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Effects of Environmental Antecedents on Financing BOT Projects in Africa, A Case of the Rift Valley Consortium

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ABSTRACT

The purpose of this study was to investigate the effects of Environmental factors on financing BOT(Build Operate Transfer) infrastructure projects, Infrastructure plays a crucial role in the drive for achieving development by providing energy, transportation, and water. There have been ups and downs in the degree of emphasis placed on infrastructure, but infrastructure has remained the largest component of the public investment programs in developing countries 62 % of gross domestic product (GDP). Nearly half of the international financial institutions' project lending to developing countries goes to infrastructure. The study used a mixed method research design; with a target population of 720 employees of rift valley rail consortium and government of Kenya representatives of which a sample of 338 . The study used questionnaires and interview guide to collect data. Data was collected by administering questionnaire to the respondents while senior managers and government officials were interviewed. Data collected was coded. Qualitative data was analysed using themes and sub themes, while quantitative data was analysed by the use of inferential statistics, of which the frequency percentages were calculated, data were cross- tabulated to establish the relationship within the variables and finally a Wald test statistic was conducted to measure the strength and direction of relationship within the variables. A calculated Pearson Chi-Square of 0.818 lead to rejection of the null hypothesis and therefore, there is significant relationship between Environmental antecedents and financing of BOT projects .The study recommended that there is need for policies to be articulated on tackling the rise of environmental destruction due to the BOT projects in Kenya.

Key words: Environmental antecedents, financing. BOT Projects, consortium

INTRODUCTION

Environmental factors identifiable elements in the physical, cultural, demographic, economic, political, regulatory, Technological environment that affects the survival, operation of Rail transport in Kenya .Projects frequently need to deal with environmental externalities and social justice. The man induced environment impact has increased rapidly ever since the industrial revolution. The strategies to reduce the environmental problems have however changed focus through the years. An environmental policy affects investment. The quality of the technology employed, the degree of policy used to secure enhanced whole life costs for the user, and respect for the environment. These fundamentals are today articulated by the concept of Environment laws that encompasses social equality, the financing of infrastructural growth and employment, protection and - if possible - enhancement of the environment, and prudent use of natural resources.

EMPIRICAL AND THEORETICAL LITERATURE REVIEW

Looking at the historical literature, In Germany, Bilfinger Berger operated as the second-largest general contractors. With origins that date back to 1890, Bilfinger Berger has evolved from a heavy construction services firm to a global multi-service group involved in civil engineering, building and industrial construction activities, build-operate-transfer (BOT) projects, industrial and real estate services, and environmental services. The German industry experienced an upswing after German reunification in the early 1990s. It has since deteriorated dramatically, forcing Bilfinger Berger to focus heavily on diversification and international operations. The company's structure is the result of the 1975 merger of Grün and Bilfinger and Julius Berger-Bauboag Founded in 1892, Grün and Bilfinger incorporated in 1906. (Berger, 1997). Berger-Bauboag was itself the product of a 1969 merger. Bauboag was founded in 1890 as a public construction firm named Berlinische Bodengesellschaft; it built thousands of apartments and many banks, stores, and shopping centres. Julius Berger, also founded in 1890, incorporated in 1892 as Julius Berger-Civil Engineers. In his first ten years in business, Julius Berger concentrated on railway, road, and bridge construction. He quickly earned a solid reputation with the government and received contracts for hundreds of miles of railways and roads. In 1893 alone he built 22 stretches of railroad across Germany, (Berger, 1997).

In the case of Ireland, the pickup in enthusiasm for BOT can be summarised that there was quick buy-in on the part of all BOT stakeholders, where the government made it clear that its social partners would be consulted on the approach taken to select BOT projects. Second, the government paid more attention to the efficiency benefits of PPP than to just their fiscal advantages. Third, conclusion was reached that the BOT would be a success despite some institutional challenges that had to be overcome. To facilitate the BOT process, the National Development Finance Agency of Ireland was set up to mobilise resources to finance BOT projects and to provide financial advice to government agencies seeking to form BOTs, (IMF, 2004).

Chile's experience with BOT has been successful and a significant portion of the sizeable infrastructure gap was fulfilled through this model. Chile's success with BOT has been underpinned by a solid institutional framework, well developed procedures to identify, evaluate the projects, efforts to ensure adequate sharing of risks between the stake holders, and reforms to ensure the availability of financing for projects. In the case of Mexico, most progress has been made with respect to telecommunications, ports and airports, but this mainly takes the form of privatisation. Empirical evidence suggest that public infrastructure in Mexico has negligible effects on private sector costs, (Nataraj and Aminabhavi, 2007).

The BOT has been operating in China for over 20 years. Since the introduction of open economic policy in early 1980s, some state-owned enterprises started their reform by becoming a limited liability company. Since the 1990s, some local governments have initiated to resort to the private sector on the provision of public facilities and services. Since 2000, the BOT has become one principal strategy used by the Chinese Government in the provision of public facilities and services. The main objective of BOT is to make use of market competition in order to ensure the effective use of resources in the provision of public facilities and services. However, some local governments place too much emphasis on attracting private investments by offering even more favourable terms than the normal national status, (Wang *et al.,* 2002).

