Influence of Monitoring and Evaluation of Projects on Supply Water supply: A case of Peri-urban Kayole, Nairobi City County, Kenya

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Abstract— Water is a key component and essential component of life which calls for proper management of the resource. One of the key components of the millennium goals is to ensure proper management of water as a resource. Decades of wastage have increased the challenge of supply of adequate water in many countries in general and in Kenya to be specific. Increased demand of water due to population explosion, increased use from factories and industries and global warming has increased the level of scarcity. Effective monitoring and evaluation of water projects ensures that resources are properly utilized. In Masimba area in Kayole estate which is part of Embakasi constituency in Nairobi County, many water projects have been initiated. However, the residents have continued to experience a shortage of water resulting in buying of water from individual vendors which is costly. The study was therefore designed to explore the influence of monitoring and evaluation on the supply of adequate water in Masimba area of Kayole in Nairobi City County. The research adopted descriptive survey research design. The target population was members of Masimba area in Kayole Sub-county. The results from data analysis revealed that effective monitoring and evaluation of water projects influenced the supply of adequate water in the area.

Index Terms— Monitoring and Evaluation, Projects, Supply of Adequate Water, Nairobi City County, Kenya.

I. INTRODUCTION

Water is a key component and essential aspect of life which calls for proper management of the resource. One of the key components of the millennium goals is to ensure proper management of water as a resource. There are over one billion people in the world without access to usable water (Klawitter & Qazzaz, 2005). Decades of wastage have increased the challenge of provision of water which has led to physical and emotional suffering. Increased demand of water due to population explosion, global warming, increased use from factories and industries and global warming has increased the level of scarcity (Water Resource Group, 2012). As a result of the scarcity many countries have adopted water reforms aimed at sustainability. In 1992 a water and environment conference in Dublin developed guidelines for water usage and also for water management which determined the limitation of water as a scarce resource that has an economic value which entails proper management through stakeholder

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participation at all levels (Fitzgerald, Posner and Workman, 2009).

It has been specified by scholars such as Tjandraatmadja and Laughlin, (2005) that in the coming decade's water supply challenges will increase. The existence of many donors and other nation's institutions brings up the need for information to be given to value the good forces of their money use. Finally the existence of many interested professional groups with different responsibilities shuffle it necessary to get facts by monitoring for possible interaction by various stakeholders on professional basis and looking at possible unused quality effect on one another (Stem, 2005).

Increased development and growth in overall world populations facilitated by improved industrial and agricultural production are putting a impacting heavily on the capacity to supply water worldwide. It is envisaged that the global demand will outstrip the supply within the next two decades by over 40%. Climate changes have aggravated this more and different countries have different resins why the supply issue is a factor. In china for example the rapid industrialisation and rapid growth has led to persistent urban water crises (WRG, 2012). With the African continent having an urbanisation rate of 4% annually which is the fastest in the world it is estimated that its urban population will grow from the 138 million recorded in 1990 to an almost high of 500million by the end of 2020, The greatest challenge is provision of water to both rural and urban residents (UNDP, 2012).

Availability of readily drinking water is not the only key challenge as the available water in these informal settlements is also contaminated. The time taken to collect water could be usefully utilised in other useful engagements. This is a high price to pay for people who survive on a dollar day degraded that over 60% of their daily budget is spent on aquatic .Due to financial constraints available wells and water facilities developed are not fully funded and water quality is not a key requirement. This agrees with the report by Awuah et al., (2009) who says that in much of the developing world once a source of water has been established peoples focus is always on quantity with very little regard to its quality thereby compromising the health of the concerned population.

For decades, scarcity of water among urban residents caused by prolonged droughts and very poor water supply management compounded by the recurrent and sharp increase of population has become a major source of concern to Kenya. The shortage has been attributed to the government's poor



investment and response to investment requests creating the water shortage as discussed in World Bank report (2010).

Although factors such as varied climatic conditions, rapid population group resulting from rural-urban migration, inadequate financial allocation to the sector, poor coordination in the water sector, corruption and poor governance, surface water contamination among others have accelerated urban water crisis in Africa, lack of or non-functioning monitoring and evaluation systems to track the efficiency of the organizations charged with the provisions of water to the urban residents is critical. In view of the foregoing the current study examined the role played by monitoring and evaluation in the provision of adequate and clean drinking water among urban residents of Nairobi using Kayole estate with particular reference to Masimba area as a case study.

