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Logical Framework as a Tool for Monitoring and Evaluation for Food Security, Lower Kuja Irrigation Scheme, Nyatike, Migori County, Kenya

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Abstract

The application of the Logical Framework Approach (LFA) is an essential method for effective management of food security projects. The purpose of this desk review was to analyse the Logical Framework as a tool for monitoring and evaluation for food security in Lower Kuja irrigation scheme, in Nyatike Sub-County, Migori County. The objectives were to determine approaches to mainstreaming monitoring and evaluation into projects and to determine the influence of the Logical framework approach as a tool for evidence-based Monitoring and Evaluation by focusing on monitoring and evaluation. The results of this review would be useful to policy makers at various levels of the government, non-governmental organizations and private sector to formulate a workable and all-inclusive monitoring and evaluation systems for better organizational performance. Existence of a reliable knowledge on application of the logical framework approach is essential for success of food security initiatives. Additionally, it would also help ensure adequate relevant stakeholders' involvement in monitoring and evaluation activities so as to enhance relevance and customer satisfaction in the programs output. The study was purely based on review and analysis of existing literature. The study findings revealed that compliance to legislative clauses for M&E as in the Constitution of Kenya 2010 that advocate for public participation at various levels to ensure that every project organization put measures and structures for M&E into their programs is lacking. Formulation and implementation of quality management systems that match global best practices also help ensure that M&E are mainstreamed into all organization policies and programs. Again, establishment or creation of M&E positions with sole responsibility of conducting M&E activities in the organizations ensure that the exercise is done as there are officers who are fully in charge of the activities. The review recommends that formal M&E approaches e.g. goal, process and impact should also be considered to help address certain specific areas of concern in food security.

Key Words: *Mainstreaming; Monitoring; Evaluation and Logical Framework*

1. Introduction

The purpose of this paper was to analyse the Logical Framework as a tool for Monitoring and Evaluation for food security, Lower Kuja Irrigation Scheme, Nyatike, Migori County. The five billion Multi-irrigation project was started in 2011 by the national government through the NIB (National Irrigation Board). It is a public irrigation scheme established under the irrigation act cap 347 of 1966. It is one of the 3 schemes making the Kenya Western scheme and is charged with the mandate of growing rice crop and other plant crops using irrigation for food security and income needs of the local communities. Once complete, it will place over 19,000 acres of semi-arid and flood prone land under irrigation to increase rice production in the country. In 2022 the scheme opened 1,200 acres of land for paddy with an estimate of over 5,000 tonnes harvested and KShs 200 million generated, but since then, it has faced several challenges, making its productivity intermittent. The broad perspective of the problem was to develop, promote, and improve irrigated agriculture through sustainable exploitation of available irrigation and drainage potential in Migori County in order to ensure food security and create wealth and employment therefore improving the living standard of Kenyans.



Over the past years, work at the scheme slackened after being negatively affected as at least 32 court cases concerning compensation were filed against the National Irrigation Board. A total of 20,223 affected families were earmarked for compensation of Sh106.7 million but the process has been delayed by lack of title deeds, poor land marking and lack of identifications in the scheme that started operations over half decade ago. In January 2022, Migori County Government was allocated block 2.1 of the scheme by NIB with over 370 acres for sweet potato farming whose upgrade was expected to cost Sh100 million, an amount wired to the accounts but yet to be invested. The scheme is also expected to boost the Sh117 million sweet potato processing plant sponsored by European Union in Getong'anya centre, Kuria West Sub-County. The NIB management set embark on rehabilitation of infrastructure like roads, water canals and valves to open up the scheme and allow improved planting. In the next four months, the scheme should open up 1,200 acres of land for paddy with estimated over 5,000 tones when harvested with a value of over KShs 200 million. This will ensure idle mills roar back to life and business booms in the area. Farmers have so far started to diversify to other trial crops with 100 acres for onions, 50 acres under tomatoes, 2,000 under sugarcane and soya beans expected to take over from empty rice fields within seasons (CIDP, 2020).