In Zimbabwe, Evolution of policy in accordance with the SADC protocol, GOZ policy since mid-1990s has been to privatize (concession) the railways. The process for the privatization of NRZ was first launched in the latter part of the 1990s with the support of the World Bank, (Graham &Harvey, 2001). The Railways Act was modified in 1997 to allow for a concession for the railway (Delmon, 2008). Consultants to support the process carried out several studies, funded by the World Bank (World Bank, 2010). The Government granted a BOT type concession for the Bulawayo Beitbridge line in the late 1990s. In 1998, the Government sought to privatize the railways based on a vertical-separation strategy (Delmon, 2008).

In Tanzania, BOT entails an arrangement between the public and private sector entities whereby the private entity renovates, constructs, operates, maintains, and/or manages a facility in whole or in part, in accordance with specified output specifications, (Kaichena, 2010). The private entity assumes the associated risks for a significant period of time and in return, receives benefits and financial remuneration according to agreed terms. BOTs constitute a cooperative venture built on the synergy of expertise of each partner that best meets clearly defined public needs through the most appropriate allocation of resources, risks and rewards (Levy, 1996). Most BOTs implemented in Tanzania are concession arrangements for running existing enterprises with limited provisions for rehabilitation and new investments (Ngumbulu, *et al.,* 1998). It is noteworthy that in the case of services, Faith Based Organizations (FBOs) have implemented BOTs successfully in education, health and water sectors for many years, (Kaichena, 2010).

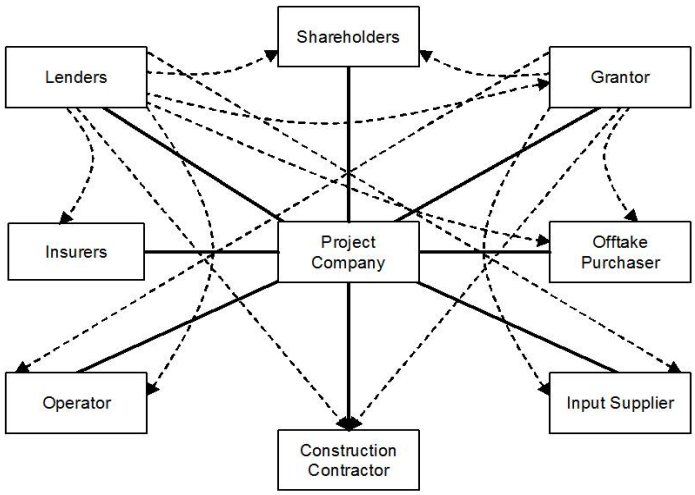
In Kenya, BOT and PPPs were discussed as one of the three crosscutting issues under the Government's Private Sector Development Strategy 2006-2010. In addition, work on establishing a PPP Unit established within the Ministry of Finance (GoK, 2006). The two key Acts of Parliament that variously spells out the legal framework for PPPs in Kenya are the Privatization Act No. 2 of 2005, which after some delay was given Presidential Assent on 13th October 2005, and the Public Procurement and Disposal Act, No 3 of 2005 assented to on 26th, October 2005, (Ong'olo, Spellman & Walker, 2006).The BOT concept is becoming a popular mode of financing transport infrastructure development and has become one of the most useful privatization strategies (Kaichena, 2010; Eredem, 2003).Despite its success in other countries, BOT in Kenya has not been performed well (PPIAF, 2010). Due to those factors, the Kenyan government admitted that the rail operation was technically insolvent (PPIAF, 2010). The Government of Kenya agreed that there was need to concession the Kenya Rail. In late October 2005 a consortium led by Sheltam Rail (Pty) Ltd (Sheltam) was named the preferred bidder and awarded 25-year concession. The two groups reportedly spent as much as $1.5 million each on their bids. The joint concession was structured legally as two separate 25-year concession contracts signed by each government with the subsidiary company in each country of the RVR Investments (Pty) Ltd ("RVR"), which acts as the overall concession holding company (PPIAF, 2010). While for regulatory and political hurdles in each country, the concessions were signed by the RVR subsidiaries with each government. Unfortunately, eight years later the operations of the RVR has proved to be wildly off the mark.RVR proved not to have sufficient expertise in actually running a railway operation to begin improving the system's revenues and the operation deteriorated from better to worst. To understand the operations of the RVR the game theory was applied in explaining the concepts.

Games Theory

This theory was formulated by Vonneumann (1944). Myers (1984) also a key proponent of the theory called it "conflict analysis" or "interactive decision theory". The use of game theoretic techniques in this field of financing BOT has also allowed an enormous debt on the Environment impact of These BOT projects to move ahead significantly. Rasmusen (2001) noted that the first contributions in a game theoretical vein were signalling models. Game theory provides simple tools, which allow observing dependencies between entities activity. Its greatest worth is contribution to explaining the mechanism of competition and co-operation. Most of the relationships between entities are neither strict conflicting nor strict co-operative. Using the terminology of the game theory, most of the social interactions are non-zero-sum games, which mean games between players whose interests aren't either totally opposite or fully coherent, in this case the Government and the concessionaires. In other worlds between players, there exists rivalry that does not exclude possibility of co-operation. Rationality is the property of maximizing one's pay-off and taking into account the fact that the opponent is also rational and also is trying to maximize his payoff (Rapoport, 1988), as in this case the government would require good services and preservation of environment without contributing initial capital while the concessionaires would want good returns at a lower investment . Rationality causes a conflict between the self-interest and collective interest. (Straffin, 2004; Boone & Macy, 1999). BOT (Build – Operate – Transfer) model can be identified as sequential games include three main phases. Generally we can look at the BOT as at a four-stage model including: preparation of enterprise, implementation, design and construction, operating and maintenance. So many stages of realization of BOT scheme can suggest that it makes sense to interpret BOT as a game due to a set of interactions involving players with a complex character, particular strategy, behaviour, interest and pay-off. Thus a very important thing is to analyze all potential risks and benefits (pay-offs) associated with realization of a given activity as a BOT and their distribution between parties. Considering BOT as a game must take into account that it is played in the environment with imperfect and incomplete information. That means that players must take steps to maximize their bargaining power by enlarging their access to information. In public service decision making the most important is following issues (Scharle, 2002).The emphasis is that the process of decision making in public sectors is more complex and unstable than in the case of private sector. The separation of decision making and decision executing, and unclear distribution of responsibilities between them enhance the risk associated with BOT. The political risk is one of the main causes why private sector avoids BOT. On the other hand there is often no social acceptance for this kind of delivering of public goods. In some cases it is reasonable, because in given countries there is high level of corruption. But in most cases the problem is the result of ignorance. The lack of necessary knowledge precludes an effective use of this hybrid form of delivering public goods. BOT isn't easy and does not always work well. But if we stop treating state and market as an alternative mechanisms for solving social problems with the availability of public goods, we can gain more.