The population of Nairobi has grown rapidly and particularly since independence in 1963. An increasing number of the city's residents live in unplanned Informal Settlements and it is estimated that three quarters of a million people. The land in the area covered by informal settlements is mostly land owned by government or absentee landlords and mostly land invaded by grabbers. Informal settlements are characterised by Structures (houses) that are constructed largely of temporary materials or permanent ones and do not conform to existing official minimum standards. The majority of house-owners have some form of form of tenure documents or letters from the main land invaders or the local administration. A majority of household's arc female headed 85 per cent of households obtain water from kiosks at a price 4-5 times higher per litre than that is sold by the local water companies.

II. PROBLEM STATEMENT

Monitoring and evaluation (M&E) practices form an integral part of any project cycle and of good management practices (Hrebiniak, 2006). Based on international best practices projects are monitored basically to ensure control because stakeholders always require transparency and accountability on utilization of resources (Fazli, 2012). Monitoring and Evaluation are closely related to concepts that are distinct but complementary. Studies have shown that monitoring and evaluation of activities in developing nations is important since a lot of government resources are given to organizations to implement various water projects. Evis (2006) carried out an investigation on the monitoring aspect and evaluation of the water and sanitation sector in regard to performance. The study had shown that M&E help in setting minimum achievable standards on water sector as a tool for government provision of required resources. Loitare (2011) did a study on the effects of M&E on improvement of performance of development projects in the republic of Tanzania and found that consistency in application of M&E helped in sustaining projects. Best practices require that projects are monitored for control and additionally stakeholders require straightforwardness on how resources were utilized. Water supply projects in Ghana were successful due to effective implementation of monitoring and evaluation practice.

Water service provision in Nairobi County experiences many problems. The city residents and its environs still faces frequent and intermittent water shortages even after lots of internal water reforms from the City Council of Nairobi in 2006, and the formation of Nairobi City Water and Sewerage Company Ltd (NCWSC). The extent to which water supply in a household has improved in a Kenya's rural household has been minimal. Advancements in measurement approaches, indicators and targets, water performance monitoring and managing for results have been made as of late keeping in mind the end goal to enough and successfully assess advance and water ventures.

In Masimba area in Kayole estate there are many water projects initiated in the area, however, the residents have been facing shortage of water resulting to buying water which is costly. A 20 litre jerry goes for Ksh.20 in the settlements. This is despite considerable investment by Governments of Kenya over the years in the form of human capacity building, expansion of urban water sources, increased financing and monitoring and evaluation programs. This has not improved the supply of adequate water to residents in Masimba area. Most water projects in Masimba areas have not adopted monitoring and evaluation system and hence outcomes and effectiveness of M&E system are unknown. This study sought to investigate the influence of monitoring and evaluation in the provision of adequate water supply in Masimba area in Kayole area of Nairobi County.

III. SPECIFIC OBJECTIVES

The objectives of the study were:

- i) To establish the influence of accountability and transparency on supply of adequate water.
- ii) To examine the influence of information sharing on supply of adequate water.
- iii) To examine the influence of stakeholder participation on supply of adequate water.
- iv) To examine influence of supervision on supply of adequate water.

IV. RESEARCH METHODOLOGY

This study adopted a case study design to explore the influence of M&E on the supply of adequate water in Masimba area of Kayole in Nairobi City County. Kenya's vision for the water segment is to guarantee water and sanitation accessibility and access for all by the year 2030. According to a study by Runji & Partners (2013), in Water and Sanitation Service Improvement Masimba, Matopeni, and Spring Valley informal settlements there were many water challenges due to inadequate water supply. The target population was residents in the Masimba estate in Kayole Estate in Nairobi County Kenya. Stratified random sampling was used to select 10% of the target population. Primary data for the study was gathered using questionnaires comprising of open and closed ended questions. The questionnaires were



administered to project leaders in the area, project clerks and the elders and residents of Masimba area in Kayole Estate, Nairobi County, Kenya. Pre testing of the instruments was done to ensure the instruments were valid and reliable (Mugenda & Mugenda, (2003). The collected data were analysed using descriptive statistics and results presented using tables, figures and text.

