# AN INVESTIGATION OF THE ALTERNATIVES OF FINANCING THE MAINTENANCE OF THE PUBLIC ROAD NETWORK IN KENYA



BY

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# DECLARATION

I confirm that this work submitted for assessment is my own and has not been submitted to any University for award of a degree.

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# DEDICATION

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# ABSTRACT

The transport sector is a catalyst of rapid economic growth, development and reconstruction. The road network is a significant component of this vital transport sector since roads link many sectors in the economy and the population. An inadequate and poor road network has a direct impact of increasing production cost (IEA, 2008). High production cost hinders economic turnaround and the implementation of the country's long-term development agenda.

According to KRB (2009), 10% of the Kenyan roads were in good condition, 34% in fair condition and 56% in poor condition as at 2008. The bulk of the Kenya's road network is in bad condition because there is insufficient funding for rehabilitation and maintenance activities. This is since roads compete for funds with other more visible and socially popular sectors like health, education, security, water, among others. There is a huge gap of finances for road maintenance and rehabilitation. According to IEA (2008), Kenya is at deficit of over KES 71.1 billion.

This paper evaluates the challenges faced in financing road maintenance and development in Kenya. It includes a review of the reforms that have taken place in the roads sub-sector over the years. The paper used desk review of available literature on the topic and the survey approach where data was collected from players in sub-sector. The data collected was analyzed using Likert scoring and Statistical Package for Social Sciences (SPSS) and findings obtained.

The study recommends a number of key macroeconomic policy factors in evaluating financing of road maintenance funds. First, on the need to create a maintenance plan and ensure road maintenance plans are implemented as per schedule. Secondly, the need for further policy decisions to shield road maintenance fund from political interference and diversion of road funds to other non-road related uses.

The need for additional financing is vital and cannot be overemphasized. The study recommends a number of viable sources of road maintenance financing in Kenya. This include, VAT on vehicles parts sale and ensuring stricter penalties for overloading. Also, the need to develop a lean road maintenance fund management to reduce administrative cost is vital. This will enable more funds to be availed to road agencies for road works implementation. Finally, the study recommends the contribution of road users to planning and management of road funds to be included in road maintenance decisions.

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# ABBREVIATIONS

| | |
|---|---|
| AfD | - Agence Francaise de Development |
| AfDB | - African Development Bank Group |
| APRP | - Approved Public Roads Programme |
| BOT | - Build Operate Transfer |
| CIA | - Central Intelligence Agency |
| EU | - European Union |
| FHWA | - Federal Highway Administration |
| FY | - Financial Year |
| GoK | - Government of Kenya |
| IEA | - Institute of Economic Affairs |
| KeNHA | - Kenya National Highways Authority |
| KenInvest | - Kenyan Investment Authority |
| KeRRA | - Kenya Rural Roads Authority |
| KES | - Kenya Shillings |
| KfW | - Kreditanstalt für Wiederaufbau |
| KRB | - Kenya Roads Board |
| KURA | - Kenya Urban Roads Authority |
| KUTIP | - Kenya Urban Infrastructure Programme |
| KWS | - Kenya Wildlife Service |
| MoF | - Ministry of Finance |
| MoR | - Ministry of Roads |
| MoT | - Ministry of Transport |

| | |
|---|---|
| OECD | - Organization of Economic Cooperation and Development |
| PPP | - Public Private Partnership |
| RMF | - Road Maintenance Fund |
| RMI | - Road Maintenance Initiative |
| RMLF | - Road Maintenance Levy Fund |
| SIDA | - Swedish International Development Agency |
| SPR | - Special Purpose Roads |
| UDD | - Department of Urban Development |
| UNESCAP | - United Nations Economic and Social Commission for Asia and the Pacific |
| USA | - United States of America |
| VAT | - Value Added Tax |
| WB | - World Bank |

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# CHAPTER ONE

# INTRODUCTION

## 1.1. Background to the Study

Financing is the act of providing resources to fund individuals or business activities and operations. It provides business or other entities (government or private agencies) the power to buy goods and services to achieve a given objective. For example, a government agency such as the Kenya Roads Board uses finances allocated to them to run the board and distribute to Road Agencies as set out in the Kenya Roads Act 2007 so as to ensure that the Kenyan roads are maintained in good conditions all times. Therefore, finance is used by individuals (i.e. personal finance), by governments (public finance), by businesses, by schools and by non-profit organizations to achieve specific objectives. When financing business activities and even infrastructure, it is important to consider financing instruments and methodologies that will be in line with an institutional setting so as not to have an adverse impact on the and effective functioning of such an entity.

The major source of road maintenance financing in Kenya is fuel levy. However, this is still inadequate with more financing still needed to keep roads in a stable condition (IEA, 2008). The view in financing of roads has changed from the mere availing of resources to a more commercial approach to roads and to the idea that recovering the costs of road development and maintenance should be based more on the user pay principle. Furthermore, growing concerns about climate change and negative environmental

impacts of roads construction and usage have stimulated the debate about recovering the costs of externalities of road transport, like congestion, pollution, noise and accidents.

***Table 1: Funding Gap for road maintenance in Kenya between FY 2002/03 and FY 2006/07 (KES Million)***

| Financial Year | Road Maintenance Funds | Maintenance needs | | | | Total Maintenance | |
|---|---|---|---|---|---|---|---|
| | | | | | | Needs | Funding Gap |
| | | Routine | Holding | Periodic | Rehabilitation/ Reconstruction | | |
| FY 2002/03 | 8,000 | 2,400 | 3,000 | 4,000 | 10,000 | 19,400 | -11,400 |
| FY 2003/04 | 8,900 | 2,500 | 3,000 | 4,500 | 12,000 | 22,000 | -13,100 |
| FY 2004/05 | 8,700 | 2,600 | 3,000 | 5,500 | 12,000 | 23,100 | -14,400 |
| FY 2005/06 | 9,500 | 2,800 | 3,000 | 6,500 | 12,000 | 24,300 | -14,800 |
| FY 2006/07 | 15,300 | 2,800 | 3,000 | 7,500 | 12,000 | 25,300 | -10,000 |
| FY 2007/08 | 18,270 | 2,800 | 2,900 | 8,000 | 12,000 | 25,700 | -7,430 |
| TOTAL | 68,670 | 15,900 | 17,900 | 36,000 | 70,000 | 139,800 | -71,130 |

Source: Institute of Economic Affairs, 2008

According to the IEA (2008), the Ministry of Roads in Kenya requires about KES 160 billion one-off to clear road rehabilitation and maintenance backlog to bring the road network to maintainable conditions. These required KES 160 billion would be used for rehabilitating and reconstructing failed road network caused by long periods of no

maintenance. MoR estimates for FY 2006/2007 indicated that road maintenance backlog require KES 21 billion annually for 2006/2007- 2012/2013 while periodic and routine maintenance requires KES 15 billion annually. In addition, KES 15billion is needed annually for road network expansion and capacity enhancement. Therefore, the Kenyan economy needs KES 51 billion (nearly 4% of its GDP) annually for road network maintenance and expansion.

This research focuses on road rehabilitation and maintenance financing in Kenya. This is since financing of road rehabilitation and maintenance in Kenya continues to experience inadequate financing and improper timing. This has caused road rehabilitation and maintenance backlog that has made it extremely difficult to preserve most Kenyan roads in good condition. In addition, to date road rehabilitation and maintenance financing as inherent in central government, is inadequate, arbitrarily allocated and does not allow for innovative ways to maintain the roads to required standards (IEA, 2008).

### 1.1.1. Financing Public Investments in Kenya

The Kenyan government receives revenue from taxes, issuance of bonds, grants and loans to finance its huge public investments ranging from capital investments to recurrent government expenditure in all sectors. However, though the government raises its revenue to finance its budget from a number of sources there are a number constraints that exist from each type of revenue source. First, the government cannot increase Income Tax such as Pay As You Earn (PAYE) beyond certain limits to avoid eroding the gains made by both government and private employees in Kenya. Secondly, the

government cannot increase fuel levy tax beyond limits that will impact negatively on the fuel users. Thirdly, the government cannot issue bonds beyond certain amounts because it does not want to raise its public debts beyond certain levels. The government through the Central Bank wished to reduce public debt from the current level of 50 percent to 45percent (GOK Fiscal Expenditure Estimates 2011).

From the foregoing therefore, the limit in raising revenue to finance the government's public expenditure cannot be re-emphasized. This has led to serious ongoing debate concerning financing of the ever increasing demand for pubic goods such as educational needs, roads, internal security, energy and communication infrastructure among many others. The main question that forms the current debate is how can the government raise sufficient revenue to finance ever increasing demand of public goods?

With such competing needs, roads tend to be neglected wherever competition for funds arises from the socially popular sectors and with the ever-increasing deficit position in government financing. It is with a view to checking on such high debt-to GDP ratio and reduce the neglect that is otherwise seen in road maintenance efforts that this study investigates sustainable options available for raising funds for use in rehabilitation and maintenance of roads in Kenya.

## 1.2. Research Problem

Over the years, the Kenyan government has put in place funding and other institutional strategies to address the development of this sub-sector. The most significant strategy for road maintenance was in 1992 when the government together with the RMI, a World Bank team hosted a Road Sector Stakeholders Seminar (KRB 2009). The seminar addressed the deteriorating condition of the road network in Kenya and the constraints that hampers timely and proper road maintenance. In addition, institutional, managerial and financial constraints were identified as major hindrance to adequate road financing. From this seminar, it was resolved that a sustainable source of funding for road maintenance be established and the existing road management institutional set-up be reviewed. This led to the enactment of the RMLF Act in 1993, to enable the provision of a source of funds that is sustainable for the maintenance of the road network.

Despite this significant step, funding for maintenance of the roads has still presented a major challenge. It is not possible to achieve the mission of good transport infrastructure development and maintenance without appropriate sustainable funding sources. This is since, as observed above, current funding levels are inadequate for new infrastructure, the maintenance and rehabilitation of the existing road infrastructure; the upgrading of the existing infrastructure where there are capacity constraints or low service levels in addition to inter-modal facilities within the road transport infrastructure.

This has led to significant debate in the Roads Sub-sector and at the macro-economic policy level, with several players raising varied challenges. Among these are: what

financing options are sustainably available for rehabilitating and maintaining roads in the Country? Have road financing reforms been successful in availing adequate funds for rehabilitating and maintaining roads in Kenya? What recommendations are needed to improve financing of rehabilitation and maintenance of roads in Kenya?

This study focuses on financing rehabilitation and maintenance of the road network by addressing the question, what financing options are sustainably available for rehabilitating and maintaining roads in the Country?

## 1.3. Objective of the Study

This study evaluates the financing of rehabilitation and maintenance of roads in Kenya.