The co-operation in BOT means that state and its commercial partners go in the direction: to enhance social welfare. Due to a lot of entities engaged in BOT, such as government (central state or local) authority or a government-owned enterprise, project sponsors, construction companies, providers of necessary equipment, plant operators, insurers, must co-operate with one another. This co-operation in some cases could be examined as a game. The better understanding of BOT games can decrease costs and potential losses. Because of relatively short

time of functioning of BOT we should carefully prescribe obligations and rights of every partner and think about BOT as a co-operation, not rivalry. The behaviour of the partners in the concession is well depicted in figure 1;



Source: World Bank (2005) figure 1: games theory of concessional contract dfus model

ENVIRONMENTAL FACTORS AND FINANCING BOT PROJECTS

Environmental regulation has become an important part of policy being implemented in order to internalize externalities, reduce damage, and increase quality of life. These desirable effects are not however straightforward to achieve. Whether policy would yield the effects or not would depend on behavioural responses, technology possibilities and the strictness of the instrument with respect to involved abatement costs (Scancy *et al.,* 2006). A study by Máca *et al.,* (2009) using the structural macro econometric E3ME model compare two alternative green tax based policy frameworks in the Czech Republic. While the first imposes a tax on emissions of classical pollutants (particulates, sulphur dioxide, nitrous oxides, and volatile organic compounds), the second consists of carbon taxation intentionally set at the level equalizing environmental effect measured by externalities that are avoided as result of both reductions in emissions subject to taxation and auxiliary effects.

According to Estach *et al.,* (2010) a strong and reasonably detailed legal framework can set the parameters for handling PPPs and also provide assurance to the private sector that contracts will be honoured. The more transparent and credible the enabling environment, the less risk premium charged by private investors in PPPs. Li, Akintoye, and Hardcastle (2001), categorized risks into three levels: macro, meso and micro. Macro level covers risks outside the project – environmental, political, legal risks that are concerned with national or industry level. Meso level risks emerge within the project's implementation phase – design, construction, operation. Finally, the micro level risks concern risks that appear between the partners involved, they rest on the idea that both of the parties have different incentives and objectives, and therefore, risks due to power struggle, differences in working methods and environment between the partners may emerge. Furthermore, Grimsey and Lewis (2004) argue for more detailed risk categorisation, they divide risks into nine categories that are suitable for the infrastructure approach: technical, construction, operating, revenue, financial, force majeure,

regulatory/political, environmental and project default risks. This distribution is similar to the one proposed by Gray (2004), IMF (2004) and the European Commission (2009).

The private sector investors and lenders will be interested to develop public infrastructure projects when the environment where these projects operate is favourable. They would like a favourable, political, legal, economical and commercial environment. After establishing a business unit and a legal framework within which the business unit would work, it must know how the risk is allocated between parties and their consequences. The business units should have the knowledge about the market within which it works. The government is in a better position than any party in creating such environments, which largely eliminate fears of the private sector concerning various risks, especially environmental risks such as expropriation and nationalization. Most of governmental guarantees and support may also be necessary to manage certain risks that can be better handled by the government, such as change in law, foreign currency convertibility, corruption, delays in approval of various permits, and certain force majeure risks (Fitzgerald, 1998; Zhang and Kumaraswamy, 2001).

Harris (2004) explained the need for high-level political support, addressing staff concern of losing jobs, need for the press to promote PPPs, prioritization of projects, and need to choose project sectors for which it is possible to develop a service based on output specification. The institutional framework needed to support PPPs within a jurisdiction requires development of guidance not only to central government departments but also to local governments and authorities. Successful implementation of PPPs requires the availability of diverse skills and expertise in procurement, legal, and financial management. Appropriate public relation strategies and activities are needed to win public understanding and support (Levy, 1996).

Sensitive movements for environmental concerns, makes the investors hesitant from investments in large infrastructure projects. Government support in such projects plays a crucial role to attract the investors.