V. RESULTS AND DISCUSSIONS

A. Accountability and Supply of Adequate Water

Table 1: Monitoring and Evaluation influence Efficient Resource Utilization

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Extent	Freq	%
Very great extent	117	55
Great Extent	51	24
Moderately Extent	45	21
Total	214	100

The results in Table 1 show that the majority of the respondents had agreed that monitoring and evaluation led to efficient resource utilization in water supply to Masimba area. 24% of the respondents indicated that monitoring and evaluation led to efficiency resource utilization in Masimba water supply to a great extent, while the remaining 21% of the respondents indicated that monitoring and evaluation led to efficient utilization of water supply.

Respondents further stated that monitoring and evaluation gave them opportunity to learn how to do things better, more effectively, with greater relevance, with more efficient utilization of resources and with greater and more sustaining impact. This implies that monitoring and evaluation influenced the supply of adequate water in the area. This is in line with Ivanceh (2003), implementation of monitoring and evaluation systems in projects influences transparency and accountability in project resource utilization which is important to good project performance.

Table 2: Extent to which Monitoring and evaluation influenced transparency in operations

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	Freq	%
Very great extent	169	79
Great Extent	45	21
Total	214	100

Respondents were requested to indicate the extent to which monitoring and evaluation has led to transparency in operations as regards to supply of water in Masimba area. From the findings of the study it was clear that the majority (79%) of the respondents indicated that monitoring and evaluation has led to transparency in operations at most water projects in Masimba to a very great extent while 21% of the respondents said to a great extent.

Respondents were also requested to indicate the extent to which accountability has led to provision of adequate water in Masimba in Kayole estate. From the findings, majority of the respondents indicated that accountability has led to improved audit of the project going by the 67% who felt it had impacted on a great and very great extent. Another 67% felt it had to a great or very great extent impacted on water supply. A very

high number at 79% felt accountability had improved resource utilization, and 71% approved that there was a minimizing loss of tools and equipment which would lead to improved provision of adequate water supply in Masimba in Kayole. This is in line with Ivanceh, (2003) implementation of Monitoring and Evaluation systems in projects influences transparency and accountability in project resource utilization which is important to good project performance.

VI. SHARING AND ADEQUACY SUPPLY OF WATER

Table 3: Extent to Which Monitoring and Evaluation Systems Influence Communication

Extent	Freq	%
Very Great Extent	171	80
Great Extent	43	20
Total	214	100

Respondents were requested to indicate the extent to which monitoring and evaluation systems influenced communication in Masimba area. From the findings, majority (80%) of the respondents indicated that monitoring and evaluation systems influenced communication in Masimba area to a very great extent, while the remaining 20% of the respondents indicated that monitoring and evaluation systems influence communication in Masimba area to a great extent.

From the findings it was clear that the majority of the respondents indicated that monitoring and evaluation systems led to resolving conflicts that may arise through effective communication and improve training of project team and members to a very great extent as indicated by a 73% acceptance level. Most of the respondents had also indicated that monitoring and evaluation systems led to efficient financial information and effective broad based reporting to a very great extent as indicated by an overwhelming acceptance level of 95%. This implies that information sharing influence provision of adequate water in Masimba Estate. This is in line with Mackay (2010) who sated the frameworks must be reliable with the qualities at the core of the association and work in help of the system.

A. Stakeholder Involvement and Adequate Supply of Water

Analysis of stakeholders influence

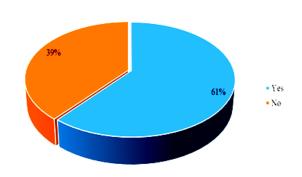


Figure 1: Influence of Stakeholder Involvement on Water Supply



Respondents were requested to indicate whether stakeholders' involvement in Masimba area influenced the supply of adequate water supply in Kayole Estate. From the findings it was clear that the majority (61%) of the respondents agreed that stakeholders' involvement influenced the supply of adequate water in Masimba Estate.

VII. STAKEHOLDERS COMMUNICATION AND SUPPLY OF ADEQUATE WATER

Table 4: Influence of Stakeholders' Communication on Supply of Adequate Water

Extent	Freq	%
Very Great Extent	143	67
Great Extent	71	33
Total	214	100

Respondents were requested to indicate the extent to which stakeholders' communication in monitoring and evaluation systems influenced provision of adequate waters in Kayole Estate. From the findings, majority 67% of the respondents indicated that stakeholders' communication in monitoring and evaluation systems influenced the provision of adequate to a very great while 33% of the respondents indicated that stakeholders' communication in monitoring and evaluation systems influence provision of adequate to a great extent.