## 1.4. Importance of the Study

The study will be helpful to the macro-economic policy planners, KRB and MoR in general, as well as scholars in roads financing and MoF. This is since, it will give the KRB and MoR a body of knowledge on how to generate and manage road finances sustainably. Also, it will contribute to the Ministry of Finance's fiscal planning on how best to raise sustainable road finances. The recommendations provided following the study will provide a platform for developing effective road fund policies and procedures that will improve availability and adequacy of road funds. Of particular mention, it will enable successful completion of my research work that will enable my completion of the MBA degree successfully. Finally, scholars will find this study work helpful during literature review when developing academic ideas on topics related to road financing.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1. Introduction

This chapter identifies and explains some of the key road rehabilitation and maintenance issues in Kenya and rest of the world that scholars, authors and agencies have investigated and discussed in their writings. Section 2.2 on the theory of road financing highlights factors considered when acquiring and using roads funds, sources of road finances as well as challenges faced in road financing. Section 2.3 highlights and describes empirical evidence on road financing in Sub-Saharan Africa, United States of America, China and South Africa. Section 2.4 highlights and describes empirical evidence on road financing in Kenya.

## 2.2. Theory of Road Financing

### 2.2.1. Road Financing Decisions

Sofat & Hiro (2008) stated that road financing is one of the most important aspects of road rehabilitation and maintenance. Decisions related to the acquisition and use of road funds are based on flexibility, the level of risk, equity, sources and timing of financing. First, flexibility guides the choice of source of funds and its use. The amount of road finances should be easily raised and increased depending on road rehabilitation and maintenance needs. Thus flexibility in road financing ensures that road financing needs

are met. Secondly, the risks of possibility of not amassing adequate amount of road finance, misuse of road finances, increasing cost of road financing and diversion of road finances are real threats that influence the availability and timing of road finances (Davis and Cunningham, 1994). Thirdly, the collection and utilization of road finances should reflect equity. Equity ensures that all road finances be allocated without discrimination according to the level of activity. Fourth, different sources of road financing dictate the timing and the adequacy of revenue streams. Fuel levy is considered one of the most predictable and reliable source of road financing though it is considered not adequate. As a result, some of the finances for rehabilitating roads are obtained from the general budget and transit tolls.

Finally, financing decisions need to be timed to take advantage of the marketplace. What type of securities should be sold? When should they be sold? What length of maturity are securities used for debt financing? Timing dictates the availability, adequacy and cost of road financing (Asian Development Bank, 2003). Road rehabilitation requires large quantities of materials and mobilization of heavy equipment. Therefore, it is wasteful to rehabilitate a road that is likely to become unusable before its next rehabilitation in another 15 years (IEA, 2008).

### 2.2.2. Sources of Road Maintenance Finance

As defined above, financing refers to providing funds to undertake a specific activity. Finance is necessary and no given road project can be implemented without financing. World Bank (2007) stated that budget approach and road fund approach are two main

sources of road financing in most countries of the world. According to Davis and Cunningham (1994), six financial mechanisms are available to states and local governments for raising road finances.

#### 2.2.2.1. Toll Roads

The Asian Development Bank (2003) describes toll roads as roads built privately or publicly which the drivers pay a fee for using it. Toll bridges and toll tunnels are structure-attracting tolls. A facility or building called toll-booth, toll-plaza, toll-house, toll-gate, toll-station or toll-bar is built to collect the fees. Tolls are normally used to recoup construction costs or raise capital funds. Road tolls apply to roads carrying thousands of vehicles daily to be effective and efficient. This is because low traffic makes the cost of collection expensive and become added burden to road users. Furthermore, it is more suitable to roads with access limitations to prevent avoidance. Road tolls are unpopular because users pay double through the toll and road tariffs. The toll funds should be kept separate from the national accounts to avoid diversion of funds.

The Table below illustrates how different toll rates are charged in on Veterans Memorial Tollway Road in Illinois, USA.

| *Table 2: Toll Rates on Veterans Memorial Tollway, Interstate 355* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Toll Plaza Name | Plaza No. | Autos | | Trucks | | | | | |
| | | All Times (I-PASS) | All Times (Cash) | Daytime (Cash & I-PASS) | | | Overnight (Cash & I-PASS) | | |
| | | | | Small | Medium | Large | Small | Medium | Large |
| Army Trail Road Toll Plaza | 73 | $0.50 | $1.00 | $1.50 | $2.25 | $4.00 | $1.00 | $1.75 | $3.00 |
| Boughton Road Toll Plaza | 89 | $0.50 | $1.00 | $1.50 | $2.25 | $4.00 | $1.00 | $1.75 | $3.00 |
| Spring Creek Toll Plaza | 99 | $1.00 | $2.00 | $3.00 | $4.50 | $8.00 | $2.00 | $3.50 | $6.00 |

**Daytime and Overnight Hours**

Daytime = 6:00 AM - 10:00 PM

Overnight = 10:00 PM - 6:00 AM

| **Category** | | **Description** |
|---|---|---|
| Passenger Cars | Auto/Motorcycle | 2 axles; auto, motorcycle |
| Commercial Vehicles | Small Truck | 2 axles/6 tires; single unit trucks, buses |
| | Medium Truck | 3 & 4 axles; trucks, buses, auto with 1-2 axle trailers |
| Vehicles w/Trailers | Large Truck | 5 + axles; trucks, auto with 3+ axle trailers |

Source: Federal Highway Administration, 2007

### 2.2.2.2. General Fund Appropriations

Roads are a major investment projects due to the funds utilized in undertaking their design, construction and even maintenance. As a result, governments and local authorities fund the expansion, rehabilitation and maintenance of roads through general taxation (Davis and Cunningham 1994). The advantage of general fund appropriations includes; it reflects legislative priorities and can be used to promote fiscal soundness via paying for capital projects from the current revenues to avoid inflationary problems. However, it competes with all other pressing programs that demands capital and current expenditure and there is some degree of uncertainty is associated with the approach. Furthermore, it requires all taxpayers to contribute to capital programs whether they use a given facility or not. For example, current generations forgo current consumption to pay for road projects that benefit the future generations. This violates the benefit principle of taxation

### 2.2.2.3. Annual Vehicle License Fees

The annual vehicle license fees are used to pay for time-related road maintenance costs. This kind of fees is paid annually and the amount collected depends on the number of vehicles in operations. The higher the number of vehicles, the larger the amount of revenue collected. It is however criticized as a collection method due to the high administrative costs required in setting up vehicle checking units for issuance of the licenses annually.

### 2.2.2.4. Supplementary Heavy Commercial Vehicle Fees

Heavy Commercial vehicles (HCVs) transport heavy loads. Such heavy loads cause more wear and tear to the roads than the light commercial vehicles or small passenger. Therefore a levy that is sensitive to the weight of a heavy vehicle may be levied a source of financing for the roads and to encourage the use of railway transport and discourage use of the HCVs hence minimize pavement wear. Part or the whole amount received from such a levy can be switched to a supplementary annual fee for heavy vehicles to reflect both vehicle weight and number of axles. This can then be utilized as a source of financing for road maintenance.

### 2.2.2.5. Fines for Overloading

Overloaded heavy vehicle cause pavement wear hence leading to faster deterioration in road conditions than would otherwise be without overloading. Therefore, to reduce incidences of overloading, fines are levied on all overloaded vehicles and paid to the government at the various weighing points along the major highways. The fines are however a deterrent measure on cases of overloading. They are therefore a source of financing by default and not by design.

### 2.2.2.6. International Transits Fees

Benmaamar (2006) argued that vehicles entering from other countries should face costs of road use equivalent to those of domestic users. International transit fees depend on the number of cross boarder vehicles and varying among countries depending on the needs and level of cross boarder activities.

### 2.2.2.7. Fuel levy Tax

Fuel levy is a flat rate tax on fuel. Moeti et al (2007) explained that fuel levy is a benefit-based tax levied on petrol and diesel purchased. The rationale behind fuel levy is that petrol and diesel consumers use the road; putting most wear and tear on the roads. Fuel levy is the most important source of user funding and revenues raised to meet routine maintenance needs. The fuel and annual taxes combined constitute third of most important state revenue in some industrialized and developing countries. The amount of fuel tax depends on traffic, fuel consumption and fuel levy per litre. Fuel Levy is reasonably equitable, simple, readily understood by the public and easy to collect. The cost of cost of maintaining the entire road network of developing countries could be met through fuel levy of only 7-9 USD cents.

Most governments levy tax on petrol and diesel. Fuel levy is based on the amount of litres sold and not as a proportion of the sale price of petrol and diesel. Fuel levy may be an effective source of revenue in the short run. However, in the long-run demand of petrol and diesel may be more elastic because consumers may adjust their consumption downwards as price increases. People may switch to more fuel-efficient cars, public transport, cycling, walking, consolidating trips and carpooling. Therefore, changes in motor vehicle technologies, fuel and new energy policies may cause reduction in fuel consumption. The other problem with this method is that when there are large differences in fuel taxes between countries, cross border purchases of fuel may result. This is evident in Europe, where large differences in fuel taxes, coupled with minimal or no border controls, encourage drivers to cross borders for the purpose of filling up their tanks with

fuel. In some states such as Luxembourg. Andorra. Gibraltar. fuel tax rates have been strategically reduced to attract more cross-border fill-ups, which ultimately increase tax revenue for such countries at the expense of the neighbouring countries. Most African countries have set fuel levy too low to be effective. For example, most African countries levy $0.03 per liter to about $ 0.16 a liter. Most countries in Sub-Saharan Africa like Benin, Cote d'Ivore, Ethiopia, Gabon and Zambia still depend on budget allocations for more than three-quarters (¾) of the resources rather than funded largely by fuel levy.

### 2.2.2.8. Road Maintenance Fund (Revolving Fund)

A Road maintenance fund (RMF) is based on the principle of road user charges, segregated from the general government budget and an autonomously administered board. Establishment of RMF is important to capture and sustain the efficiency gains derived from improvement of road management practices through establishment of a fully autonomous institution. RMFs secure a more stable and predictable flow of funds needed for road maintenance and development.

Asian Development Bank (2003), observes that countries with mature road networks, sufficient budget to maintain road smoothness, good road management, skilled staff, no political and corruption do not need RMFs. This is because it operates on the principle of financing additional road-finance needs by adding taxes paid by road-users. RMFs help to improve financial management. encourage extensive use of the road fund, provide strong oversight and prevent diversion of road finances to other areas. However, a number of road funds in SSA are poorly designed and far from meeting the requirements

of the second-generation funds. Some road funds have attained considerable financial autonomy but others still depend on general taxation. Therefore, there is need for diversification to other road user charges (vehicle licenses) and to channel the revenues directly through RMF.

World Bank (2007) indicated that second-generation funds are appropriate when there is lack of funds to finance road maintenance. This leads to a severe deterioration of the road network provided there is government commitment to off budget financing of maintenance and to commercially oriented reforms of road management. Road fund should not be established when there is a high level of corruption and little likelihood of having independent audits and transparent procurement.

According to Benmaamar (2006), the main objective of RMF is to secure proper maintenance, including all activities needed to keep the roads operating indefinitely and to clear up maintenance backlog. Road maintenance can be a shared responsibility between road users who gain the mobility benefit and property owners who gain access benefit. RMF finance routine maintenance such as restoring drainage, filling potholes and cracks and edge maintenances. It also finances periodic maintenance, which includes resealing and rehabilitation. RMF should fund administration, planning, programming and monitoring of maintenance operations as well as studies, training, research and development relevant to road maintenance which is an integral part of maintenance.

