IOSR Journal of Humanities And Social Science (IOSR-JHSS)
Volume 21, Issue 10, Ver. 12 (October.2016) PP 54-60
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

An assessment of sustainability of donor funded road construction projects in Kenya.

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Abstract: Sustainability is a challenging endeavor in project management and especially in many developing countries. Striking a balance between economic growth and social welfare in road construction projects is fundamental. Kenya, has a massive road network size, traffic volume and highly projected future growth rates that require large investments in road infrastructure development. Often the capital and the available resources compared to the needs is unequaled and exceeds the country's budgetary financing capacity. Off budgetary financing has therefore become necessary in order to enable the country meet the challenge of the growing road traffic. Private sector plays a major role in bridging the financial gap, so does the foreign aid. This paper attempts to review sustainability factor in the construction of donor funded road projects. Descriptive survey design was used. Questionnaires were used to gather primary data. Secondary data was used to validate the communicative and realistic validity of primary data. The target was all road construction companies and regulatory bodies involved in ongoing and recently completed projects in Kenya. The results from the literature shows that, sustainability factors can be evaluated under economic, social and environment, resource utilization and entire project management.2

Keywords *– Sustainability, Donor funded, Construction, Projects, Monitoring and Evaluation*

I. INTRODUCTION

In developing nations road projects are some of the largest funded donor projects and the largest cause of resettlement (DeGrassi, 2005). The development of roads has been extensively supported as poverty mitigation instrument by donor institutions. It is argued that road construction projects are key to raising living standards. By cutting down on transport costs, roads are expected to generate market activities, affect input and output prices and nurture economic connections (Van de Walle, 2009). As a result the local economy goes through tremendous change including; the boosting of agricultural production, donor investment and this has a cascading effect on income-earning opportunities (citizens are capacitated), governments are able to collect more revenue and consequently there is population redistribution all over a country. There has been claims that better roads facilitate access to social service facilities enhancing social outcomes. (Kamau and Mohamed, 2015) states that the monitoring and evaluation of such projects is imperative if the project objectives and success is to be realized. The construction industry is intricate in its nature because it comprises large numbers of parties as owners or clients, i.e. contractors, consultants, stakeholders, and regulators. Exploring the causes of delay has become a significant input for improving construction industry performance. Several studies have been done on road construction projects in Kenya. (Hassan, 2013), says monitoring and evaluation of road projects implementation is paramount in determining successful completion. The study showed that project mission, structural capacity, processes and outcome mapping components of monitoring and evaluation influenced project quality. Despite immense study focusing on factors affecting the performance of road construction projects in Kenya, majority have focused on projects undertaken by local contractors.

Basing on an earlier research this study will therefore major primarily on the Donor Funded projects and build on the Monitoring and Evaluation (M&E) Component as one of the independent variables. The intention is to capture how sustainability is planned and achieved in donor funded road construction projects. Many reviewed studies have not shown a conclusive result on how sustainability of donor funded road construction projects is achieved in Kenya. The study aimed to bridge this knowledge gap by evaluating the factors affecting the performance of road construction projects with an emphasis on projects undertaken by foreign contractors.

II. Literature review

Sustainability emerged in the 1960s in reaction concerning the environmental degradation brought about by poor resource management. As the environment became increasingly key as a world concern, sustainability was adopted as a common political goal. As a result Organization for Economic Cooperation and Development (OECD) was formed to endorse policies that would achieve 'the highest sustainable economic growth and employment in Member countries in order to stimulate employment and increase living standards' (McKenzie, 2004).

However, this concept of sustainability gained wider use after the World Commission on Environment and Development published "Our common future". The commission defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs"(Brundtland et al., 1987). The idea arose in reaction to economic growth models that characterized development models over the last half century. (TACHE, 2011) opine that sustainable investment projects play an essential part in the growth and development processes of all economies. He defines sustainable investment as a discrete investment action, with a specific starting point and a specific ending point, intended to accomplish specific economic, social and environmental objectives simultaneously and in addition it encompasses a well-defined structure of investments that are expected to result in a stream of specific benefits over time.

(Lim and Yang, 2007) highlights the importance of infrastructure project deliverables stages to be guided by the principles of sustainable development to ensure the project's sustainability. On the other hand (Nthenge, 2014) stresses that the success and sustainability of any project or program largely depends on constant feedbacks about project on going activities. (Oino, Towett, Kirui, and Luvega, 2015) says a number of projects have, been successful. However, little evidence is available on the true impact of funded programs on the lives of the poor in Kenya. One of the most critical obstacles is the extent to which the projects are able to persist despite the exit of donors, while the beneficiaries reap dividends, and appreciate their participation and ownership role in the project. Apparently, little evidence indicates that, it is sustainability that makes the difference between success and failure of community-based projects.