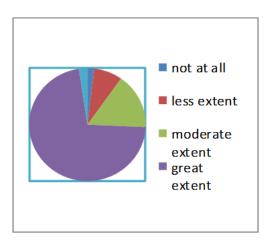


Figure 2: Extent to which stakeholders' involvement influenced supply of adequate water

Respondents were requested to indicate the extent to which sstakeholders involvement influenced the provision of water at Masimba area. From the findings, majority of the respondents indicated that sstakeholder involvement enhances project decision making and stakeholder communication improve project operation efficiency thus influencing the provision of water to a very great extent. 72% of the respondents indicated that sstakeholder involvement influence project resource mobilization and 74% agreed that it improved motivation of project teams to a very great extent. 79% of the respondents indicated that the project management effectively manages risks due to sstakeholders involvement to a great extent. This implies that sstakeholder involvement influence provision of water at Masimba area. This is in line with Awuah et al. (2009), who stated that stakeholders can be engaged with tendering and supplies and other measures put in place to facilitate transparent analysis and implementation of the projects.

VIII. SUPPORTIVE SUPERVISION AND SUPPLY OF ADEQUATE WATER

Table 5: Influence of Supervision on Supply of Water Adequate

Response	Freq	%
Yes	167	78
No	47	22
Total	214	100

Respondents were requested to indicate whether supervision of Masimba area influenced provision of adequate water supply in Kayole Estate. From the findings, majority 78% of the respondents indicated that supervision of Masimba area influenced provision of adequate water in Kayole Estate while 22% of the respondents indicated that supervision of Masimba area did not influence provision of adequate water supply in Kayole Estate.

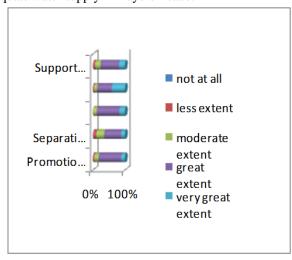


Figure 3: Supportive Supervision of Monitoring and Evaluation Systems influence

The respondents were requested to indicate the extent to which supportive supervision of monitoring and evaluation systems influence provision of adequate water in masimba area in relation to provision of water and sewerage services. From the findings, majority of the respondents indicate that separation of project team responsibilities, motivation of project stakeholders and promotion of correction action in project operations influence provision of adequate water in Masimba Estate to a very great extent . Most of the respondents indicated that influenced coordination of project activities and support project team members in decision making influence provision of adequate water in Masimba Estate to a very great extent as indicated by 76% rate .87% felt that there was improved motivation for the project stakeholders,88% felt that there was influence in project activities in regards to corrective action.. This implies that supportive supervision of monitoring and evaluation systems influence provision of adequate water.



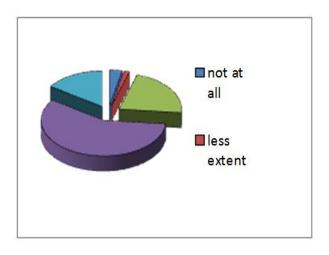


Figure 4: Water supply Monitoring and Evaluation Systems influence provision of adequate water

The study sought the extent to which Masimba Water supply monitoring and evaluation systems influence provision of adequate water. From the findings, majority of the respondents indicated that the organization has improved customer satisfaction among the clients at 73%, the organization achieved timeliness in provision of water at 67% and the organization achieve cost effectiveness in health projects due to improve accountability and transparency to a very great extent as indicated by acceptance level of 79%. Most of the respondents indicated that the organization achieved quality service delivery due to effective monitoring and evaluation to a very great extent as indicated by an acceptance level of 67%. Most of the respondents indicated that the organization improved efficiency level in project management thus influencing the provision of water to a very great extent.

IX. SUMMARY

The first objective of the study was to establish influence of accountability and transparency on provision of water in Masimba area. The results showed that monitoring and evaluation led to efficiency resource utilization and transparency in operations in regards to water supply in Masimba. The study established that accountability led to adequate resource utilization, minimizing loss of tools and equipment and improve auditing of project operation, efficient financial management and competent project team members execute responsibility efficiently thus influencing provision of adequate water.