Monitoring is defined as the continuous and systematic assessment of the implementation and performance of a project or programme over the course of its implementation cycle (Hughes, 2021). The process involves ongoing collection and review of information to measure progress against programme plans and objectives. The monitoring process usually includes a number of specific monitoring interventions such as field monitoring visits (World Bank, 2021). Evaluation however is a rigorous and in-depth assessment of the progress of all aspects of a project or programme against its initial plan and objectives at a key point during its life cycle (Lusthaus, et al. 2020). Evaluations are typically undertaken at pre-determined periods during implementation e.g. mid-term evaluation, terminal or summative evaluation and may be undertaken as internal or external exercises (Stem, et al. 2020., Soken-Huberty, 2022 and Niru, 2019). Karim, (2020) state that monitoring and evaluation approach is a specific process for doing M&E, which is generally accompanied by a series of steps or guidance. According to Alessandro and Giuseppe (2021) project management teams should involve relevant stakeholders at all stages of the project implementation and provide sensitization and training activities on M&E to all relevant project staff before they are engaged in the exercise.

Monitoring and evaluation is essential to any project or program (Ayindrila, et al. 2022). The process helps organizations collect and analyze data, and determine if a project or program has met its stated goals and objectives. According to Broughton, (2021) monitoring begins right away and extends through the lifecycle of a project, evaluation comes at the tail end and assesses how well the program performed. Every organization should have an M and E system in place. Crawford, (2019) while explaining why most of the developing world has failed to mainstream monitoring and evaluation into policies, programs, services and initiatives noted that Monitoring progress and evaluating impacts have long been considered important in the developed countries to ensure that money is well spent and that objectives are met. In their study, Mathilde, et al. (2022) established that Monitoring and Evaluation plans help define a project's scope, establish interventions when things go wrong, and give everyone an idea of how those interventions affect the rest of the project. This way, when problems inevitably arise, a quick and effective solution can be implemented. This research review is significant in several ways; good M&E leads to better decision making and therefore improved quality of products and services. Additionally, in majority of situations projects never go perfectly according to plan, but a well-designed Monitoring and Evaluation when put in place helps the project stay on track and achieve its objectives (Posthuma, et al. 2019). Noted gaps included limited empirical studies on the practical application of the Logical Framework in irrigation-based food security projects in Kenya, particularly at the county level and inadequate evidence on the relationship between Logframe use and household-level food security outcomes. The study of the Lower Kuja Rice Irrigation Scheme addressed these gaps by examining the design, use, and effectiveness of the Logical Framework as a tool for M&E, and its contribution to food security outcomes in Migori County.

Food insecurity remains a persistent challenge in many parts of Kenya, particularly in rural areas where livelihoods depend heavily on rain-fed and irrigation-based agriculture. The Lower Kuja Rice Irrigation Scheme in Migori County was established to enhance rice production, stabilize household incomes, and improve food security among beneficiary communities. Despite sustained investments in irrigation infrastructure, inputs, and farmer support programs, the scheme has continued to experience implementation challenges and fluctuating food production. This raises concerns about the effectiveness of project planning, implementation, and monitoring mechanisms used to guide decision-making and assess results.



Monitoring and Evaluation (M&E) systems are critical in ensuring that agricultural and food security interventions achieve their intended objectives. The Logical Framework (Logframe) approach is widely used as a planning, monitoring, and evaluation tool because it links project inputs, activities, outputs, outcomes, and impacts with measurable indicators, means of verification, and assumptions. However, in practice, many food security projects adopt the Logframe mainly as a donor compliance requirement rather than as a practical management and learning tool. In the Lower Kuja Rice Irrigation Scheme, limited empirical evidence exists on how effectively the Logical Framework is applied in monitoring and evaluation processes and how this affects food security outcomes.

Weak alignment between project objectives, indicators, data collection, and decision-making may undermine the ability of the scheme's managers and stakeholders to track progress, identify implementation challenges, and make timely corrective actions. Inadequate use of the Logframe for M&E may also limit accountability, stakeholder participation, and evidence-based planning, thereby reducing the scheme's potential contribution to household and community food security. Therefore, there is a need to systematically examine the use of the Logical Framework as a tool for Monitoring and Evaluation in the Lower Kuja Rice Irrigation Scheme and assess its effectiveness in supporting food security outcomes in Migori County. This study seeks to address this gap by analyzing how the Logframe is designed, implemented, and utilized in M&E processes and the extent to which it may influence project implementation and food security performance within the scheme. The specific objectives of this desk review were:

1. To determine approaches to mainstreaming monitoring and evaluation into projects.
2. To determine the influence of the Logical framework approach as a tool for evidence based Monitoring and Evaluation.