(Silvius and Schipper, 2010) sees sustainability as the balance or harmony between economic sustainability, social sustainability and environmental sustainability citing (John Elkington, 1997).

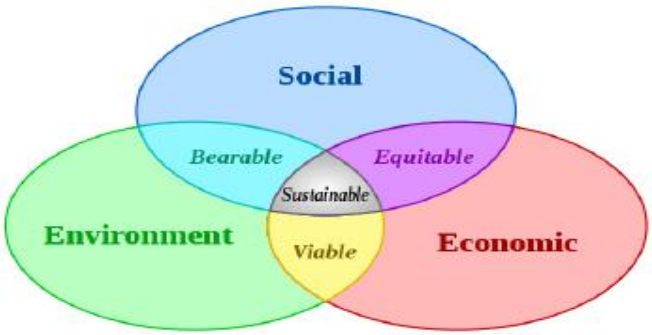

Figure 1: The Triple-P concept of sustainability Source (Silvius and Schipper, 2010)

2.1 Social

Social requirements (Akotia, 2014) are important in developing an energetic society, as a result it is imperative that the requirements for such social issues are clearly set out, to drive the social values, processes and systems towards achieving their anticipated objectives. For any community to meet its social aspirations, it is a necessity that the people living in such a community have access to social services and facilities.

(Haroun and Adam, 2015) says a very essential factor for the sustainability of projects is the candid participation of local people because their concerns and experience are fundamental to the project's success. The level of community support determines whether a project becomes established, how quickly and successfully it consolidates, and how it responds and adapts to meet changing need. According to (Ndegwa, 2015), foreign donors have conventionally been careful while involving with local stakeholders community leaders, the larger community or local donors who in the contemporary setting of the developing world are acknowledged widely as essential to effective sustainability of development projects.

2.2 Economic

(Koglin, 2009) defines economic sustainable development as development that puts the profit into action to enable a more sustainable society, such as higher wages, ecological modernization, and effective technologies. The growth progress must however be sustainable also for future generations, likewise those generations have to work and economic progress. Economic sustainability requires that the different kinds of capital that make economic production possible must be maintained or augmented. These include manufactured capital, natural capital, human capital, and social capital. Some substitutability may be possible among these kinds of capital, but in broad terms they are complementary, so that the maintenance of all four is essential over the long term.

According to (Akotia, 2014) a primary limitation confronting the sustainable development and regeneration agenda is the way the development projects can be carry out and preserve a reasonable balance between peoples' economic aspirations and their sustainable development priorities. In addition, the promotion of employment and investment prospects, together with the heightening of skills are deliberated as crucial benefits, regeneration projects are meant to deliver. Consequently such added value enables communities to respond favorably to economic transformation and effectively tackle issues of deprivation.

2.3 Environmental

According to (Bhandari, 2009) an environmentally sustainable system needs to preserve and uphold a stable resource base, avoid overexploitation of renewable resources and preserve biodiversity. (Ngacho, 2013) notes that, construction projects have irreversible impact on the local environment as construction processes not only consume enormous energy but also generate the most waste, use large quantity of non-energy related resources and are responsible for the most pollution. Additionally, he says the environmental effect being indirect and long term in nature has implications on sustainability of the project within the community. (Montgomery, Schirmer Jr, and Hirsch, 2015) in agreement says that transport projects can have substantial effects on the environment and local communities if not addressed openly in the design and implementation of projects and programs. They further suggest that it is important to move to more environmentally sustainable projects and programs that offer extra benefits. They note that currently, project stakeholders are increasingly demanding and expecting environmental sustainability to be integrated into infrastructure projects. Currently, a number of regulatory incentives are pushing organizations to adopt environmentally friendly construction methods to ensure that they develop the capability of delivering sustainable projects within acceptable cost constraints (Ngacho, 2013).

III. METHODOLOGY

2.4 Research Design

The research design was descriptive survey. This study design involved describing the characteristics of a particular individual or of a group of variables (Kothari, 2008). It is used to determine how people feel about a particular issue by enabling them to describe their experiences. The purpose of a descriptive survey is to provide an in-depth description of a phenomenon or the relationships between two or more phenomena. It has three common goals; it explains how service beneficiary or program characteristics relate to one another, describes community service/resource utilization and implore opinions of a group of people on an issue i.e. survey (Project Star, 2006). Data-gathering techniques were precise as per the requirements of a descriptive study. This study adopted descriptive research design which involved; analysis of existing data /information, survey of data relating to program experiences, a preliminary outcome measures or tests that allowed to test if the research area is operating as intended and finally statistical analysis of data collected. The study aimed to provide data on sustainability of donor funded road construction projects.