Bruha and Scasný (2005) affirmed that environmental tax reform are mostly based on higher energy taxation, including the principle of revenue neutrality and is based on carbon taxation, and harmful airborne pollutants. Environmental regulation is not, however, free of economic impacts. Intervention might harm the economy and reduce overall welfare; or, on the contrary, a double dividend might be reaped, technological progress enhanced or employment boosted. To evaluate the overall effect, enviromental models have to be developed and gradually utilized (Máca *et al.,* 2009). Benes *et al.* (2003) posited that impact of instruments on the environment and the economy should play an essential role in making a decision about the particular mix of tools. Zylicz (2002) found emission charge rates were one order lower than the Pigovian rate in Poland. Maca *et al.,* (2009) draw similar conclusion by comparing actual emission charge rates and the values of respective external costs in several Europeans countries.

The study done by Mogila *et al.,*(2010) on the use of Biofuel on the Railway transport in USA found that there is a growth in emissions of NO_2, which can be compensated by a decrease in fuel injection advance angle. The study used secondary data to arrive to the findings. Greene & Schaefer (2003) points out that it is possible for bio fuels to be used instead biodiesel on railway transport. In addition, there is a positive experience in using biodiesel on rail transport.

European Commission (2009) reveals that in U.S. (Texas) a mixture containing 80% of diesel fuel and 20% of biodiesel in diesel engines have been tested and was noted that there was a decrease of harmful emissions and the reduction of power losses of the locomotive. This also corresponds to the Mogila *et al.,* (2010) findings.

However, according to Katsioloudis and Mildred (2012) the additive proved to be economically insufficient and that by reducing the dependence on non-renewable diesel fuel and improving the environmental give a promising ways. It is rational to use biodiesel fuel as an additive to diesel fuel and in future as an independent fuel (Greene & Schaefer, 2003) According to U.S. Department of Transportation (2010) Results from environmental research and pursuant governmental regulations are changing the way companies do business and how transportation systems address the future. According to the report for the Pew Centre on Global Climate Change mentioned, trucking accounts for 72 percent of "transportation energy and use and carbon emissions effects on the environment (Greene & Schaefer, 2003).

A study by Topalovic *et al.,* (2012) explores the health, environmental, social and economic impacts of light rail transit, and a component of the City of Hamilton's rapid transit initiative in America. It performs a comparative analysis with other major North American cities that have successfully implemented this form of mass transit. The analysis concentrates on three main areas: urban development and land values, health and environmental impact and socioeconomic factors. The results of the research on light rail transit (LRT) and its possible benefits indicate overwhelming support for the economic, health, environmental and social benefits of LRT, especially when compared to other forms of transit, including rapid bus and local transit schemes. Greene and Schaefer (2003) argue that the result should be considered a viable and desirable transit option; a catalyst for transit oriented, high density, mixed use development; an economically sound investment opportunity, providing a return on investment to property owners, businesses and the municipality; and a catalyst for social change, improving the health, environment and connectivity of the community.

Cervero and Sullivan (2011) points out that rail transport has been used as a strategy for implementing a rapid transit system in an urban environment and can have an effect on urban growth, land use, intensification and revitalization without a push factor. Litman (2010) states that the impacts of rail transport on development are not accidental and have significant impacts, and stimulated economic benefits only occur when a system is planned with policies and complementary land-use strategies in place. Litman (2010) consent that development impacts of Railway transport systems are restricted to regions that are rapidly growing and have a healthy underlying demand for Rail transport as opposed to policies.

Crampton (2003) asserts that cities, which have successfully implemented LRT systems, have reported an increase in shopping commerce generated adjacent to the transit line, development of new residential and commercial areas and increased employment nodes, as was the case with LRT development in San Diego. Although urban development has been reported around where rail transport infrastructure has been effective, Handy (2005) reports from the Transit Cooperative Research Program (TCRP) concluded that rail transit might not actually create new growth but simply redistribute growth that would have otherwise taken place elsewhere without the transit investment.

A study by Olmstead (2003) on how Dam construction project influenced people's lives in Bujagali. The study used the case study design and observation method in collecting data. The findings were that the construction of the dam had violated the religious belief while also threatening to displace people and destroy the surrounding environment. These led interest groups to protested against the construction of this dam, thus delaying the start of this project. The private infrastructure provider later pulled out of the project (International Rivers Network, 2004). Botman *et al.,* (2006) points out that water supply and sanitation sector has traditionally been a fertile ground for disputes relating to social inequality. Byrnes, and Patricia, (1991) noted that most private providers of water and sanitation services in developing countries are foreign firms funded through BOT.

The European Environment Agency (2001) ascribes energy to be the basic driving force behind both the climate change and a number of other air pollution problems. The energy consumption unfortunately still depends on a growing demand in the transport sector (European Environment Agency, 2001). These desirable effects are not however straightforward to achieve, (Shapiro, 2010). Whether policy would yield the effects or not would depend on behavioural responses, technology possibilities and the strictness of the instrument with respect to involved abatement costs (Pollitt, 2008).This study fill these gaps.

Case studies suggest that BOTs are complex, demanding and time-consuming but that under the right conditions, and in the right sectors, they can offer significant benefits to government, the private sector and consumers. They have been generally more successful in sectors such as ports, telecommunications, and transport and eco-tourism projects than power and water. But with the correct regulatory framework and strong political commitment, they do offer value for money to governments and good opportunities for investors.

Farlam (2005) reveals that those partnerships that have been most successful in Africa have been characterised by thorough planning, good communication, strong commitment from parties and effective monitoring, regulation and enforcement by government. The issue of pricing is crucial both to avoid political fall-out and to ensure the viability of the contract for business. Leaders need to talk openly with their citizens about their inability to continue to offer free, undervalued or heavily subsidised services, and their plans for holding the private sector accountable for providing these services. BOTs — like full privatisation and other forms of government tendering — are vulnerable to graft and governments need to effectively tackle corruption before they can hope to get such partnerships right.