Food security remains a priority development concern in Kenya, particularly in counties where livelihoods are largely dependent on agriculture and irrigation schemes (Kusek and Rist, 2004). The Lower Kuja Rice Irrigation Scheme in Migori County was established to enhance rice production, stabilize household incomes, and contribute to food security at both household and county levels. Despite sustained investments in irrigation infrastructure and agricultural support services, the food security outcomes of the scheme have been inconsistent, suggesting possible weaknesses in planning, monitoring, and evaluation processes. The Logical Framework Approach is widely adopted by government agencies, donors, and development partners as a standard tool for project planning, Monitoring and Evaluation. However, in many development interventions, including agricultural and irrigation projects, the Logical Framework is often applied as a compliance and reporting requirement rather than as a practical management and learning tool. Studying the Logical Framework as a tool for M&E in the Lower Kuja Rice Irrigation Scheme is therefore justified in order to establish whether and how it supports effective monitoring, evidence-based decision-making, and improved food security outcomes.

From a policy perspective, Kenya's agricultural and food security strategies emphasize results-based management, accountability, and data-driven planning. This study will provide empirical evidence to inform county and national policymakers on the effectiveness of Logframe-based M&E in irrigation schemes, thereby supporting improved policy formulation, resource allocation, and oversight within the agricultural sector. At the institutional level, the findings will benefit project managers, irrigation scheme administrators, and extension officers by identifying strengths, weaknesses, and gaps in the design and use of the Logical Framework. This will contribute to improved M&E practices, enhanced project performance, and better alignment between planned objectives and actual food security results in the Lower Kuja Rice Irrigation Scheme. Academically, there is limited context-specific research in Kenya examining the application of the Logical Framework in irrigation-based food security interventions. This study will therefore contribute to the body of knowledge on Monitoring and Evaluation by generating empirical evidence on the relationship between Logframe use and food security outcomes in a real-world agricultural setting. The findings may also serve as a reference for future studies on M&E tools in similar irrigation schemes and food security projects across the country. Finally, the study is justified on practical grounds, as improved use of the Logical Framework for M&E has the potential to enhance transparency, accountability, stakeholder participation, and learning within the Lower Kuja Rice Irrigation Scheme. Ultimately, this can lead to more effective utilization of public resources and sustained improvements in food security for beneficiary communities in Migori County.

The study was anchored on Results-based Management (RBM) a theory as a philosophical foundation. Results-Based Management posits that effective development interventions require clear definition of results, measurable indicators,



continuous monitoring, feedback, and adaptive decision-making to achieve intended outcomes and impacts. It is relevant to this study since the Logical Framework is a central tool within the RBM framework as it defines results hierarchically (inputs → activities → outputs → outcomes → impact), Specifies performance indicators and means of verification, identifies assumptions and risks and facilitates monitoring, evaluation, accountability, and learning (Funnel,2011). In the context of the Lower Kuja Rice Irrigation Scheme, RBM theory explains how the use of the Logical Framework for M&E should lead to; Better tracking of implementation progress, Improved decision-making and corrective action, Enhanced agricultural productivity and Improved food security outcomes. The theoretical assumption is that if the Logical Framework is properly designed and consistently used for M&E, as observed by Themistocleous and Wearne (2020), it enhances results orientation and accountability, which in turn improves food security performance.