### 2.2.2.9. Infrastructural Bonds

Most developed and developing countries are selling government and municipal securities to raise finances to finance infrastructure. According to Central Bank of Kenya, Government Infrastructure Bond on was issued on February 23 2009 valued at KES 18.5billion at 12.5% coupon rate with a 12 year maturity. The main advantage of bond financing is that it permits large amount of capital to be accumulated for major projects at relatively low capital costs that vary with market conditions. It may not be appropriate because a tax burden is added to a taxing jurisdiction.

### 2.2.2.10. Revenue for Vehicle and Parts Sale

Some revenue can be raised from other sources other fuels levy if higher prices of fuel levies are a concern. Therefore, part of the revenue can be raised by levies on lubricants, tires, and spare parts or levies applied on purchases of new vehicles. This can be in the form of a sales tax on the price of such vehicles or vehicle parts.

### 2.2.2.11. Loans and Grants for Development Partners

Most countries borrow long-term loans and grants to finance its infrastructure. World Bank, African Development Bank, European Union and IMF are key international financial institutions that provide infrastructural loans for governments. For example, the Government of Kenya received a loan of KES 4.3 billion from African Development Bank to finance 340 kilometer Isiolo-Moyale road. China Wu Yi Construction Company is constructing the road aimed at improving trade between Kenya and Ethiopia.

### 2.2.2.12. Private Public Partnerships

Public-Private Partnership (PPP) refers to an agreement between the government and one or more private partners where private partners agree to finance, construct or operate a given project. The decision to involve the private sector has to be guided by an assessment of relative long-term costs and benefits as well as availability of finance, taking into consideration pricing risks transferred to the private operators and prudent fiscal treatment of risks remaining in the public domain. The private partners deliver the service in such a manner that service delivery objectives of the government are aligned with the profit objectives of the private partners and where the effectiveness of the alignment depends on sufficient transfer of risk to private partners (OECD, 2007).

According to OECD (2010, p.18), Public-Private Partnership is preferable because it delivers efficiency and complement fiscal budget. Private sector is considered to have greater incentives and ability to deliver (design, construct, operate and maintain) cost effective capital assets than public provision. It is presumed that tying service delivery with payment mechanism may encourage faster construction and better continued maintenance over the contract life of the assets. A number of countries since 1990 use Public-Private Partnership. The United Kingdom, Australia, Germany, Korea and South Africa as well as France, Portugal and Spain increasingly use Public-Private Partnership. The government needs to ensure an enabling policy framework for investment and adequate capacity at all levels of government to implement agreed projects. It must also be supportive of good public governance such as integrity and ex post controls, audit and reporting. In the UK, the need for the project is determined by the state, through appraisal

and public inquiry, using in house public staff. Competitive tendering is then used to select private sector construction contractors and the public sector usually takes the responsibility for operation and maintenance.

#### 2.2.2.13. Other Sources of Road Financing

There are other sources of road finances. They include weight-distance charges, vehicle-distance traveled charges, urban congestion charges and road licenses among many others.

### 2.2.3. Road Financing Challenges

According to Benmaamar (2006), one of the factors that influence road financing is financial management. Over half of the SSA roads were in poor condition, mainly because of poor management and lack of transparency, insufficient and erratic maintenance funding, inefficient use of money received, large workforce with low productivity, weak planning and programming and frequent political interference (Zietlow 2007). Other problems include unauthorized expenditures, diversion of funds and weak oversight. There have been reforms aimed at uprooting the challenges. Second-generation (significant nature of road sector reforms) road funds brought institutional and legal framework to assure proper management of the funds and accountability to users and government. With the assistance of lenders, many countries tried to correct these problems by increasing road taxes, reducing permanent work force, increasing the use of contractors and installing sophisticated computer- based pavement management system.

However, user tax increases were absorbed into the overall budget and little emerged for road maintenance. Further, delayed payment, erratic workloads, and inflation bankrupted the contractors or else they charge inflated prices to cover these risks. Sophisticated pavement management systems installed but lapsed due to lack of funds. The legislation set out specific roles and responsibilities of a representative management board to oversee operations and an urgency to manage road fund. The legislation helps to set up an institution, which has a unique mandate for securing resources and channeling the funds to mandated road agencies.

Availability of road finance does not assure effective and efficient maintenance and development of road infrastructure. The establishment of road fund has not resolved the insufficiency of funds for road maintenance and development. According to World Bank (2007), institutional reforms were formed to create independent source of funding for maintaining and developing the road. Most institutions in African countries that guide the disbursement of road funds are politically influenced. As a result, the road finances are diverted or raided by politicians for other purposes putting road financing into jeopardy and hampering progress in the road sector. Therefore, there is need to create new autonomous or semi-autonomous organizations with private sector participation. The reforms in most African countries are in the danger of being stalled or rolled back due to political instabilities, influence, and undermine the gains of the road fund.

The reforms may be viewed negatively because it is a threat to the traditional public administration and may face opposition. However, development partners continue to play pivotal role in providing assistance to support reform efforts and even intervene to

prevent politicians from hampering the reform process. Consequently maintaining the momentum of the reform and creating positive image towards the road user and the public in general. Establishment of independent and effective institutions are needed to capture and sustain the efficiency gains derived due to improvement of road management practices and better use of available resources. The key institutional problems facing the roads management include poor financial management, absence of independent audits, extensive use of funds for unauthorized expenditures, diversion of funds, and weak oversight. Issues such as lack of funding or technical has not been the cause of poor maintenance but institutional and policy weaknesses have.

World Bank (2007), private sector participation in the second-generation roads boards is an effective way to improve transparency and accountability in the use of roads maintenance funds. To improve road maintenance, road users should be involved in management, clear performance targets should be established and introducing sound business practices to ensure that effective management of road maintenance (Asian Development Bank, 2003).

## 2.3. Empirical Evidence on Road Financing

This sub-chapter gives details about the financing of road rehabilitation and maintenance in various parts of the world. The chosen countries have demonstrated superiority in both road network size and quality in the continents where they are found. For example, South Africa has the best road network in Africa while United States of America has the best road network in the South American continent.

### 2.3.1. Financing Roads in Sub-Saharan Africa

According to Zietlow (2007), road transport is a chief mode of transport in Sub-Saharan Africa (SSA) where the railways, seas and the airways are not widely used as mode of transport. It carries over 75% of both passenger and cargo. SSA had over two million kilometers of roads with a replacement value of US$150 billion by 1990. Over one million kilometers of roads were in poor condition, mainly because of inadequate financing and poor road maintenance. Poor road maintenance is causing road users an additional cost of US$1.2 billion annually.

African governments instituted institutional reforms since mid-1990's. As a result, they have second-generation roads fund supported by fuel levies and autonomous road agencies (World Bank, 2009). The independent road agencies are responsible for contracting out public works. The second reform is performance-based contract reform. World Bank (2009) revealed that the governments have established performance-based contract because the approach provides strong incentive for contractors to undertake effective maintenance and reduce expenditures uncertainties for road fund. In addition, the condition of the roads improves steadily, however under the traditional approach; the road condition improves for a short time (World Bank, 2009).

It is estimated that performance-based contract approach save road maintenance cost from between 10-40% in industrialized countries and between 10-20% in developing countries. The contract approach started in Canada in the late 1980's and has become popular among industrialized countries (Metsshies, 2002). The developing countries are

adopting performance-based contract approach. In SSA, Ethiopia, Ghana and Zambia have embraced performance-based contract approach.

Different countries apply different ways of raising road finances (Zietlow, 2007). The various ways of raising road finances include general taxes, road maintenance levy fund (RMLF), vehicle license fees; international transit fees (cross-border charges), weight-distance charges; axle load fines, bridge tolls, and road tolls collected by the fund, funding from development partners. Vehicle-distance traveled charges, tolls for specific roads and bridges, urban congestion charges, charges for over-weight vehicles, charges on purchase of new vehicles and road licenses. Due to increasing need for finance, the government identifies road related taxes, charges and deposits them into a special budget such as road levy to support road spending. This alternative approach was tried in Burundi, Senegal and Gabo, following examples from Europe and Asian Tiger countries.

The main source of financing in SSA is fuel levy. Most SSA charge between US$ 3 cents and 15 cents per litre of fuel consumed. However, US$12 cents per litre is considered adequate for SSA countries in assumption that roads and finances are well used. Fuel levy has been the most consistent source of user funding. In Kenya, Ethiopia and Togo fuel levy constitutes 100% of the road maintenance fund. Most countries are shifting from own labour force to contracting out road maintenance. Countries that have adopted road maintenance contracting have saved between 30% and 50% of the cost of their unit rates of road maintenance. The main feature of the approach is that a contractor is paid a fixed fee for keeping roads at a predefined service level. South Africa, Zambia, Chad, Cape Verde and Cameroon have contracted out road maintenance under

performance based road maintenance contracts (Metsshies, 2002). Kenya, Tanzania, Uganda, Mozambique, Madagascar, Nigeria, DR Congo, Gabon, Senegal and Rwanda are following suit. Therefore, roads are key component of countries' development and promote investment climate and reduce cost of doing business.

### 2.3.2. Financing Road Network in the USA

According to the CIA ($2009_3$), the USA has the longest road network in the world of 6,465,799 kilometers. Of the 6,465,799 kilometers, paved road network is 4,209,835 km and the unpaved is 2,255,964 km. FHWA (2007) revealed that USA obtains funds through a variety of sources as detailed below:

***Table 3: Sources of Road Finances in USA***

| **Source** | **Percentage** |
|---|---|
| Motor Fuel and Vehicle Taxes | 51.74 |
| Tolls | 5.27 |
| Property Taxes and Assessments | 4.82 |
| General Fund Appropriations | 18.57 |
| Others Taxes and Fees | 4.77 |
| Investment Income | 4.43 |
| Bond Issue Proceeds | 10.40 |
| TOTAL | 100.00 |

Source: Federal Highway Administration, 2007

Road fund approach was adopted first by USA, Japan and New Zealand in the mid-1950s and has been effective. As a result, most countries have adopted road fund approach due to its efficacy and effectiveness. According to World Bank (2007), road funds that meet the commercial approach is referred to as second- generation road fund. This is because it operates on the principle of financing additional road finances needs by addition tax paid by the road users and does not burden the national budget. The potential of developing the annual vehicle tax is enormous. For road maintenance, increased taxation of urban vehicle owners should be technically structured in a socially acceptable manner. For instance, it should follow a systematic approach based on formulas for the present vehicle value as applied in Indonesia (Metsshies, 2002).

The portion of monies used to finance the highway expenses in USA is derived from user fees proportionate to the use of roads. Gasoline or fuel tax contributes the bulk of user fees. Fuel taxes in the USA vary according to state. The average state gasoline tax in the first quarter of 2009 was 27.2 cents per US gallon, plus 18.4 cents per US gallon federal tax making the total 45.6 cents per US gallon. The USA government and respective states allow the state or local government to finance road project and expenses using bonds. A bond is a written promise to repay borrowed money on a definite schedule, usually at a fixed rate over the life of the bond. Massachusetts was the first state to use bond to finance the highway improvements in 1893. Following the success of use of bonds to finance highway projects, there has been significant increase in the number of municipal bonds and highway bonds, issued to finance roads projects in the USA and other countries (FHWA, 2007).