Farlam (2005) further noted that implementing mechanisms to guarantee transparency at all stages in the tendering process. These mechanisms must include sett procurement specifications, open public hearings for major government contracts, and the final selection of contractors; and Involving independent agencies such as to oversee the bidding process and commit and private bidders to an integrity pact, Pre-empt public complaint and suspicions by; preparing the ground structural reforms and raising tariffs to approach cost recovery levels (where appropriate); communicating decisions around privatization and BOTs to the public to build consensus and transparency, providing policy clarity in the areas of free basic services in concession areas; considering the extent to which a project or particular bidder will contribute to the local socioeconomic environment, assessing the political commitment government

institutions. According to IMF (2004) good governance matters in BOTs if governments are to climb the maturity curve. This process requires putting into place the enabling institutions, procedures and processes surrounding BOTs in order to fully benefit from BOTs. This means also helping governments to play a critical role in the process and involving citizens as well as other stakeholders. Many governments, regional, international organizations and NGOs now recognize the importance of governance for economic development. Good governance involves some key principles, good governance is open to much interpretation but overall six core principles have become widely accepted; the degree of involvement of the public; the degree to which the formation and stewardship of the rules is undertaken without harming; or causing grievance to people; the degree of clarity and openness with which decisions are made; the extent to which political actors are responsible to society for what they say and do; the degree to which rules apply equally to everyone in society; and the extent to which limited human and financial resources are applied without waste, delay or corruption or without prejudicing future generations (Guidebook on Promoting Good Governance in Public-Private Partnerships, 2008).

FINDINGS OF THE STUDY

Environmental factors and financing of BOT projects

This was the fourth objective the study sought to achieve with a focus in environmental policies, laws and policies on environment protection, force majeure risks and public opinion to assess how these variables influence financing of BOT projects. These are further discussed on the following subsequent sub-themes.

Environmental Policies and financing of BOT projects

The study was interested in establishing environmental policies' influence as a component of environmental factors influence financing of BOT projects. Environmental policy evaluation on project's potential environmental risks in its area of influence; examines project alternatives; identifies ways of improving project selection, sitting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The respondents were asked on their opinion regarding environmental policies perceived influence and financing BOT projects as measured in the scale of very low, low, moderate, high and very high levels and the results are as shown in table 4.1

Table 4.1: Distribution of level of response on environmental policies and financing Build Operate Transfer Projects

Scale of measurement	Frequency (f)	Percent (%)
Very low	41	12.1
Low	98	29.0
Moderate	86	25.4
High	80	23.7
Very high	33	9.8
Total	**338**	**100.0**

Table 4.1 indicates that 98 (29.0%) respondents responded that environmental policies influence financing of BOT at a low level, followed by 86 (25.4%) moderately, 80 (23.7%) high, 41 (12.1%) very low and 33 (9.8%) responded that it was very high. therefore environmental policies does not influence financing BOT. As shown by 60%. The implication of this result is that the availability of environmental policy may influence financing of BOT projects by 1.6 times (1+60.0/100) either way. To depict the relationship between two or more survey questions by provides a side-by-side comparison of how different groups of respondents answered the survey questions. The study conducted across tabulation and the results are as indicated in table 4.1.

Table 4.2: Cross tabulation showing environmental policies' influence on financing Build Operate Transfer projects

BOT Projects financing	**Rating of policies formulation in integrating environmental and social consideration in rail construction projects**					
	Very low	**Low**	**Moderate**	**High**	**Very high**	**Total**
Influence	31(12.4%)	71(28.5%)	71(28.5%)	57(22.9%)	19(7.6%)	**249(74%)**
Does not influence	10(11.2%)	27(30.3%)	15(16.9%)	23(25.8%)	14(15.7%)	**89(26%)**
Total	**41(12.1%)**	**98(29%)**	**86(25.4%)**	**80(23.7%)**	**33(9.8%)**	**338(100%)**

Table 4.2 illustrates that 71 (28.5%) respondents agreed that environmental policies' influence at a low level while 10 (11.2%) in the same category declined its influence, followed by 71 (28.5%) who moderately agreed on the influence of environmental factors while in the same category 15 (16.9%) declined its influence, this was followed by 57 (22.9%) respondents who acknowledged its influence at a high level while 23 (16.9%) in the same group declined its influence followed by 31 (12.4%) agreed that the influence of environmental policies was at a very low level while in the same category 10 (11.2%) declined, lastly 19 (7.6%) respondents noted that environmental policies influence financing of BOT projects at a very high level where as in the same group 14 (15.7%) declined its influence.

The result indicates that environmental policies have an influence on financing of BOT projects as supported by 249 (74%) of the respondents compared to 89 (26%) who indicated that there is no influence. This implies that the largest difference in the column percentages for survey respondents in the category of government's environmental policy formulation and financing BOT projects when compared across the groups defines by levels (very low, low, moderate, high and very high) was that of low influence which was 28.5% thus environmental policy do not influence financing of BOT projects. Therefore there is a likelihood of environmental polices influencing financing of BOT projects. Looking at the influence within each variable one may agree that there is no sufficient influence, but by looking at the total influence which is 74% indicates that there is sufficient evidence to agree that policy formulation influence financing of BOT projects.