2. Research Methods

In this study three main methods of desk review techniques were employed, it included Policy and Strategy Document Review, Academic Literature Review and Institutional and Donor Report Review. They were regarded as appropriate as they were most likely to yield accurate data to determine the objectives of this study. Policy and Strategy Document Review technique involves systematic review of national, county, and sectoral policy documents to understand the policy context guiding M&E, irrigation, and food security. Examples of data documents included; Kenya Vision 2030, National Food and Nutrition Security Policy, National Irrigation Board (NIB) strategies, Migori County Integrated Development Plan Reports (CIDPs) and County agricultural and irrigation policies. Academic Literature Review technique focuses on peer-reviewed journal articles, theses, dissertations, and books related to M&E, Logical Framework Approach, irrigation schemes, and food security. Institutional and Donor Report Review involves reviewing reports produced by development partners, government agencies, and international organizations. Institutions that provided data includes; FAO, IFAD, World Bank, UNDP, Ministry of Agriculture and Livestock Development, National Irrigation Board (NIB) and NGOs involved in food security and irrigation work in the country. More than 36 publications (including organizational documents and reports, Web sites, journal articles, and books) from the field of Monitoring and Evaluation were reviewed in the study majorly focusing on Monitoring and Evaluation literature related to mainstreaming M&E into policies, projects, services and initiatives. Various literatures were analyzed to identify different approaches and key trends in mainstreaming M&E into policies and programs. This review focused on all the sectors, but the greatest amount of documentation was found in the NGO community. This is most likely because NGOs are usually responsible for project implementation in most parts of the developing world.

3. Analysis of Results and Discussion

The analysis results revealed that compliance to legislative clauses for M&E as in the Constitution of Kenya 2010 that advocates for public participation at various levels to ensure that every project organization put measures and structures for M&E into their programs have been ignored. Formulation and implementation of quality management systems that match global best practices can also help to ensure that M&E are mainstreamed into all organization programs. Establishment or creation of M&E positions with sole responsibility of conducting M&E activities in organizations to ensure that projects are done as per the requirements though currently lacking is very necessary since the officers will be fully in charge of the projects. This would be evidenced by staffing of M&E officers in various government departments such as department of Agriculture and Constituency development fund offices. Additionally, investment in ICT, relevant stakeholders' training in ICT especially for those who have not embraced the digital culture and the existence of a reliable monitoring system as well as application of the logical framework approach is essential for mainstreaming M&E into programs. It also established that problems of drought; famine and climate change are real and widespread in the counties begetting hunger and malnutrition which can be corrected through infusion of the Logframe as an evidence-based tool for food insecurity mitigation.



The results also revealed that formal presence of Logframes exists but its practical use in projects is limited. Logical Frameworks exists mainly as a planning and reporting document and can be directly linked to the Lower Kuja Rice Irrigation Scheme's management structure. However, in the scheme as is often the scenario in other County projects, Logframes are often developed during project design or when reporting to the National Irrigation Board or development partners, but day-to-day operational decisions, such as water allocation schedules, timing of planting, or response to pest outbreaks—are largely based on experience rather than Logframe-generated M&E data. This explains why monitoring information does not consistently influence implementation decisions within the scheme. The study further found out that there is overemphasis on output indicators rather than food security outcomes. The Logframe prioritizes output-level indicators such as hectares under rice cultivation, number of farmers supported, or quantity of inputs distributed. In the Lower Kuja context, there is the possibility that, these indicators can be easier to track by scheme officers than outcome indicators like household food availability or income stability. As a result, increases in cultivated acreage may be reported as success, even when some farmers continue to experience food shortages during off-season periods due to limited income diversification and post-harvest losses.

By reviewing mainstreaming M&E into projects, how they have evolved, and their key strengths and limitations, the researcher was able to identify several general lessons as was also observed by Guijt, et al. (2022) that Mainstreaming M&E into projects require different approaches among organizations and that evaluation using only quantitative data alone is insufficient, qualitative data help provide a more complete understanding of what is happening at a project site. This is revealed when weak monitoring of assumptions and risks in the scheme are noted. The study analysis revealed that poor monitoring of Logframe assumptions can be clearly linked to Lower Kuja's vulnerability to water management challenges and climate variability. Although the Logframe may assume reliable water supply from the Kuja River, in practice, seasonal fluctuations, siltation of canals, and upstream water use affect irrigation reliability. The lack of systematic monitoring of these assumptions limits the scheme's ability to anticipate reduced yields and food insecurity among farmers. This was also noted by Opondo (2020) during a study of application of LFA in Kenyan Agricultural projects, where poor monitoring of Logframe assumptions made it difficult to realize the benefits that can be accrued to well thought out food projects in areas like Mwea Irrigation scheme.