Transportation Research Board (2006) indicated that the federal government collects taxes on tyres, large track and trailers. The trucks pay annual federal heavy vehicle use tax. The registration fees and miscellaneous federal, state and local taxes averaged USD 125 per registered vehicle in 2004. The federal and state taxes and fee schedule discriminate vehicles based on their size and road usage. This is in attempt to collect revenues from different kinds of vehicles proportionate for highway costs. The federal charges 12% of excise tax on trucks over 33,000 pounds gross weight and on trailers and credited to the Highway trust fund. Trucks over 55,000 pounds gross weights pay an annual federal fee of between $100 to $ 500 depending on axle weight. Highway finance in the USA is known as pay as you go system. Therefore, debt financing is little in the USA.

### 2.3.3. Financing Road Network in China

The second country with the largest road network in the world is China with the road network of 3,583,715 kilometers (CIA. $2009_1$). The country fund road projects through a variety of sources. UNESCAP (2007) provides break down of source of road fund in china as follows. The enterprise investment fund is seven percent (7%), national budget is three percent (3%), and vehicle purchase taxes twelve percent (12%), local fund is thirty two percent (32%), foreign loan is one percent (1%), domestic loan is forty three(43%) and other is two percent (2%). In some countries in Asia especially in China, fuel tax is a very sensitive issue and every time State Council tried to institute fuel tax to finance the National Trunk Highway System, the National People's Congress strongly opposes the move. This is because of the perceived negative impact on the farmers.

### 2.3.4. Financing Road Network in South Africa

CIA (2009) reveals that South Africa is a country with the longest road network in Africa but ranked eighteenth globally. The road network is 362,099 kilometers of which 73,506 kilometers are paved while the remainder is unpaved. Stander and Pienaar (2000) indicated that South Africa derives its road funds through various sources. They include customs and excise levy on fuel, road accident fund, VAT on vehicle sales, VAT on vehicle, VAT on vehicle parts sales, car repair services, import duties on vehicle /parts, license fees, fines, toll fees (Moeti et al. 2007).The toll roads affect barely zero point one percent (0.1%) of the region-classified network. The many vehicles daily on South Africa roads make road tolls attractive (World Bank 2009). Furthermore, South Africa is increasingly using Public-Private Partnership to finance her roads network.

## 2.4. Empirical Evidence on Financing Roads in Kenya

Road transport carries more than 80% of all cargo and passenger traffic in the country (IEA 2008). Efficient road infrastructure is a requirement for socio-economic growth and development (KRB. 2009). As a result of this, the government of Kenya has put in place funding and other institutional strategies to address the development, rehabilitation and maintenance of roads in Kenya. There may be few areas in Kenya with insufficient road network but generally, the current network coverage is sufficient to support the current level of socio-economic activities. Roads in Kenya are classified into class A, B, C D, E, F, Rural Access Roads (RAR) and others and are managed by Roads Department of the

Ministry of Roads, Local Authority councils, Kenya Wildlife Services, Kenya Forest Services and in some cases Tea Board of Kenya.

According to KRB (2009), the road network in 1963 (at independence) was approximately 45,000 kilometres of which about 2,000 Kilometres was paved and the rest, unpaved. This had expanded to 177,500 kilometers in 2009 of which, about 12,000 Kilometres is paved and the rest unpaved (KRB, 2010). Improvement of the network therefore still remains vital, with the key motive as to ensure major roads are upgraded to bitumen standards and improvement of rural roads to gravel standards.

The major concern with the Kenyan roads is the quality of the road network as well as expansiveness of the network. Most tarmac and non-tarmac roads have deteriorated significantly due to many factors. Chief among these is sheer neglect; the road network was neglected for so long in the 1990s and in early 2000s. As a result, the roads had deteriorated to the point where rehabilitation is necessary before maintenance. KRB (2009) confirms that only 10% of the Kenyan roads are considered to be in good condition. According to IEA (2008), there was a deficit of over KES 71.130 billion for the maintenance of the Kenyan roads between financial year 2002/2003 and 2007/2008. This high magnitude of financing deficit has made it extremely difficult for the Kenyan government through the Roads Department of the Ministry of Roads to maintain its entire road network sufficiently.

Other causes of the poor state of the Kenyan roads include overloading by heavy commercial vehicles, increased road traffic volume, slow growth in the economy and constrained budget. Furthermore, lack of periodic and routine maintenance, rampant

corruption in road construction contracts, collusion between contractors and government officials, overloading, El-Niño rains, and non-prioritization of roads in government expenditure, institutional, managerial and financial inadequacies have caused deteriorating conditions of the national roads in Kenya.

The Kenyan government has put in place many initiatives to address the national road financing challenges. They include First Highway Sector Project with the World Bank (1986), Second Highway Sector Project, Road tolls, the El-Niño Emergency Fund, the Kenya Urban Infrastructure Programme (KUTIP), Roads 2000 programme, Build Operate Transfer (BOT) and establishment of institution such as KRB. The major aspects that road financing intends to serve are Road development financing that entails construction of new roads, upgrade of sewer lines, expansion of existing roads capacity improvements (that is widening of roads to dual or multiple carriageways) and improving the roads condition, such as from gravel to bitumen or concrete standards. The other aspect is Road rehabilitation and maintenance that refers to preserving roads in their current good condition.

### 2.4.1. Road Rehabilitation and Maintenance Financial Policies in Kenya

The Kenyan government through KRB has spelt out criteria under which road maintenance levy is utilized. According to KRB (2010), 60 percent of the road maintenance levy goes to international, national trunk and primary roads: 24 per cent goes to secondary roads while 16 per cent goes to rural roads. Furthermore, of all the funds received by the KRB, 2 per cent goes for administrative activities of the board

while 40 per cent goes to KENHA for roads A, B and C. KeRRA (Constituency and District Roads), KURA (Municipality and City Roads) and KWS (Park and Game Reserve Roads) receive 20 per cent, 12 per cent, 15 per cent and 1 per cent respectively.

***Table 4: KRB Fund Disbursements Information***

| **Recipient Agency** | **Percentage** |
|---|---|
| KRB operations | 2 |
| KENHA-roads department (A, B, C) | 40 |
| To be allocated by KRB Board | 10 |
| Constituencies | 20 |
| KERRA - DISTRICTS (DRC EQUITABLE) | 12 |
| KURA – MOLG | 15 |
| KWS | 1 |
| TOTAL | **100** |

Source: Kenya Roads Board 2010

## 2.4.2. Finance from Development Partners and Loans

Kenya receives loans from major development banks such as World Bank, AfDB, EU and China EXIM Bank (Budget 2009:9). Hull (2008) stated that the GoK received a loan of KES 4.3 billion from AfDB to finance the 340 Kilometres Isiolo - Moyale road. China Wu Yi Construction Company is constructing the road.

According to the AfDB (2007), the African Development Bank Group approved a loan of US$ 326 Million to finance the second phase of Mombasa-Nairobi-Addis Ababa Road Corridor Project. The loan will finance the construction and tarring of 438 km road (245 km Merille River-Marsabit-Turbi road section in Kenya and 193 km Ageremariam-Yabelo-Mega road section in Ethiopia). The loan was granted to Ethiopia USD 132 Million and Kenya USD 194 Million. The second grant of Sh9.3 billion will support regional roads component, in particular, the upgrading of the 122-kilometre Merille - Marsabit road. (Bryson, 2008) European Union (EU) and World Bank (WB) are funding the Northern corridor at KES 25 billion and China (KES 8 billion) is funding Nairobi's Northern and Eastern bypasses.

Other projects being financed by development partners include: Labour-based construction on rural roads (also called Roads 2000 programme) in Rift Valley (funded by AfDB); Nyanza (funded by SIDA); Eastern Province (funded by European Commission); Central Province (funded by AfD). Lot 1 (Meru – Marimba – Nkubu – Mitunguu road) and Lot 2 (Imenti – Kionyo - Chogoria, Ndagene loop). The total project cost is approximately Euro 67.4 million. The project is co-financed by KfW for Euro 12,078,411.72 and EC with Stabex funds amounting to Euro 21,250,000. The other major project is Nairobi-Thika Super-highway in Provision of additional capacity through construction of additional lanes, and strengthening of existing carriageway; Construction of Interchanges at (Pangani, Muthaiga, GSU, Kasarani, Githurai, Eastern Bypass) and Construction Supervision Services (co-financed by GoK, China EXIM Bank and AfDB) among others (KRB 2010).

### 2.4.3. Financing via Infrastructure Bonds

Central Bank of Kenya (2009) indicates that the CBK issued the first Government Infrastructure Bond on February 23rd 2009, valued at KES 18.5bn at 12.5% coupon rate with a 12 year maturity. Of the KES 18.5B. KES 6.4 billion was set for financing roads. The Infrastructure bond was oversubscribed by 146%. The MoF fiscal reports (2008) indicate the government has plans to raise KES 360 billion in the next five years through infrastructure bonds. The bonds will be issued to help fund projects in the energy, housing, sewerage and water supply, transport, rails and road networks among other sectors. Out of the KES 360 billion to be raised, KES186 billion would be set aside for the construction and upgrading of 64.500 kilometers of roads.

## 2.5. Summary

The literature review covered financing decisions, road-financing policies and theories, short preview of road subsector, factors affecting road financing as well as empirical evidence especially for South Africa, United States of America and China countries. Furthermore, the chapter highlighted and discussed approaches to financing road rehabilitation and maintenance and the road maintenance fund.

From the foregoing, it is evident that there exists a broad spectrum of sources of finance for road maintenance activities. Indeed, the theory of road financing as given, and road financing decisions have been indicated to rely on a number of varied factors. This study however looks at the Kenyan scenario, with an evaluation of what policy makers can follow as the sustainable ways of raising road maintenance finances.

Every country needs to develop criteria for acquiring and using road funds to increase it effectiveness and efficiency. Road finances can be sourced from one or more of the following sources: General fund appropriations, infrastructural bonds, fuel levy, dedicated taxes (vehicle license fees; international transit fees (cross-border charges), weight-distance charges; axle load fines, vehicle-distance traveled charges, urban congestion charges, overload fines, taxes on new vehicles, vehicle parts and road licenses, bridge tolls, and road tolls), private public partnership, development partners and state revolving funds.

SSA countries face challenges in accounting for road finances due to poor management and lack of transparency, institutional and policy weaknesses and frequent political interference among many others. The above challenges have contributed significantly to poor road network in developing nations.

The main source of road maintenance financing is fuel levy in most countries except China. Apart from fuel levy, general taxes, vehicle license fees; international transit fees (cross-border charges), weight-distance charges; axle load fines, bridge tolls, and road tolls collected by the fund, funding from development partners are also used. In addition, Vehicle-distance traveled charges, tolls for specific roads and bridges, urban congestion charges, charges for over-weight vehicles, charges on purchase of new vehicles and road licenses have been used by certain countries. The largest source of financing road network rehabilitation in the USA is the motor-fuel and vehicle taxes. General fund appropriations come second and bond issue proceeds come third. The largest source of

China road finances are domestic loans. This is followed by local fund and vehicle purchase tax.

South Africa derives most of its road finances from customs and excise levy on fuel and VAT on vehicle and part sales. The government requires over KES 160 billion to rehabilitate and reconstruct failed road network. In addition, the road subsector needs about KES 51 billion annually for road network maintenance and expansion. Finally, the government needs to devise ways of raising annual maintenance needs deficit of about KES 4 billion and 29.09 billion for back log maintenance.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1. Introduction

This Chapter outlines the Research design in Section 3.2, followed by an analysis of the population in section 3.3. This is then followed by a definition of how sampling was done in section 3.4 and a summary of the methods used for data collection and analysis in sections 3.5 and 3.6 respectively.