According to U.S. Department of Transportation (2010), Results from environmental research and pursuant governmental regulations are changing the way companies do business and how transportation systems address the future. According to the report for the Pew Centre on Global Climate Change mentioned, trucking accounts for 72 percent of "transportation energy and use

and carbon emissions effects on the environment, as these policies are implemented little room is left for manipulation and therefore all rules are followed make environmental policies less significant.

The findings supports a study by Topalovic *et al.,* (2012) that explored the health, environmental, social and economic impacts of light rail transit, and a component of the City of Hamilton's rapid transit initiative in America. It performs a comparative analysis with other major North American cities that have successfully implemented this form of mass transit. The analysis concentrates on three main areas: urban development and land values, health and environmental impact and socioeconomic factors. The results of the research on light rail transit (LRT) and its possible benefits indicate overwhelming support for the economic, health, environmental and social benefits of LRT, especially when compared to other forms of transit, including rapid bus and local transit schemes. This could be the reason why policies are formulated and project is left to operate within the environment without being monitor, they may exploit the value of environment for its own profit maximization. The overall 74% shows that there is a significant relationship between environmental policy and financing BOT project, While 26% indicated that financing BOT is not influenced by environmental policies.

Laws and policies on environment protection and financing BOT projects

Governments create the rules and frameworks in which businesses are able to compete against each other. From time to time, the government will change these rules and frameworks forcing businesses to change the way they operate, thus affected the business. The respondents were asked to state their opinion on influence of law and policies and environment protection on financing BOT projects as measured in the scale of very low, low, moderate, high and very high levels and the results were as shown in table 4.3:

Table 4.3: Laws and policies on environment protection on financing Build Operate Transfer Projects

Scale of measurement	Frequency (f)	Percent (%)
Very low	55	16.3
Low	107	31.7
Moderate	53	15.7
High	49	14.5
Very high	74	21.9
Total	**338**	**100.0**

Table 4.3 indicates that 107 (31.7%) respondents agreed that laws and policies on environmental protection influence financing of BOT at low level, followed by 74 (21.9%) at a very high level, 55 (16.3%) at a very low level, 53 (15.7%) at moderate and 49 (14.5%) at a high level of influence. The result reflects that law and environmental policies protection do not influence financing BOT projects. Results implies that when laws and policies on environment protection are available or not, financing BOT projects may not be influenced up to 1.3 times (1+31.7/100) therefore financing BOT does not depend on availability of laws and policies on environment.

The findings supports a policy National Environmental Policy Act of (1969) U.S. Department of Transportation's Federal Highway Administration (FHWA), environmental streamlining procedures have been implemented for federally-funded highway projects on an ad hoc basis for a number of years, even before the official introduction of the concept in TEA-21 in 1998. The procedures that have been utilized in advancing projects through the NEPA process have varied, to some extent, by former FHWA region or by FHWA divisional office, or even from project to project. However, even on an ad hoc basis, the FHWA projects that have been most successful in advancing through the entire NEPA process in a timely fashion can be particularly informative and useful for future instruction and application on other projects, therefore policies and laws need not be available.

The findings prompted the need to determine the relationship within. The study further conducted a cross tabulation to establish the level of influence within each decision status on each scale items and the results obtained are as indicated in table 4.4.To establish the relationship between two or more survey questions by providing a side-by-side comparison of how different groups of respondents answered the survey questions, the study conducted across tabulation and the result shown in table 4.4.

Table 4.4: Cross tabulation showing laws and policies on environments protection and financing BOT Projects

BOT Financing Projects	**Rating of the laws and policies on environment protection relating to construction of the rail infrastructure projects**					**Total**
	Very low	**Low**	**Moderate**	**High**	**Very high**	
Influence	38(15.3%)	86(34.5%)	43(17.3%)	35(14.1%)	50(18.9%)	**252(76%)**
Does Not influence	17(19.1%)	21(23.6%)	10(11.2%)	14(15.7%)	34(30.3%)	**86(24%**
Total	**55(16.3%)**	**107(31.7%)**	**53(15.7%)**	**49(14.5%)**	**74(21.9%)**	**338(100%)**

Table 4.4 reveals that 86 (34.5%) of the respondents responded that influence of laws and policies on environment protection was low, 21 (23.6%) in the same group saw no influence of the same, 50 (18.9%) noted very high influence, in the same category 34 (30.3%) noted there is no influences, 38 (15.3%) in the very low category responded the influence is low, In the same category 17 (19.1%) noted no influence. Whereas 35 (14.1 %) in the high-level category acknowledged the influence, while at the same category, 14 (15.7%) respondents noted there is no influence on financing BOT projects. This means that laws and policies on environment protection influence financing BOT projects as supported by 252 (76%) compared to 86 (24%) of the total respondents who noted no influence. The implication is that when environmental policies and laws are available on not chances of financing BOT projects remains at 1.8 times (1+76/100) compared to 1.2 time of not financing.