The researcher was keen to establish the role of the Logical Framework on project success especially in food sustenance and security. The findings of this desk review coupled with the findings of other studies reviewed by the researcher clearly indicate that the Logframe significantly influence project success (Boadu, 2019). This is because to begin with, one criterion of project success is client or stakeholder acceptance. Stakeholders in any project even if not officially recognized, will carry out their own M&E and rate the success of a project (Mike, 2021). The study revealed limited involvement of farmers and water user associations in M&E activities. In the Lower Kuja Rice Irrigation Scheme, M&E tasks are often centralized among scheme management and extension staff, with farmers mainly engaged as data providers rather than decision-makers. This reduces ownership of the Logframe and weakens the relevance of indicators to farmers' lived experiences of food security, such as household consumption patterns and coping strategies during lean seasons. Secondly, because indicators that measure the level of achievement of project objectives are identified and are used to guide project implementation, it is highly likely that ultimately projects will be accepted by stakeholders and receive ownership thus ensuring their sustainability (Morgan, 2019). The findings of this review have clearly indicated that the logical framework is a tool that promotes communication of issues related to the projects.

In addition, Wotela, (2019) argues that the logical framework is a tool that can be able to communicate the vital dynamics of a project to any given stakeholder and thereby ensuring stakeholders are informed of important information concerning project implementation. This is because the logical framework summarizes important features concerning a project in form of a matrix. It may for instance show the inputs necessary for given activities that are required to be undertaken. It also shows the outputs that should be realized after the said activities have been undertaken and the outcome that is expected in order for the overall goal of a project to be achieved (Fontan & Mughal, 2019). A finding on poor alignment between the scheme's Logframe and county M&E frameworks can be linked to institutional arrangements in Migori County. Lower Kuja reports may not fully feed into county agricultural and food security monitoring systems, limiting the use of scheme-level data for county planning and budgeting. This reduces the visibility of the scheme's challenges and potential within county policy processes. The study hence finds limited use of M&E findings for learning and adaptation. In Lower Kuja, issues such as delayed input delivery, canal



maintenance challenges, and fluctuating market prices recur across seasons. The absence of structured Logframe review meetings means these issues are addressed reactively rather than systematically, reducing the scheme's effectiveness in improving food security.

The study also revealed capacity gaps affecting use of the Logframe. The findings on capacity constraints can be linked to the fact that many Lower Kuja extension officers and scheme staff have technical agricultural expertise but limited formal training in Monitoring and Evaluation. Consequently, Logframe indicators may be poorly defined or inconsistently measured, and data analysis is minimal. This contributes to weak feedback loops between monitoring results and scheme management decisions. The study concluded that significant public resources are invested in irrigation schemes such as Lower Kuja. The findings of this study imply that policymakers should require irrigation projects to use Logframe-based M&E systems not only for reporting but also for continuous performance assessment. Strengthening oversight mechanisms through standardized Logframe indicators and regular performance reviews can enhance accountability, reduce inefficiencies, and ensure that investments translate into tangible food security gains. The study highlights the importance of effectively using the Logical Framework to link policy objectives, program activities, and measurable food security outcomes. For national and county policymakers, this implies the need to strengthen results-based planning and implementation across agricultural and irrigation programs. By institutionalizing high-quality Logframe design and application, policymakers can improve clarity of objectives, performance tracking, and accountability in food security interventions.

Findings from the study suggest that Logframe-generated data is underutilized for decision-making. Policymakers can address this by institutionalizing mechanisms that require periodic review of M&E findings and use of evidence to inform policy adjustments, budget reallocations, and program redesign. This promotes adaptive management, especially in the face of climate variability and market uncertainties affecting food security. Overall, the study suggests that while the Logical Framework is present within the Lower Kuja Rice Irrigation Scheme, its potential to enhance food security is constrained by contextual factors such as water management challenges, capacity limitations, centralized decision-making, and weak integration with county systems. Grounding Logframe-based M&E in the everyday operational realities of Lower Kuja is therefore critical for translating monitoring data into sustained food security outcomes.