## 3.2 Research Design

Research was carried out using personal interviews and desk top research. The number of people interviewed was 23. The study was cross-sectional because people from different departments were interviewed. Desk top research was used to collect data from official documents including statistical abstracts and economic surveys. Information obtained from official documents includes the amount of fuel, the number of vehicles registered in Kenya and revenue deficit levels.

## 3.3 Population

The number of representatives in each road agency with road financing knowledge was considered to be ten on average. This indicates that the sampling frame for this study was ninety road agency representatives from nine road agencies in Kenya. The agencies are KeNHA, KURA, KeRRA, Ministry of Local Government via the Department of Urban Development (UDD), MoF, Directorate of PPPs, MoR, KRB and KWS.

## 3.4 Sampling

Cluster sampling was used, where respondents were chosen from different government road agencies, macroeconomic policy-makers and local government. The clusters were KeNHA, KURA, KeRRA, UDD, Ministry of Finance, Directorate of PPPs, Ministry of Roads, KRB and KWS. From the sampling frame of ninety representatives, only twenty-seven representatives were selected through convenience because it was the only practical way in the sense that it was difficult to interview all potential respondents within the same period because of work load and availability factors. In this case, it was important to identify a small sample that would give the results that are representative to the population (Baker & Charvat, 2008).

***Table 5: Road agencies and corresponding number of representatives interviewed***

| Road Agencies | Number of representatives interviewed |
|---|---|
| Kenya National Highways Authority | 3 |
| Kenya Urban Roads Authority | 3 |
| Kenya Rural Roads Authority | 3 |
| Local Government | 3 |
| Ministry of Finance | 3 |
| Directorate of Public Private Partnerships | 3 |
| Ministry of Roads | 3 |
| Kenya Roads Board | 3 |
| Kenya Wildlife Services | 3 |
| **TOTAL** | **27** |

## 3.5. Data Collection

Primary data was collected via a questionnaire a copy of which is attached. In addition, an invitation letter was given to respondents to explain the purpose of the study to the expected respondents. The activity took 15-30 minutes. However, any respondent who required more time to fill the questionnaire was allowed to do so, with contacts of the researcher being given for any clarification that may be required.

## 3.6. Data Processing & Analysis

### 3.6.1. Reliability and Validity

Research instruments must be valid and reliable. Reliability refers to the extent to which scores on the research instrument are free from measurement errors. Reliability means that the concept must become replicable or consistent by giving identical results if reused (Austin and Pinkleton, 2006). Reliability of statistical variables is measured using the Cronbach Alpha. Items in the questionnaire are statistically reliable if Cronbach Alpha is 0.7 and above (Amran, 2006). Validity on the other hand measures if the research questionnaire is measuring what is designed to measure.

Validity means that if a research study is meant to test an overall theme, the research instruments should be sufficient to capture the actual information as required. It should not leave out key variables that are important in measuring the overall theme of research.

There are many types of validity. The first one is construct validity. Construct validity determines if the conceptual variable measures what it is supposed to measure. The

second type of validity is content validity, which examines whether sampling was relevant for the study. Criteria validation measures the correlation between the research instrument and the outcome in the present or in the future. There is face validity that determines outwardly if the instrument looks if it is measuring something relevant. Finally, internal validity measures if one variable is solely responsible for a given outcome (Mackey and Gass, 2005). Primary data was obtained using research instruments that were thoroughly reviewed by experts of road financing and fellow academicians through a pilot study. Data was collected from all road agency departments, thus every agency was represented.

### 3.6.2. Questionnaire Design

***Table 6: Likert Scoring and Analysis***

| Answer | Scale | Score |
|---|---|---|
| Disagree | 1 | 1.00 – 1.80 |
| Undecided | 2 | 1.81 – 2.60 |
| Agree | 3 | 2.61 – 3.40 |

A combination of both quantitative and qualitative data analysis was used in the study. Quantitative data analysis involved the use of statistics and the associated mathematical formula. On the other hand quantitative analysis involved identification of many items that is judged by respondents using own discretion.

The data was recorded in tables for analysis; the three point Likert scale measured the perceptions of road agency representatives. The data was then tabulated on frequency tables and analyzed using SPSS to compute averages, percentages and frequency tables (Anderson et al. 2008). The data provided meaningful results as it allowed for comparison in terms of percentages. Ratios and percentages become meaningful as they can be easily interpreted. Consequently, statistical data manipulation was possible to compute statistical association between particular variables in the questionnaire (Longnecker. 2008).

# CHAPTER FOUR

# DATA ANALYSIS, RESULTS AND DISCUSSION

## 4.1. Introduction

The study's main objective was to evaluate the financing and rehabilitation of the public road network in Kenya. This is due to the realization that the current financial needs are greater than what is being allocated. A total of twenty three questionnaires were received out of the sent twenty seven questionnaires, representing a rate of return of 85.2%. The main challenge experienced during data collection is scarcity of time of the respondents who at the time of collecting the questionnaire were in meetings or had traveled out of office for official duty. In deed this was appreciated as some respondents would infer that 'roads are out in the field and not in the office.'

***Table 7: Response Rate***

| **Description** | **Responses** | **Percentage** |
|---|---|---|
| Complete | 23 | 85.2% |
| Incomplete | 0 | 0.0% |
| No responses | 7 | 14.8% |
| **Total** | **27** | **100%** |

Source: Research data.

The findings of the research are explained according to different sub sections below.

## 4.2. Sources of Revenue for the Road Maintenance Fund

Of the total number of road maintenance fund, 97% of the total fund is derived from fuel consumed by motor vehicles. There is a positive correction among the number of vehicles registered, total fuel consumed and the amount of money raised from fuel levy. The higher the number of vehicle the higher the amount of fuel consumed, which lead to higher fuel taxes collected.

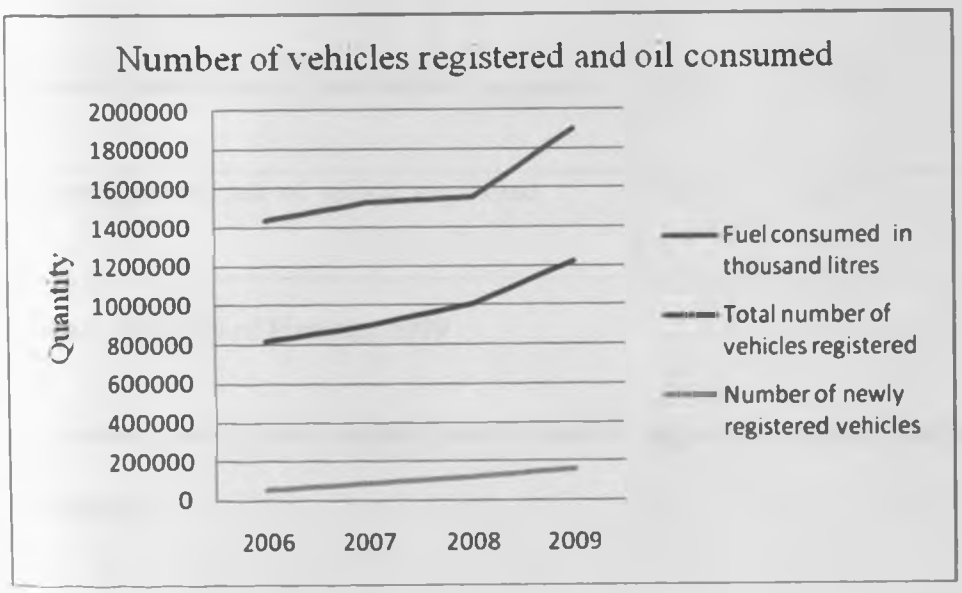


**Figure 1: Trends of the Number of Vehicles Registered and Petroleum Products Consumed.**

The number of vehicles registered in Kenya was 819,444, 896,572, 1,009,438 and 1,221,083 in 2006, 2007, 2008 and 2009 respectively. The number of new vehicles

registered in Kenya was 52,817, 85,324, 121,831 and 161,813in 2006, 2007, 2008 and 2009 respectively.

The total amount of fuel consumed in Kenya was 1,434,500,000, 1,523,700,000, 1,552,400,000 and 1,901,700,000 in 2006, 2007, 2008 and 2009 respectively.

***Table 8: Annual Vehicle Registration and Fuel Consumption Growth Rates***

| **Details** | **2007** | **2008** | **2009** |
|---|---|---|---|
| Annual oil consumption growth rate | 6% | 2% | 23% |
| Annual growth rate of new vehicle registered | 9% | 13% | 21% |
| Annual growth rate of vehicle registered | 22% | 43% | 53% |

Source: Ministry of Finance, 2009

The above table shows annual growth rates of registered vehicles and amount of fuel consumed.

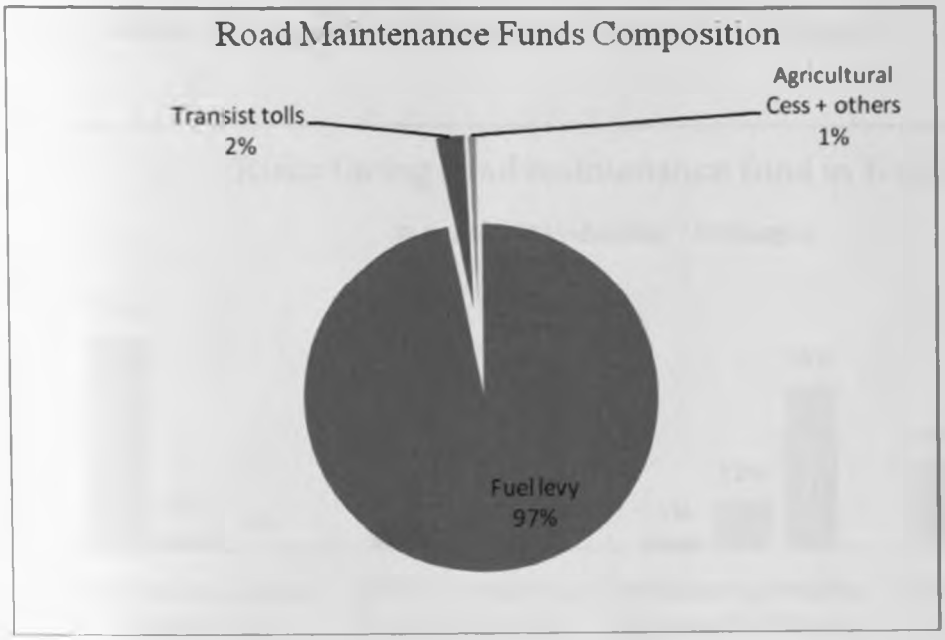


**Figure 2: Road Maintenance Levy Fund Composition**

RMF is made of fuel levy (97%), transits tolls as well as agriculture cess and other at 2% and 1 % respectively. The total amount of road maintenance fund allocated was KES15, 300,000,000, KES 18,278,869,260, KES 20,000,000,000 and KES 21,000,250,000 in 2007, 2008, 2009 and 2010 respectively. However, the road maintenance needs were estimated to be KES 25,300,000,000, KES 25,700,000,000, KES 26,000,000,000 and KES 27,300,325,000 in 2007, 2008, 2009 and 2010 respectively.