2.5 Target Population

The population of this study was all the road construction contractors in the Ministry of Transport & Infrastructure, Kenya. The study targeted a population of estimated 2391 contractors under the then Ministry of Works (GoK, 2012) which is now Ministry of Transport and Infrastructure Kenya involved in ongoing road construction projects across the country. Being key informant the study targeted the project managers involved in 42 road construction projects in Nairobi which are ongoing or completed (kura.go.ke, 2016).

2.6 Data Collection Procedure

The research obtained an introduction letter from the University and a research permit from the bodies and ministry officials identified. The drop and pick method was used in the data collection in the specified departments. This allowed the respondents to work on the questionnaires independently and in convenience.

2.7 Pilot Study

The content validity tested whether all the important aspects of the constructs are measured. This was done by first testing the instruments on 10% of the sample and reviewing the findings. Reliability of the responses was tested using the Cronbach alpha. Normally, α should be between 0.7 – 0.9 (Santos, 1999).

According to Gay (1992), reliability is a measure of degree to which a particular measuring procedure gives consistent results or data after a repeated trial. The research study used a test-retest method which involved administering the same scale or measure to the same group of respondents at two separate times. This was done after a time lapse of one week. The test was administered twice at two different points to the same respondents. Cronbach's Alpha was utilized to calculate the correlation co-efficient in order to ascertain the degree of consistency in giving similar response each time the questionnaire was administered. The formula that was used to calculate the Reliability Coefficient is as follows: (N/ (N-1)) ((Total Variance – sum of Individual Variance)/ Total Variance).

2.8 Validity and Reliability

Validity was determined by the use of face and content validity. Face validity tests whether the questions appear to be measuring the intended constructs, while content validity the test content to determine whether it covers a representative sample of the behavior area to be measured and covered.

2.9 Data Analysis and Presentation

The data collected from the field was captured using Statistical Package for Social Sciences (SPSS) version 21 and Microsoft Excel (2013). Descriptive statistics including frequency, percentages and means was employed and a summary graphs, pie charts and frequency distribution tables given. Content analysis was used to analyze qualitative data to help triangulate quantitative data. It mostly involved analyzing the contents of documentary materials such as books, magazines, newspapers and the contents of all other verbal materials which were either spoken or printed according to (Kothari, 2009).

IV. DATA ANALYSIS AND INTERPRETATION

The analysis is of two types namely; descriptive statistics and inferential statistics. Descriptive analysis was used to describe the data and mainly involved frequency distributions, calculation of mean and standard deviation. A total of 331 questionnaires were dispatched. This represented a response rate of 90% which according to Mugenda and Mugenda (2003) is good response rate.

4.1 FINDINGS

Table 1

Statement	SD	D	I	A	SA	Total	Mean	Standard deviation
Participation processes included the empowerment of communities so that their opinions were considered throughout the project cycle	28	65	95	84	21	293	3.02	1.087
The communities took part in the process of initiating the project, review of the design and evaluation the of the final product as a means of indicating whether they were satisfied with project	28	52	100	89	27	296	3.12	1.100

The project was managed within the existing institutional structure to facilitate sustainability after it ended or was a special project organization created	21	65	114	72	24	296	3.04	1.036
Overall	**77**	**182**	**309**	**245**	**72**	**885**	**3.06**	**1.074**

Key: SD=strongly disagree, D=disagree, I=indifferent, A=Agree, SA=strongly agree

From Table 1 above the respondents were asked to give their opinion on the statements. This was purposely done to check the measures put in place to ensure the sustainability of the donor funded road construction projects sustainability was achieved at 61.2%. The responses of the first two statements reveal that it is through involvement that benefits from an intervention can be appreciated. That participation act as an incentive which becomes a reason for them to take part and device ways of sustaining the project. (Haroun and Adam, 2015) supports this revelation saying candid participation of the local people is a very essential factor for the sustainability of projects because their concerns and experience are fundamental to the project's success. The level of community support determines whether a project becomes established, how quickly and successfully it consolidates, and how it responds and adapts to meet changing need. (Koglin, 2009) defined economic sustainable development as developments that puts the profit into action to enable a more sustainable society, such as higher wages, ecological modernization, and effective technologies. (Mazibuko, 2009) opines, projects designed with full compliance to guidelines have a greater chance of success than those projects that undermine the stated guidelines. They advocate adaptive and popular approaches in project planning, stressing creation of a conducive environment in terms of policy and legal instruments.

A cross-tabulation of sustainability vs project body was carried out and table below displays the results.