A chi square test was done to investigate further the level of each influence and it gave a p-value of 0.01 which is less than 0.05 confidence level. Therefore there is sufficient evidence that environmental laws influence financing of BOT projects. This finding agree with the findings by Glazebrook *et al.* (2000) that the growing interest in 'sustainable development' has led many companies to examine the ways in which they deal with environmental issues. To achieve

sustainable development, environmentally conscious design (eco-design) or Design for Environment (DfE) is becoming an increasingly important policy (Brezet and Van Hemel 1997). According to Khan *et al.,* (2002) policy is one of the most important techniques for the successful implementation of a process or development in the context of environmental sustainability. As Allen (1996) indicated, one of the most common uses of policy is identifying critical areas in which the environmental performance of the infrastructure can be improved

Occurrence of force majeure risks and financing BOT projects

Certain events, beyond the control of the parties, may inhibit the parties from fulfilling their duties and obligations under the project agreements. To avoid the resultant breach of contract, parties may prefer to excuse contractual obligations to the extent that they have been so inhibited. Respondents were asked whether force majeure risks influence financing of BOT projects as measured in the scale of very low, low, moderate, high and very high levels and the results were as shown in table 4.5.

Table 4.5: Force majeure risks and financing BOT projects

Scale of measurement	Frequency (f)	Percent (%)
Very low	46	13.6
Low	93	27.5
Moderate	65	19.2
High	51	15.1
Very high	83	24.6
Total	**338**	**100.0**

Table 4.5 reveals that 93 (27.5%) respondents responded that the influence of force majeure is low, 83 (24.6%) very high, 65 (19.2%) responded it was moderately projects, 51 (15.1%) responded it was high and 46 (13.6%) responded that force majeure risks influence financing of BOT projects was very low. This means that force majeure does not influence financing BOT project. This implies that when force majeure risk occurs during the project operation financing BOT projects is not affected. This could be attributed to government compensating risk that occurred during the post-election violence as indicated by the general manager of the consortium during the interview. On the other hand the 83 (24.6%) indicate high which is also significant ,meaning that if force majeure risk occurs at level to which compensation may not be made by the government then financiers may not fund the projects up to 1.3 times.

Looking at the result in table 4.6 it is true to state that the influence is low, while the percentage of high also seem to be significant the study therefore conducted across tabulation to establish the percentage within tabulation and the results were as in table 4.6.

Table 4.6: Cross tabulation showing the influence of force majeure risks on financing BOT projects

Financing BOT Projects	Rating of the likely occurrence of force majeure risks during construction and operation of the rail project					
	Very low	**Low**	**Moderate**	**High**	**Very high**	**Total**
Influence	33(13.1%)	61(24.2%)	54(21.4%)	48(19.0%)	56(22.2%)	**252(74%)**
Does Not Influence	8(9.3%)	25(29.1%)	11(12.8%)	12(14%)	30(34.9%)	**86(26%)**
Total	**41(12.1%)**	**86(25.4%)**	**65(19.2%)**	**60 (17.8%)**	**86(25.4%)**	**338(100%)**

Table 4.6 show that 61 (24.2%) responded the influence was low, 25 (29.1) declined within the same category of low, 54 (21.4%) indicated that there is an influence at moderate level, 11 (12.8%) in the same category refuted, 56 (22.2%) noted very high, while in the same category 30 (34.9%) declined, 48 (19%) indicated that there is an influence at High level, while in the same category 12 (14%) did not agree and 33 (13.1%) very low whereas 8 (9.3%) in the same category did not acknowledge its influence. Therefore majeure risks occurrences influence financing of BOT projects as supported by 252 (74%) of the respondents compared to 86 (26%) of the respondents who indicated that there is no influence.

The study further carried out a chi- square test which gave a p value of 0.046, which still less than the confidence level of 0.05 indicating that there is significance influence between the two variables. We deduce that when force majeure risks occur during the concession contract BOT project has a chance of being financed 1.2 times (1+17/100). This can be attributed to the response the government made during post election violence, of which the damage of the railway was paid by the government of Kenya. The study finding supports the results of a study done by Xenidis & Angelides (2005) where findings indicated that force *majeure* usually includes unexpected circumstances that occur beyond the control of a project stakeholder and prevent the stakeholder from fulfilling his obligations incorporated in the contract. These "unexpected circumstances" should be limited only to events that are impossible to foresee at the point of signing the contract (e.g., sudden and severe natural phenomena), excluding rare events, where their occurrence is predictable (e.g. public disorder).

Public's Opinion and financing BOT projects

Public opposition if environmental or social impacts are questionable. Large infrastructure projects affect both the environment and the social life of the region where they are established. In many cases, the public strongly disbelieves that a new infrastructure project will not harm the environment, public health and safety of the region where it is established (rail). This is the reason why social groups often oppose the development of large projects, considered to be detrimental to living standards. This public opposition can delay construction and cause operation problems in a BOT project, with direct effect to viability and profitability of the project. Respondents were asked to explain the level of influence of Public opinion on financing BOT projects and the results were as shown in table 4.7: The scale of measurement were very high (5), high (4), moderate (3), low (2) and very low (1).

Table 4.7: Publics opinion and financing BOT projects

Scale of measurement	Frequency (f)	Percent (%)
Very low	92	27.2
Low	92	27.2
Moderate	44	13.0
High	50	14.8
Very high	60	17.8
Total	**338**	**100.0**

Table 4.7 indicates that 92 (27.2%) respondents responded that the influence was low and low respectively followed by 60 (17.8%) very high 50 (14.8%) high and 44 (13.0%) moderate. This means that public opinion does not influence financing BOT projects. The implication is that when the opinion chances towards negative financing BOT project chances 1.2 (1+17/100) compared to 1.3(1+27/100) times of not being financed. Therefore the variation cannot be deduced to be directional. Therefore there was need for further investigation, to shows the relationship between two or more survey questions by provides a side-by-side comparison of how different groups of respondents answered the survey questions and the results obtained presented as in table 4.8.