## 4.3. Risks Facing Road Revenue Collection in Kenya

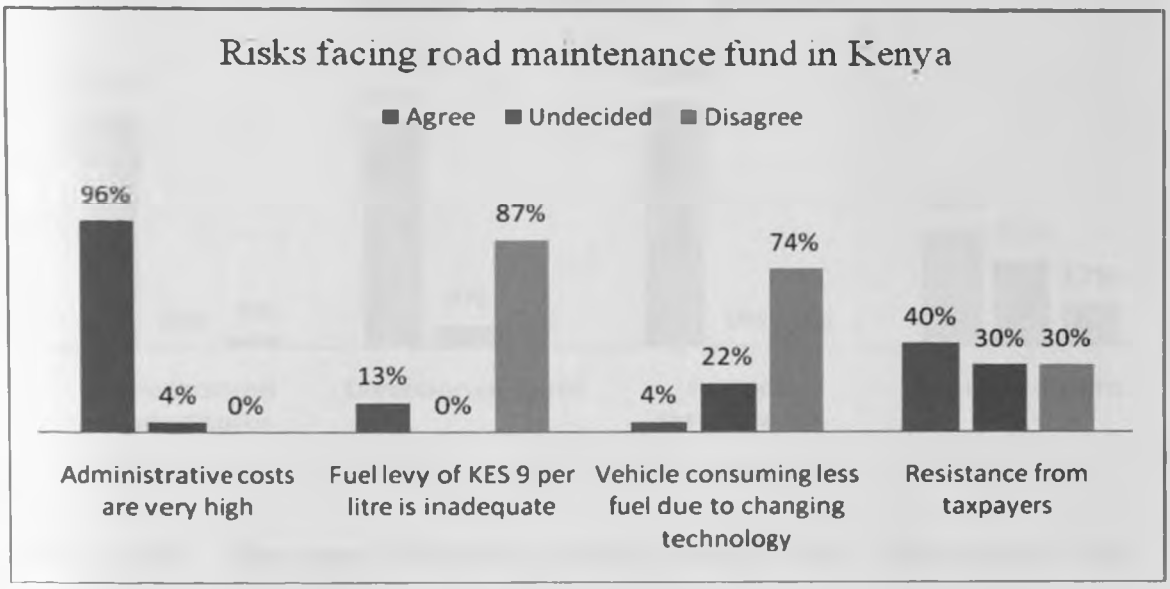


**Figure 3(a): Responses Regarding Risks Facing Road Revenue Collection in Kenya**

From figure 3(a), according to question 1, respondents were asked about their views on collection challenges. Nearly all respondents 96% agreed that administrative costs are very high. Most of them however failed to agree with the statement that the current fuel levy at KES 9 per litre is inadequate. 74% of the respondents do not agree with the statement indicating that changes in technology make most vehicles consume less fuel. This was argued that more journeys would be encouraged hence ultimately maintaining same consumption levels. In response to the question 1(h), 40% of all respondents agree with the statement that tax payers are resisting payment of fuel levy hence asking for waivers. However, 30% of the respondents neither agreed nor disagree with the statement.

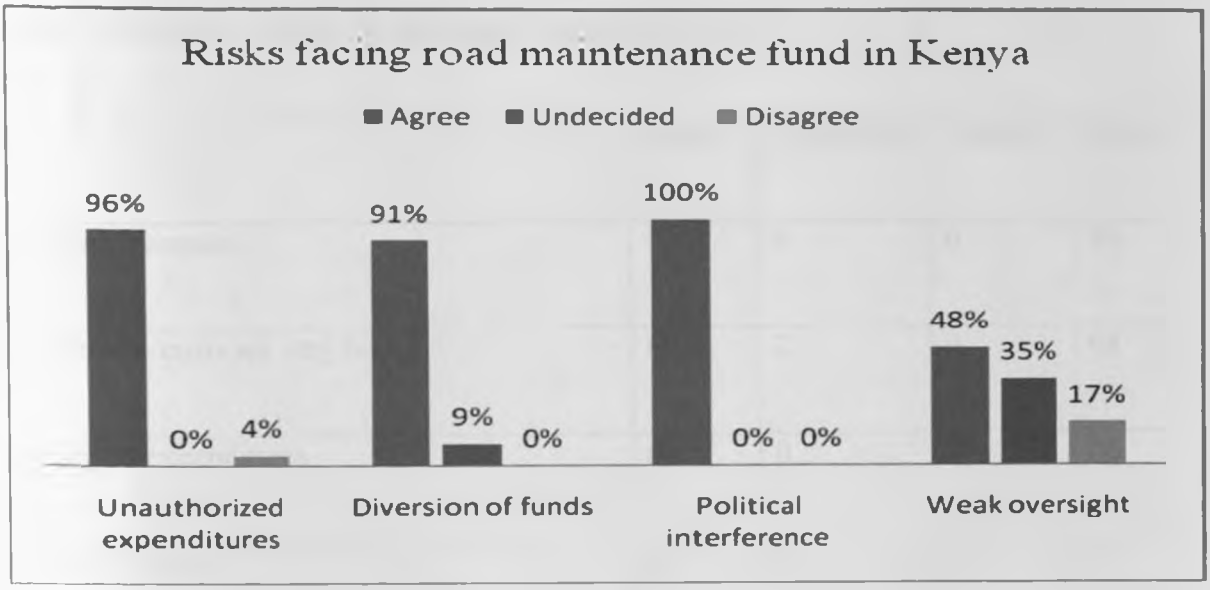


**Figure 3(b). Responses Regarding Risks Facing Road Maintenance Fund Management in Kenya**

From figure 3(b), according to question 4, respondents were asked about management of the road maintenance fund. Nearly all respondents (96%) agreed that there are unauthorized expenditures. According to question 4(c), most respondents (91%) agreed with the statement that funds from the RMF are diverted. In addition, all respondents (100%) agreed that there is political interference in management of RMF in Kenya and 48% of all respondents agree with the statement that there is weak oversight of the Fund. However, 35% of the respondents neither agreed nor disagree with the statement on weak oversight while 17% of the respondents disagreed with this statement.

*Table 9: Ranking of Road Maintenance Fund Risks (%)*

| | Agree | Undecided | Disagree | Total |
|---|---|---|---|---|
| Political interference | 69 | 0 | 0 | 69 |
| Administrative costs are very high | 66 | 2 | 0 | 68 |
| Unauthorized expenditures | 66 | 0 | 2 | 68 |
| Diversion of funds | 63 | 4 | 0 | 67 |
| Weak oversight | 33 | 16 | 8 | 57 |
| Resistance from taxpayers | 27 | 14 | 14 | 55 |
| Fuel levy of KES 9 per litre is inadequate | 9 | 0 | 40 | 49 |
| Vehicle consuming less fuel due to changing technology | 3 | 10 | 34 | 47 |

Source: Research Data

The rankings have political interference as the greatest risk facing RMF management. This is followed by high administrative cost, unauthorized expenditure, diversion of funds and weak oversight which are ranked second, third, fourth and fifth respectively. On the other hand, tax payers' opposition is ranked sixth, inadequacy of fuel levy seventh and less fuel consumption due to technology is ranked last.

## 4.4. Possible Sources of Extra Road Maintenance Revenue in Kenya

This was addressed by question three (3) which focused on the revenue sources that are viable in Kenya, for road maintenance financing, in the opinion of the respondents. Results are presented below:

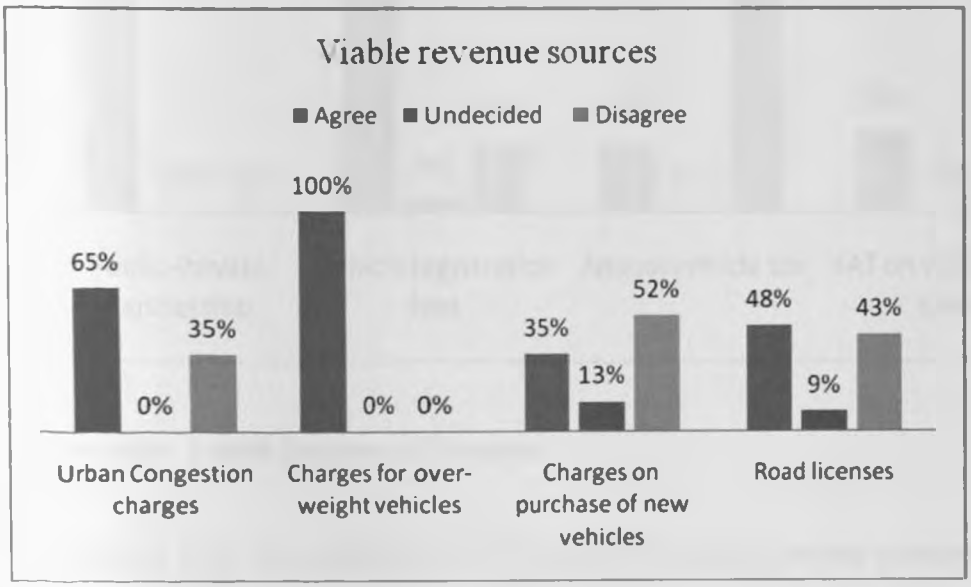


**Figure 4(a): Viable Sources of Revenue**

From figure 4(a), 65% of the agreed with the statement that urban congestion charges should be introduced while 35 % of the respondents disagreed. All respondents (100%) agreed with the statements that overweight vehicles should be charged. Most respondents (52%) disagreed with the statement that charges of new vehicles should form a basis of collection. However, 35% agreed with the above statement and 13% were undecided. Also, 48% of all respondents agreed with the statement that road licenses need to from basis of tax revenues. However, 9% of the respondents neither agreed nor disagree with the statement while 43% of the respondents disagreed.

