmers with information on best practices, crop management techniques, and the latest agricultural research empowers them to make informed decisions and adapt to changing environmental conditions (Muthoni *et al*., 2020). Additionally, access to drought-resistant seeds enables farmers to cultivate crops that can withstand water scarcity and extreme weather events, ensuring more reliable harvests and reducing vulnerability to climate-related risks. Similarly, access to improved livestock breeds enhances resilience by increasing the animals' resistance to diseases, improving productivity, and diversifying income sources for rural households. This can contribute to broader socio-economic development and poverty reduction.

h. Strengthening agricultural extension services

Effective extension services play a pivotal role in bridging the knowledge gap and facilitating the adoption of new technologies and practices among farmers in ASALs. These services serve as conduits for disseminating relevant information, providing technical assistance, and offering hands-on training to farmers, empowering them to make informed decisions about their agricultural practices (Wang, Patel, & Li, 2022). Extension workers act as intermediaries between agricultural researchers, policymakers, and farmers, translating scientific knowledge into practical solutions tailored to local contexts. This can improve productivity, enhance climate resilience, and promote sustainable resource management.

i. Need for dietary diversification

National food security strategies must transcend mere considerations of food availability to encompass equitable access to nutritious foods. While ensuring an adequate supply of food is crucial, it's equally important to address socio-economic factors that restrict certain groups' ability to access nutritious food. This involves addressing issues such as income inequality, food affordability, distribution networks, and nutritional education (Johnson, Patel, & Brown, 2023). Promoting dietary diversification and incorporating locally available, culturally appropriate foods are crucial for improving the overall well-being of ASAL communities.

j. Importance of community involvement

Active participation from ASAL communities in the design and implementation of food security interventions is paramount for their effectiveness and sustainability. ASAL communities possess invaluable local knowledge, insights, and understanding of the unique challenges they face, including climatic conditions, resource constraints, and socio-economic dynamics. Involving them in decision-making processes ensures that interventions are contextually relevant, culturally appropriate, and

responsive to their needs and priorities Mwangi *et al* (2021). Furthermore, community participation fosters ownership, empowerment, and buy-in, leading to greater engagement, cooperation, and trust between stakeholders (Smith *et al*., 2023). Community involvement ensures interventions are contextually relevant and empowers local stakeholders to take ownership of development processes, leading to more sustainable and impactful solutions.

Conclusion

In conclusion, the study revealed a complex interplay between national food security policies and food security outcomes in Kenya's ASAL regions. While interventions exist, including national drought management policies, persistent food insecurity remains a pressing issue. The findings suggest that a one-size-fits-all approach inherent in many national food policies is not effective in addressing the unique challenges faced by ASAL communities. These challenges include heavy reliance on unpredictable rainfall, limited access to resources, insecure land tenure systems, and a lack of focus on dietary diversification. This highlights the need for a more nuanced approach that acknowledges the specific vulnerabilities of ASAL regions. Effective food security interventions must consider the interplay of climatic factors, socio-economic realities, and traditional knowledge of local communities. By taking a context-specific approach, policymakers can design and implement interventions that are more likely to achieve sustainable food security in these fragile regions.

Recommendations

The study recommends the need for a multi-pronged approach to improve food security in ASAL regions. Specifically it proposes that policies should promote climate-resilient agriculture by encouraging a shift towards drought-resistant crops, diversification beyond staple crops, and sustainable land management practices. Additionally, crucial investments in water harvesting and storage infrastructure are essential to capture and conserve rainwater, providing a more reliable water source for drought-mitigation and increased agricultural productivity in these fragile regions.

Strengthening land tenure security in ASAL regions is also critical in boosting food production. By reforming land tenure systems to grant secure land rights, communities will be incentivized to invest in long-term improvements like soil conservation and sustainable practices. This shift from short-term, extractive farming towards sustainable land management will ultimately unlock the full agricultural potential of ASAL regions and contribute to long-term food security.

Improving access to crucial resources is a key driver for boosting agricultural productivity and livelihoods in ASAL communities. Initiatives that provide credit for farmers to invest in seeds, fertilizers, and equipment, along with proper storage facilities to minimize post-harvest losses, will directly enhance agricultural output. Additionally, facilitating access to markets through improved infrastructure and establishing market linkages will connect farmers to buyers, offering fairer prices and creating opportunities for increased income and sustainable livelihoods in these vulnerable regions.

Investing in knowledge and technology is a powerful tool for enhancing food security in ASAL regions. By disseminating information on new technologies like drought-resistant seeds and improved livestock breeds, farmers can significantly increase their agricultural output and resilience in the face of climate challenges. However, simply providing access to these advancements is not enough. Strengthening agricultural extension services is crucial. These services bridge the gap by providing training and support,

empowering ASAL farmers to effectively adopt and utilize new technologies, ultimately leading to more productive and sustainable food systems.

To achieve food security in ASAL regions, national strategies must move beyond simply ensuring enough calories are available. Prioritizing dietary diversification is essential. This means promoting the production and consumption of a wider range of locally available, culturally appropriate, and nutritious foods. By encouraging a shift towards a more balanced diet rich in essential vitamins and minerals, these strategies can significantly improve the overall health and well-being of ASAL communities, tackling not just hunger but also malnutrition and its associated health problems.

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