Table 4.8: Cross tabulation showing the influence of public's opinion on financing BOT projects

BOT Financing	Rating of the public's opinion on the concessional performance on the achievement of the rail project					
	Very low	**Low**	**Moderate**	**High**	**Very high**	**Total**
Influence	62(24.1%)	66(25.7%)	33(12.8%)	29(11.3%)	67(26.1%)	**257(76%)**
Does Not influence	23(28.4%)	18(22.2%)	5(6.2%)	15(18.5%)	20(24.7%)	**81(24%)**
Total	**85(25.1%)**	**84(24.9%)**	**38(11.2%)**	**44(13.0%)**	**87(25.7%)**	**338(100%)**

Table 4.8 indicates that 62 (24.1%) of the respondents responded that the influence was very low, in the same categories 23 (28.4%) indicated that the influence does not exist, 66 (25.7%) responded it was low, while 18 (22.2%) in the same category denied that there is no influence, 29 (11.3%)indicated that there is high influence, while 15 (18.5%) in the same group declined, those who indicated that there was very high influence were 67 (26.1%),while in the same category 20 (24.7%) responded it does not influence, 33 (12.8%) responded that public's influence was moderate, while 5 (6.2%) in the same category responded it did not. The table also indicates that the total majority 257 (76%) responded that public opinion influence financing BOT projects compared to only 81 (24%) who responded that there is no influence. The implication of these results is that when public opinion is negative or positive towards the project the chances of financing BOT projects is 1.8 (1+76/100) higher and 1.2 chances lower. Using the frequency of each category (very low, low, moderate, high and very high to compare the likelihood of a specific answer can be misleading.

For further investigation a chi -square test was calculated and gave a p value of 0.023 which is below the significance level of 0.05 indicating that public opinion influence financing BOT

projects.These results supports the findings of Chan and Tse (2003) who illustrated that cultural difference can do a substantial damage to the organization of an international construction project. In their research on contractual issues of such projects, they clearly suggest the demand for an integrative investigation of legal, social, and cultural contexts that may cause specific risks to the development of international projects. Therefore, such contexts must be considered thoroughly to individuals involved trust and the general public, in order to ensure close and fruitful collaboration with local staff and labour and to avoid public opposition in environmental or social issues. With these variation in the findings there was need to establish the comparative power function of each variable within environmental factors. These variances prompted the study to test the following null hypothesis to choose between two competing hypotheses about the value of a population parameter:

Hypothesis 1: The environmental policies have no significant influence on the financing of the BOT railway projects in Kenya

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.305[a]	4	.818
Likelihood Ratio	7.880	4	.096
Linear-by-Linear Association	2.369	1	.124
No. of Valid Cases	**338**		

The chi square test was carried out, gave a p - value of 0.818 which is greater than confidence interval of 0.05. Therefore, the null hypothesis is rejected. Meaning that there is significant relationship between environmental policies and financing of BOT projects in Kenya.
Therefore a Wald test was performed and the results are as show in table 4.9

Table 4.9: Wald test showing comparative power functions of variables within Environmental factors influence on financing BOT projects

Variables in the equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1(a)	**ENVITPOL**	.045	.117	.144	1	.007	1.046
	LAWPOE	.145	.123	1.389	1	.024	1.156
	FORCEMAJ	.049	.120	.165	1	.006	1.050
	OPINION	-.088	.105	.713	1	.039	.915
	Constant	-1.007	.334	9.071	1	.003	.365

Variable(s) entered on step 1: Envitpol, Lawpoe, Forcemaj, And Opinion.

Table 4.9 indicates the result of a Wald test on environmental factors indicators and their power of influence on financing BOT projects. Environmental policy has a Wald result 0.144 and a significance value of 0.007, laws and policies on environment has a Wald result of 1.389 and a significance of 0.024, force majeure risks has a Wald result of 0.165 and a significance 0.684 and public opinion has a Wald result of 0.713 and a significance of 0.039. This is therefore, among the indicators of the environmental factors environmental policy has stronger power of influence on financing BOT in comparison to the other indicators of environmental factors.

Wald test of the environmental policy statistics as shown in table 4.48 decreases to zero as the distance between the parameters estimate and the null value increases, implies that Wald test decrease to the significance. To achieve sustainable industry, environmentally conscious design (eco-design) or Design for Environment (DfE) is becoming an increasingly important topic . hence need to have polices to protect the environment. This is followed by force majeure risk with a Wald test statistic results of 0.165 and significance of 0.006, which tends to decrease to zero as the distance between the parameter estimate and the null value increases.

Therefore the influence force majeure risk power is the second in influencing financing BOT projects, these result are contrary to the findings of the frequency distribution and the cross tabulation which indicated that the two do not have any significant influence in BOT financing.. Public opinion and laws on environmental policies have no significant influence as the Wald test of 0.713 and 1.389 all tends to increase from zero as the distances between the parameter estimate and the null decreases. These results confirm the results form frequency percentage and cross tabulation table. Which when we compare the % within respondents the public opinion, the level high influence become reverse and very low (17.5%). Social support is based on the public acceptance of the concept of private provision (2005) On the other hand, states that inadequate political support would pose a great risk to PPP projects. In Virginia when building the Dulles Greenway using the BOT method, most residents liked the project, but some opponents were very vocal. That public relations campaign had to be launched in the communities in the vicinity of the project in order to gain more cooperation from residents before the construction process.

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