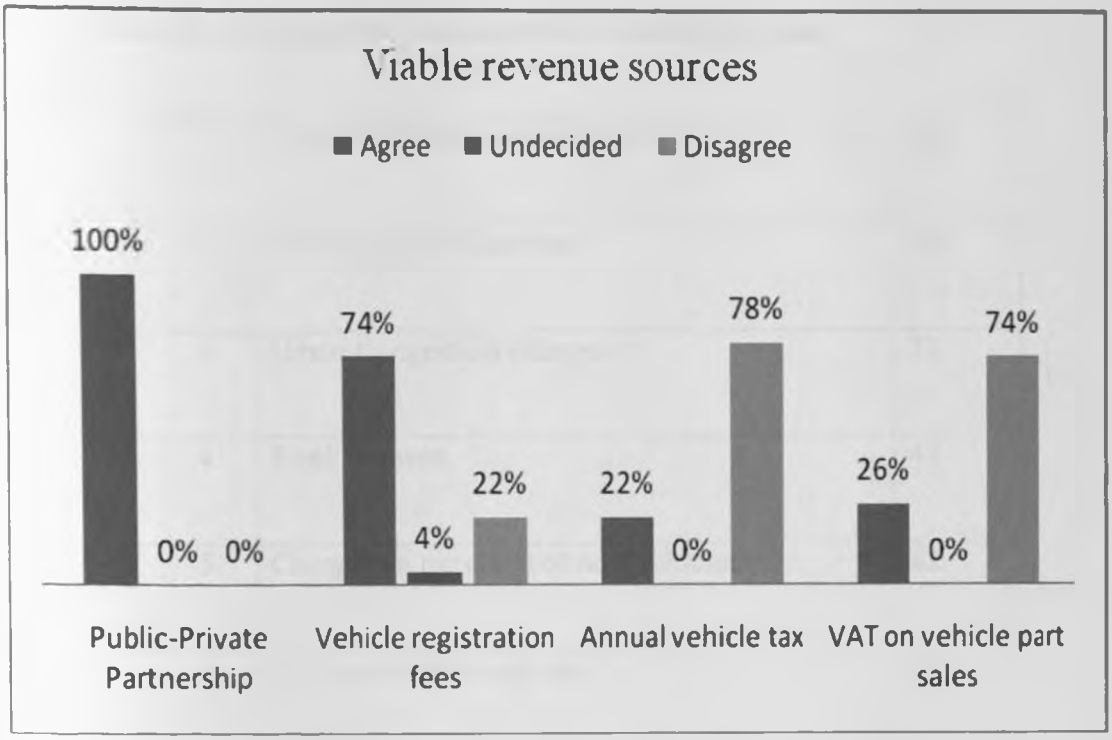


**Figure 4(b): Viable Sources of Revenue**

From figure 4(b), all respondents (100%) agreed that public private partnership (PPP) is a viable way of obtaining finances. Most respondents (74%) agreed with the statement that vehicle registration fees should be a basis of road revenue collection. However, 22% of the respondents disagreed with the statement while 4% were undecided. According to question 3(m), most respondents (78%), disagreed with the statement that annual vehicle tax should form the basis of collection, while only 22% agreed with the statement. In response to the question 3(n), 74% of all respondents disagreed with the statement that VAT on sale of vehicle part should form a basis. Of all respondents only 26% disagreed with the above statement.

*Table 9: Rankings for Sources of Road Fund Revenues*

| | | |
|---|---|---|
| 1. | Charges for over-weight vehicles | 69 |
| 2. | Vehicle registration fees | 58 |
| 3. | Urban Congestion charges | 53 |
| 4. | Road licenses | 47 |
| 5. | Charges on purchase of new vehicles | 42 |
| 6. | VAT on vehicle part sales | 35 |
| 7. | Annual vehicle tax | 33 |

Source: Research Data

The above table shows a charge for overweight vehicles is ranked first at 69 points while annual vehicle tax is ranked last by 33 points.

## 4.5. Making Road Finances Management Efficient

From figure 5 below, all respondents (100%) agreed that management of road fund require independent regular technical and financial audits and introduction of performance-based road management contracting. Ranked highly also at 96% was the need for managerial accountability and strong oversight at 70%.

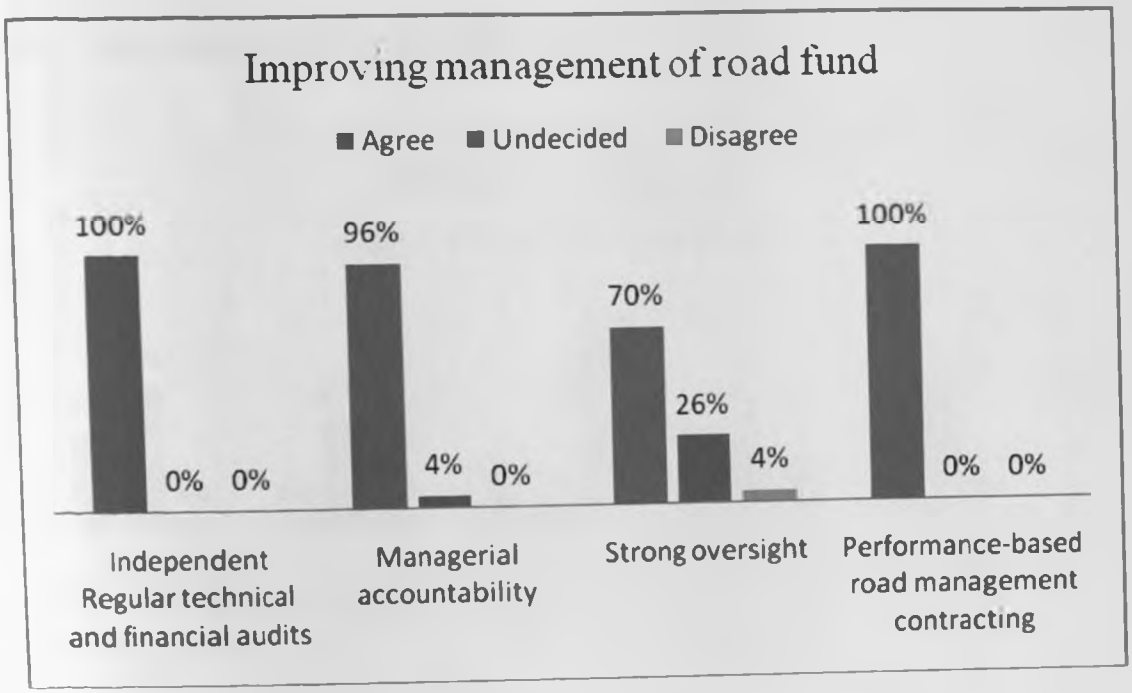


**Figure 5: Improving Management of the Road Fund**

This is tabulated below, where it is evident that the above factors need to be considered and implemented to increase road fund efficacy. Independent regular technical and financial audits, managerial accountability, strong oversight and performance-based road management contracting are ranked first, second, third and fourth respectively.

***Table 11: Rankings for Actions to Make Road Fund Efficient in Kenya (%)***

| | **Agree** | **Undecided** | **Disagree** | |
|---|---|---|---|---|
| Independent Regular technical and financial audits | 69 | 0 | 0 | 69 |
| Managerial accountability | 66 | 2 | 0 | 68 |
| Strong oversight | 48 | 12 | 3 | 63 |
| Performance-based road management contracting | 54 | 0 | 0 | 54 |

## 4.6. Reforms in the Road Sub-sector

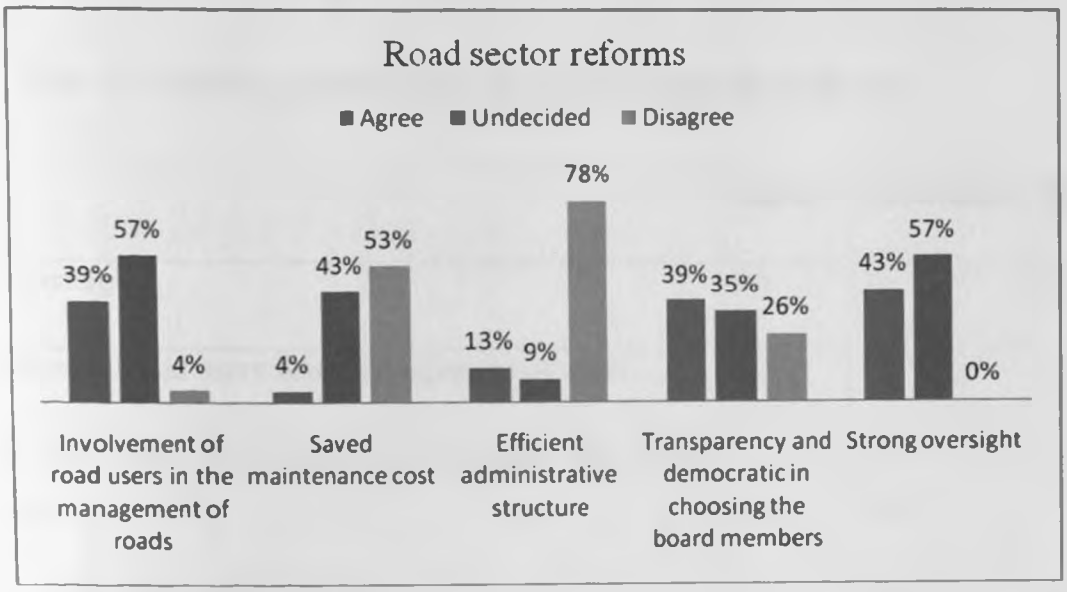


**Figure 6: Road Rub-sector Reform Contribution**

From figure 6, most respondents (57%) were undecided road users are involved in road management. On the other hand, 39% agreed with the above statement while 4% disagree with the above statement. According to question 7, only 4% of respondents agreed with the statement that road sector reforms have saved maintenance cost. However, 43% of the respondents were undecided with the statement while 53% disagreed. Further, 78% of the respondents disagreed with the statement that road sector reforms have led to efficient administrative structure, while only 13% agreed with the above statement and 9% were undecided. In response to the question 7(i), 39% of all respondents agreed with the statement that road sector reforms have led to transparency and democracy in choosing board members of road maintenance fund. Of all respondents only 26% disagreed with the above statement while 35% were undecided. In response to the

question 7(j), most respondents 57% were undecided about the statement that road sector reforms have led to strong oversight while 43% agreed with the above statement.

***Table 12: Rankings for the Effect of Road Financing Reforms (%)***

| | **Agree** | **Undecided** | **Disagree** | |
|---|---|---|---|---|
| Strong oversight | 30 | 26 | 0 | 56 |
| Involvement of road users in the management of roads | 27 | 26 | 1 | 54 |
| Transparency and democratic in choosing the board members | 27 | 16 | 6 | 49 |
| Saved maintenance cost | 3 | 20 | 12 | 35 |
| Efficient administrative structure | 9 | 4 | 18 | 31 |

Source: Research Data

Strong oversight, involvement of road users in the management of roads, transparency and democratic selection of board members, savings in maintenance cost and efficient administrative structure are ranked in the order of first to fifth respectively.

# CHAPTER FIVE

# SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

## 5.1. Summary of Findings and Conclusions

### 5.1.1. Summary of Findings

Road maintenance fund is the most important fund to ensure that roads are maintained at the required standards. However, the amount of road maintenance fund allocated is less that the amount of road maintenance fund required. Considering secondary and primary data obtained and analyzed, it is obvious that more money of needs to be raised to meet the current level of road maintenance needs. The immediate need for this from this analysis of data is KES 4 billion.

The objective of this study was; ***'To evaluate the financing of maintenance and rehabilitation of the public road network in Kenya.'***

According to the study conducted, the respondents rank charges for overweight vehicles first, vehicle registration second, urban congestion charges third, road license fees fourth, charges on purchase of new vehicles fifth, VAT on vehicle parts sales sixth and annual vehicle tax seventh as the most optimal viable revenue sources. Looking at the above statement, introducing annual vehicle tax is likely to receive high level resistance from vehicle owners. However, fining overweight vehicles is likely to generate wider

acceptance among the Kenyan population. The challenge about charging overweight vehicles is that it may not generate the required about KES 4 billion because only trucks and passenger vehicle are likely to be fined. It is a fact that charging overweight vehicles, charging newly registered vehicles, collecting urban congestion fees, road license fees and charging annual vehicle tax for owners cannot raise the required about KES 4 billion if used singularly. Therefore, all the above viable sources can form a basis of road maintenance fund.