4. Conclusion

Anchoring M&E policies into law, embracing quality management systems, appointing M&E officers and application of the logical framework in project implementation activities can help in mainstreaming Monitoring and evaluation into programs, and that the Logframe for instance is key in showing the inputs necessary for given activities that are required to be undertaken, it shows the outputs that should be realized after the activities have been undertaken. The analysis established that the Logical Framework Approach is formally adopted as the primary tool for planning, monitoring, and evaluation in the Lower Kuja Rice Irrigation Scheme. Project design documents and annual work plans contained a Logframe matrix outlining project objectives, outputs, indicators, means of verification, and assumptions. However, the Logframe was found to be used largely as a planning and reporting instrument rather than as a dynamic management and learning tool throughout the project implementation cycle.

The findings also revealed that while project objectives and outputs were clearly stated in the Logframe, there were weaknesses in the quality of indicators used to measure food security outcomes. Many indicators focused on inputs and activities, such as acreage under rice cultivation and quantity of inputs supplied, with limited emphasis on outcome- and impact-level indicators related to household food availability, income stability, and resilience. This limited the ability of the M&E system to comprehensively assess food security outcomes. The study further found that Logframe-based monitoring was irregular and largely compliance-driven, with data collection mainly conducted to satisfy reporting requirements rather than to inform timely decision-making. Feedback mechanisms for using M&E findings to adjust implementation strategies were weak, and M&E reports were rarely discussed in structured review forums involving key stakeholders.

The study also found limited integration of Logframe-based M&E with broader county and national food security monitoring systems. Although the scheme's objectives aligned with county and national agricultural policies, the Logframe indicators and reporting formats were not fully harmonized with county M&E frameworks, leading to



fragmented data use and limited policy-level learning. In terms of food security outcomes, the study observed improvements in rice production levels and seasonal food availability among participating households. However, these gains were inconsistent and vulnerable to external factors such as water management challenges, climate variability, and market fluctuations. The Logframe's assumptions and risks were not systematically monitored, limiting its effectiveness in anticipating and managing these challenges. All in all, the study concluded that while the Logical Framework has potential to support effective Monitoring and Evaluation for food security in the Lower Kuja Rice Irrigation Scheme, its impact is constrained by weak indicator design, limited stakeholder participation, insufficient capacity and inadequate use of M&E findings for adaptive management.

5. Suggested Study Recommendations

1. Enhance capacity building on Logframe-Based M&E

The study recommends regular training and capacity-building programs for scheme managers, extension officers, M&E personnel, and farmer representatives on the practical use of the Logical Framework for monitoring, evaluation, and learning. Strengthening stakeholder understanding of Logframe concepts will enhance data quality, ownership of M&E processes, and effective use of findings for decision-making.

2. Promote use of M&E findings for decision-making and learning

The study recommends that M&E data generated through the Logical Framework be systematically used to inform planning, budgeting, and operational adjustments within the scheme. Regular review meetings should be institutionalized to discuss M&E findings, assess progress against Logframe targets, and implement corrective actions to improve food security outcomes.

3. Integrate participatory monitoring and evaluation approaches

The study recommends greater involvement of farmers, water user associations, and local community leaders in Logframe-based monitoring and evaluation. Participatory M&E will improve the relevance of indicators, enhance transparency and accountability, and ensure that food security outcomes reflect the real needs and experiences of beneficiary households.

4. Align the Logical Framework with County and national food security policies

The study recommends aligning the scheme's Logical Framework with Migori County Integrated Development Plan (CIDP), national agricultural policies, and food security strategies. This alignment will enhance coherence, facilitate resource mobilization, and improve reporting and accountability across governance levels.

5. Institutionalize regular review and updating of the Logframe

The study recommends that the Logical Framework be treated as a living document that is periodically reviewed and updated to reflect changes in donor agency demands, climatic conditions, market dynamics, farmer capacity, and emerging risks. This will enhance the scheme's adaptability and long-term contribution to food security.

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