The second objective of the study was to examine influence of information sharing on provision of water in Masimba area. The study established that monitoring and evaluation systems influenced communication and correction of deviations of project activities at Masimba Water adequately. The study revealed that monitoring and evaluation systems led to resolving conflicts. Monitoring and evaluation systems led to efficient financial information and effective broad based reporting.

The third objective of the study was to examine influence of stakeholder participation on provision of water in Masimba area. From the results stakeholders participation influenced provision of adequate water in Kayole Estate. Stakeholders' communication in monitoring and evaluation systems influenced provision of adequate water. The study revealed that stakeholder involvement enhances project decision making and stakeholder communication improve project operation efficiency thus influencing the provision of water. The sstakeholder involvement influence project resource mobilization and improve motivation of project teams. From the findings project management effectively managed risks due to stakeholders involvement. The study revealed that there was a significant positive relationship between stakeholder involvement and in provision of water in unplanned settlements.

The fourth objective of the study was to examine influence of supervision role on provision of water in Masimba area. The study established that supervision of Masimba area influence provision of adequate water as the correction of errors influence provision of adequate water to a very great extent. From the findings, separation of project team responsibilities, motivation of project stakeholders and promotion of correction action in project operations influence provision of adequate water. Coordination of project activities and support of project team members in decision making greatly influenced provision of adequate water. There existed a significant relationship influence of supportive supervision on in provision of water in unplanned settlements.

X. CONCLUSION

Based on the summary of the findings, it can be stated that monitoring and evaluation improved water supply in the area. The study concludes that for provision of water in the Masimba in Kayole estate monitoring and evaluation practices are a necessity. This will fulfill the improvement of sustainable outcomes as it is an important tool to assist with management planning in provision of adequate ware to the residents in the Masimba estate in Kayole Estate.

The study concludes that accountability and transparency is achieved by revealing the extent to which the project has attained its desired objective. Demonstrating accountability project stakeholders and shore up funds to performance by providing relevant information to facilitate sound management decisions which increases the capacity of the project team to respond and manage which in turn translate into better project performance and thereby provision of adequate water. It is through accountability and transparency that the management has efficient resource utilization and financial management, improve auditing of project operation and minimize loss of tools and equipment. The management further has competent project team members who execute responsibly and efficiently.

The study concludes that information is an ingredient of project success and can aggregate to project sustainability. When project beneficiaries are provided with project information they felt valued and were motivated to make positive contributions to their project. When there is effective communication, beneficiaries are kept informed on matters affecting the water provision project as a strategy of reinforcing their continued commitment towards the project. The study concludes that information sharing influence provision of adequate water communication and correction of



deviations of project activities. The objectives of provision of adequate water will be achieved if there is efficient financial information and effective broad based reporting, effective sharing of ideas, conflict resolving, provision of descriptive information on where an intervention is at any given time in relation to targets and outcomes while evaluation provides an analytical view.

The study concludes that stakeholder involvement was associated with indicators of better water project performance which resulted in improved provision of water to the residents. Stakeholder involvement improves the project operation efficiency, motivates project teams and enhances project decision making. On the other hand supportive supervision influences correction of errors, promotion of correction action in project operations, separation of project team responsibilities, coordination of project activities, motivate stakeholders and support project team members in decision making.

XI. KEY RECOMMENDATIONS FOR STAKEHOLDERS

From the findings and conclusion, the monitoring and evaluation on the provision of water in unplanned settlements in Kenya relate to larger extent. The study recommends that organizations should consider monitoring and evaluation as mandatory at all levels of the projects. When these are put in place success of projects in an organization will be accomplished. The study recommends that accountability and transparency need to be improved and that there is a need for departments regarding monitoring and evaluation of water provision in the Masimba estate in Kayole Estate to enhance accountability and transparency in the project.

The study also recommends that effective information sharing within the project team in water provision project should be enhanced so that management can seek more ways of engaging stakeholder in decision making to create a sense of belonging and improve sustainability of the project in Masimba in Kayole estate thus resulting to better achievement of the project goals. The study recommends that the presence of stakeholder involvement should be emphasized to to facilitate transparent analysis and implementation of the projects. The study recommends that there should be presence of supportive supervision on projects. This will ensure competent and experienced staff in the project in Masimba in Kayole estate are retained and eventually will lead to provision of water.

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