The most commercially viable source of revenue though ranked sixth is earmarking VAT on vehicle parts for road maintenance. This is because from the secondary data collected, the average value of vehicle parts imported was KES 47,869,863,500 over the period 2007 to 2010. Consequently, with the current VAT rate of 16%, KES 7,659,178,160 can be generated which is over and above the required KES 4 billion deficit. The main problem of this option is that it reduces the total revenue of tax collected by the government for other programs.

The second option of filing the deficit gap is by increasing the fuel levy tax by KES2.50. According to the literature review, some countries charge above KES 14 per litre of fuel, therefore increasing this levy to KES11.50 will be another revenue option considering that most motorist continue to pay for price increases. Consequently, though it will face opposition from the public at large. If however this is done, with an average consumption of about 1,603,075,000 litres, increasing the levy by KES 2.50, will generate an additional KES 4,007,687,500 annually and this can be used to fill the deficit. Increasing

fuel levy and earmarking VAT on vehicle spare parts to road maintenance fund therefore seem to be the most viable ways of raising additional funds for road maintenance.

The study revealed that all respondents cited political risk as the greatest risk facing management of RMF in Kenya. The other risks include higher administrative cost, unauthorized expenditure, diversion of funds and weak oversight. In addition, majority of respondents cited lack of scheduled maintenance as a major risk. Therefore, the government through KRB needs to develop policies that minimize the above risks with utmost urgency because the above risks largely contribute to road maintenance fund deficits.

All the factors listed that need to be considered and implemented to increase efficacy of road fund are critical. Therefore, the government through its relevant agencies needs to develop and implement independent regular technical and financial audits, managerial accountability, strong oversight and performance-based road management contracting to increase efficacy of road fund.

The study revealed that road reforms that have been carried out have yielded marginal results. From the study, it is evident that most people feel that road sector reforms failed to adequately improve efficacy of the administration of the road fund. In addition, they have failed to save maintenance cost and have also failed to make road fund board transparent and democratic. On the contrary, the study revealed that road sector reforms have led to strong oversight and involvement of road users in road maintenance.

### 5.1.2. Conclusions

An effective RMF is vital for ensuring that roads are maintained at a usable level. The study has revealed high risk factors, viable sources of additional road maintenance revenues and ways in which management of the RMF can be made efficient.

The existing revenue gap can be covered by several sources, however, increasing fuel levy by about KES 2.50 from the current level of KES 9.00 per litre and earmarking VAT on vehicle and vehicle parts sale are the most optimal and adequate sources of additional road maintenance funds.

Political risks, unauthorized and/or ineligible expenditure and diversion of RMF are the riskiest factors that negatively impact RMF management. Therefore steps need to be taken to mitigate and manage these risks so as to ensure management of road fund is made efficient. Additionally, high administrative cost of road funds and road implementation agencies need to be managed so as to avail funds to the intended purpose of road maintenance as opposed to personnel costs and administrative financing.

Independent, regular technical and financial audits, managerial accountability, strong oversight and performance-based road management contracting are critical in the management of these risks. These need to be put in place so as to ensure the funds that are generated for road maintenance financing are used sustainably and effectively.

## 5.2. Limitations of the Study

There are three (3) limitations to this study. First, the research evaluated road maintenance revenues, RMF and road reforms leaving out other aspects in road financing such as trends in road financing, maintenance techniques and methodologies and their impact on financing, road safety and environmental considerations. Such factors are also vital factors in considering the nature, timing and amount of financing need for road maintenance activities. Secondly, financing public expenditure and other government operations and activities, to which the public road network is a component, usually focusses on the emotive issue of taxation and government levies. Most respondents are usually influenced in their responses to any aspects involving taxes by subjective choices. Lastly, the response rate expected was 100%, however, only 85.2 response rate was attained due to some of the target respondents being out of office.

## 5.3. Recommendations

The study recommends a number of key macroeconomic policy factors in evaluating financing of road maintenance funds. First, on the need to create a maintenance plan and ensure this is implemented as per schedule. This will ensure all target maintenance activities are implemented within resource constraints of road works implementing agencies. Secondly, the need for further policy decisions and actions such as implementation of Road Maintenance Protection Act to shield RMF from political interference and diversion of funds to unauthorized and ineligible expenditure. Further, the need for additional financing so as to cater for the current revenue gap is paramount.

This can be by earmarking VAT from sale vehicles and vehicle parts to the RMF and ensuring stricter penalties for overloading. In addition, the need for a lean and efficient management structure for the RMF and road implementing agencies so as to reduce administrative cost is paramount. This will enable availing of more funds to road works implementation. Finally, the contribution of road users to planning, scheduling and management of road works and funding needs, should be included in road maintenance decisions.

## 5.4. Recommendations for Further Research

Road maintenance financing is a vital subject that has attracted limited research by students and research institutions locally. There is need for further research in this otherwise important but neglected area so as to have a broader local understanding and appreciation of the roads sub-sector, which is vital for economic growth and development. Research on such vital financing mechanisms such as tolls needs to be undertaken in the country so as to identify the viable toll rates and possible amounts that can be collected in the country.

According to the research, it was evident that political interference, high costs of administration and diversion of funds to unauthorized expenditure is rife. This can be subjects for further research. Such study could also include the amount of cash diverted and its destination as well as the impact of political interference on the effectiveness of funding and managing road maintenance funds.

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## APPENDIX A

## RESEARCH INVITATION LETTER

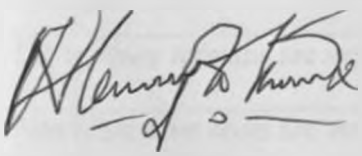
Dear Respondent,

I am inviting you to participate in a research project to study road financing in Kenya. Along with this letter is a short questionnaire that asks a variety of questions about road financing issues. I am asking you to look over the questionnaire, complete it and hand it back to the research assistant or send it back to me. The results of this project will help me complete my academic thesis and I hope to share my results by publishing them in your company's newsletter.

I do not know of any risks to you for participating in this survey and I guarantee that your response will not be identified with you personally. Your participation is voluntary.

If you have any questions or concerns about completing the questionnaire or about being in this study, you may contact me at henry.taabu@gmail.com or 0721265494

Sincerely



**NYEGENYE HENRY TAABU N**

**STUDENT NUMBER: D61/9127/2005**

# APPENDIX B

# RESEARCH QUESTIONNAIRE

## I. INTRODUCTION

This section aims to identify the source of the response without identifying the respondent.

Respondents are requested to ensure it is completed due to its generality, with an assurance to respondents that this is a general section whose intention is to show the views of different segments of respondents.

Ministry/Corporation: .....

Department/Division: .....

## II. ROAD FINANCING REVENUES

This section is aimed at getting the respondents views on the challenges and preferred mechanisms for collecting finances for road maintenance and rehabilitation in Kenya.

### a) Collection Challenges

1. What problem faces road revenue collection in Kenya?

| | | Agree | Undecided | Disagree |
|---|---|---|---|---|
| a. | Collecting agency is deficient | | | |
| b. | The revenue streams are very unstable | | | |
| c. | Administrative costs are very high | | | |
| d. | Fuel levy of KES 9 per litre is inadequate | | | |
| e. | Sources of revenue streams are few | | | |

| | | | | |
|---|---|---|---|---|
| f. | Some road users evade paying road charges | | | |
| g. | Vehicle consuming less fuel due to changing technology | | | |
| h. | Resistance from taxpayers | | | |
| i. | Others, please specify | | | |

2. What needs to be done to improve road revenue collection in Kenya?

| | | Agree | Undecided | Disagree |
|---|---|---|---|---|
| a. | Fuel levy should be increased above KES 9 per litre | | | |
| b. | Revenue streams should be diversified | | | |
| c. | Impose higher charges on heavy road users | | | |

**b. Sources of Revenue**

3. With regard to sources of finance available in Kenya, state which of the following should form the basis:

| | | Agree | Undecided | Disagree |
|---|---|---|---|---|
| a. | Vehicle-distance traveled charges | | | |
| b. | Tolls for Specific Roads and Bridges | | | |
| c. | Urban Congestion charges | | | |
| d. | Charges for over-weight vehicles | | | |
| e. | Charges on purchase of new vehicles | | | |
| f. | Road licenses | | | |
| G | Public-Private Partnerships | | | |

| | | | | |
|---|---|---|---|---|
| H | International transit fees | | | |
| i. | Fines of over-weight vehicles | | | |
| j. | Charges on purchase of new vehicles | | | |
| k. | Vehicle registration fees | | | |
| l. | Infrastructure bond | | | |
| m. | Annual vehicle tax | | | |
| n. | VAT on vehicle part sales | | | |
| o. | Import Duties on vehicle /parts | | | |
| P | Others, specify | | | |

## III. EXPENDITURE OF FINANCES

This section aims at verifying the respondents' views on current expenditure challenges for finances that are collected and ways in which improvements can be done.

4. What challenges face road finance management in Kenya?

| | | Agree | Undecided | Disagree |
|---|---|---|---|---|
| a. | Lack of transparency | | | |
| b. | Unauthorized expenditures | | | |
| c. | Diversion of funds | | | |
| d. | Political interference | | | |
| e. | Weak oversight | | | |
| f. | Inadequate revenues | | | |
| g. | Slow growth in the economy | | | |

| | | | | |
|---|---|---|---|---|
| h. | Constrained budget | | | |
| i. | Others, specify | | | |

5. What is needed to make road finance utilization efficient?

| | | Agree | Undecided | Disagree |
|---|---|---|---|---|
| a. | Independent Regular technical and financial audits | | | |
| b. | Managerial accountability | | | |
| c. | Road fund administration with clear rules and regulations | | | |
| d. | Strong oversight | | | |
| e. | Efficient administrative structure | | | |
| f. | Transparency and democracy in choosing the board members | | | |
| g. | Performance-based road management contracting | | | |
| h. | Others, specify | | | |

## IV. ROAD SECTOR REFORMS

From the reforms that have been undertaken over the years in road sector financing and the challenges that are still inherent, the respondent is requested in this section to give their views on a preferable way forward, if any.

6. Has reliance on Fuel Levy in road financing promoted the following

| | | Agree | Undecided | Disagree |
|---|---|---|---|---|
| a. | Independent auditing | | | |
| b. | Collection of Road User Charges | | | |

| | | | | |
|---|---|---|---|---|
| c. | Revenue allocation rules | | | |
| d. | Separation of functions between collectors and implementers | | | |
| e. | Direct transfer to road fund | | | |
| f. | User representation on the Roads Fund | | | |
| g. | Others, specify | | | |

7. Have the reforms in road financing help to address the following:

| | | Agree | Undecided | Disagree |
|---|---|---|---|---|
| a. | Reduced large backlog of deferred maintenance | | | |
| b. | Increased available funds for maintenance | | | |
| c. | Promoted road use on a fee-for service basis | | | |
| d. | Involvement of road users in the management of roads | | | |
| e. | Saved maintenance cost | | | |
| f. | Promoted managerial accountability | | | |
| g. | Efficient administrative structure | | | |
| h. | Regular technical and financial audits | | | |
| i. | Transparency and democratic choice of board members | | | |
| j. | Strong oversight | | | |
| k. | Others, specify | | | |

**THANK YOU.**