Table 2 Cross-tabulation Type of Project vs Communities took part in the evaluation

		Communities took part in the evaluation, design and review of conclusions as a means of indicating whether they were satisfied with project benefits					**Total**
		SD	**D**	**I**	**A**	**SA**	
Type of Project	**KENHA**	16	26	53	51	16	162
	KURA	10	9	21	14	6	60
	KERRA	1	13	15	19	3	51
	Others	1	4	11	5	2	23
Total		**28**	**52**	**100**	**89**	**27**	**296**

From the findings 39.2% of the respondents agreed that communities took part in project evaluation, design, review and conclusion. This percentage is on the lower side which could mean that the involvement of the stakeholders was not satisfactory. The qualitative data collected reviewed that the sustainability guidelines given by the donors are up to date though the client or the agencies in the country receiving the donations should ensure that proper checks are done to ensure sustainability of the project.

Further the respondents were asked if the project was managed within the existing institutional structure to facilitate continuation of activities after its end. 35.6% agreed to the statement which also gave a notion that sustainability was not so well elaborated. (Okun, 2012), says that, involvement and participation of stakeholders and target beneficiaries promotes ownership of the project, boosts resource mobilization, allows participatory planning, sets a base for oversight and feedback to the project. This ensures both success and failures of the project are shared enhancing a smooth occupation and maintenance of the projects operation way after the donations are terminated.

Table 3: Definition of Sustainability of Construction of Donor Funded Road Projects

Was sustainability defined?	**Frequency**	**Percentage**
Yes	142	47.7%
No	156	52.3%
Total	**298**	**100.0%**

52.3% said that sustainability was not defined while 47.7% agreed that it was defined. This response could mean that the sustainability defined did not meet the expectations of the respondents. Probably the stakeholders were not aware of the documented evidence of the sustainability of these donor funded projects. The findings are in agreement with (Oino, Towett, Kirui, and Luvega, 2015) who says that a number of the projects have been successfully completed, nevertheless, little evidence is available on the true impact of funded programs on the lives of the poor in Kenya. (Khalid et al., 2012; Jeon & Amekudzi, 2005) says that sustainability factors should be designed to address sustainability throughout the project stages. On the other hand (Nthenge, 2014) stresses that the success and sustainability of any project or program largely depend on constant feedbacks about the projects and the ongoing activities.

V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The projects integrated the use of participatory approaches to development. However, there were shortcomings that were observed during the implementation which could affect the sustainability of the donor funded project. Secondly, a few gaps were identified by the constructors in the designs which according to the respondents requires proper checks before commencement of construction activities to ensure sustainability.

Before the actual final data collection, a pilot study was conducted where the content validity and reliability of the questionnaires was tested. The validity was enhanced through discussion of the questionnaire contents with two randomly selected road project officials from government bodies that is Kenya National Highways Authority (KeNHA) and Kenya Urban Roads Authority (KURA). The reliability was tested through statistical package for social sciences (SPSS) and Cronbach alpha correlation coefficient was used to satisfy the reliability tests. The study sample had 331 questionnaires distributed and 298 were duly completed and returned for analysis.

Findings on the sustainability showed that sustainability was not well defined. This response could mean that the sustainability defined did not meet the expectations of the respondents. The respondents said that the guidelines on sustainability of the donor funded projects apparently is well stipulated but the agencies in the receiving countries should put checks and measures to ensure that these guidelines are followed to the dot.

VI. CONCLUSION

The adoption of better mechanisms in the management of donor funded projects could enhance sustainability of projects. Proper checks on design details is mandatory before any construction begins. The study also concludes that strict measures by the agencies should be done to ensure guidelines put by the donors is achievable by the country and adherence by the constructors and other stakeholders observed. Monitoring of donor funded road construction projects is essential to quantify and evaluate social, economic and environmental benefits in societies. This also is necessary in determining successful completion of projects within set budgetary and time constraints. Generally stakeholder's involvement is crucial during identification and implementation of projects to meet their defined goals and the objectives with minimum displacements and conflicts with the project implementers. Donor funded road construction projects come with plenty of benefits for the recipient countries. They bring added value that enables communities to respond favorably to economic transformation and effectively tackle issues of deprivation. According to the findings of this study, sustainability mechanisms were unsatisfactory. This could have been brought about by poor engagement of the stakeholders, insufficient feasibility studies, and other factors that affect the communities socially and economically. Sustainability therefore can be achieved if the above issues are taken into account especially on the adherence of the guidelines put by the donors and mechanisms put to monitor and evaluate the implementation of the projects. All the pillars should be carefully observed, that is, social, economic and environmental pillars of sustainable project implementation.

VII. ACKNOWLEDGEMENTS

I wish to acknowledge God for His gift of life and wisdom. Further, I acknowledge my Supervisors and Lecturers Dr. Mike Iravo and Prof. Bwisa for their intellectual support throughout the research period.

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