

**ENFORCEMENT OF ENERGY AND PETROLEUM REGULATORY
AUTHORITY POLICIES IN THE LIQUEFIED PETROLEUM GAS SECTOR
IN UASIN GISHU COUNTY, KENYA**

BY

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DECLARATION

Declaration by the candidate

This thesis is my original work and has not been presented for the degree in any other university. No part of this thesis may be reproduced without the prior written permission of the author and Moi University.

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ABSTRACT

The petroleum sector in Kenya is critical for energy security and economic growth, yet challenges in policy enforcement continue to hinder its effective regulation. Despite the existence of the Energy and Petroleum Regulatory Authority (EPRA) policies, compliance issues persist, particularly in the Liquefied Petroleum Gas (LPG) sector, where unlicensed operations, illegal cross-filling, and brand hoarding are common. Notwithstanding the existence of the Energy and Petroleum Regulatory Authority (EPRA) policies, there persists proliferation of Liquefied Petroleum Gas (LPG), many operating without licenses, while cases of illegal cross-filling and hoarding of competitors' brands are common. This calls into question the enforcement and effectiveness of enforcement regulations by EPRA. This study sought to assess the enforcement of EPRA's policies that regulate liquid petroleum gas sector in Uasin Gishu County in Kenya. The specific objectives were to: analyze the legal, policy and institutional frameworks guiding LPG regulatory practices; evaluate EPRA's enforcement activities; assess the effectiveness of EPRA in ensuring compliance among LPG dealers; and to examine EPRA's institutional capacity and challenges. The study was grounded in Stakeholder Theory and Institutional Theory and guided by explanatory research design while using a mixed-methods approach. The target population of the study comprised 809 LPG dealers and 26 industry stakeholders. Using Yamane's formula, a sample size of 267 LPG dealers was selected to provide primary data through questionnaires where 241 returned the questionnaires. Through purposive sampling, all the 26 stakeholders were slated for interview but 23 were selected as part of the sample and were interviewed as Key Informants. Quantitative data was analyzed using descriptive statistics, while qualitative data was analyzed using thematic analysis. Data was presented in tables for quantitative data while interview results were presented in a narrative form. The findings indicated that the policy enforcement areas of EPRA include conducting periodic inspections to verify compliance with safety standards, issuing operational guidelines and storage protocols, as evidenced by a mean score of 4.0044. EPRA also provides contractual procedures, with a mean score of 4.9674, enhances business clarity and sustainability. Further, EPRA enforces penalties on non-compliant dealers as reflected by a mean score of 4.9228. The qualitative findings showed that EPRA's activities include issuing licenses, monitoring compliance, imposing fines and providing mechanisms for consumer feedback. The results indicated that there are various challenges ranging from resources and enforcement capacity in EPRA. The study concluded that EPRA possesses adequate legal, policy, and institutional framework to regulate petroleum industries effectively and efficiently but faces challenges such as limited field enforcement capacity and resource constraints that hinder full implementation of these frameworks. The study recommends enhancing regulatory processes and increasing resources to strengthen EPRA's enforcement capacity roles. This is particularly informed by the findings that the proliferation of unlicensed dealers is linked to EPRA's limited resources and operational challenges in law enforcement. The study suggests that future research be done on the role of consumers in industry regulation, and best practices for enforcing LPG regulations.

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DEDICATION

This research study is devoted to my children, mum and my husband

ABBREVIATIONS

LPG: Liquefied Petroleum Gas

NPA: National Petroleum Authority

EPRA: Energy and Petroleum Regulatory Authority

ERC: Energy Regulatory Commission

UG: Uasin Gishu

NOCK: National Oil Corporation of Kenya

NACOSTI: National Commission of Science, Technology and Innovation

SPSS: Statistical Package for Social Science

OPERATIONAL DEFINITION OF TERMS

Capacity: This is the institutional capacity in terms of financial, human as well as structural ability to handle regulation effectively.

Compliance: This is the level of conformity with the laid down rules, regulations and procedures.

Customer: These are the people who are using the LPG in Uasin Gishu County as dealers (Petrol stations, Supermarkets, Sidewalks, Stores & Kiosks).

EPRA: This is the body charged with the responsibility of regulating the operations in the petroleum industry including the LPG.

Enforcement: This is the act of making sure that the laid down rules, regulations as well as procedures are adhered to and any deviation dealt with accordingly.

Kiosks: These are shops that besides selling LPG, they are also involved in the trade of other commodities.

Legal, policy and institutional framework: Laws, policies as well as rules plus regulations that put in place to improve regulatory activities

Regulating liquid petroleum gas sector: The capacity for the regulator to control the sector in accordance with the set standards, prices as well as operations

Sidewalks: These are LPG operator who sell the gas on the streets in the estates.

Stakeholders: These are EPRA officials (department of petroleum and gas), LPG Importer, LPG distributors (Depots) and KRA officials (department of petroleum and gas).

Stakeholders: These are the group of people who are in one way or another consume the LPG in various capacities or are involved in the dealings in the LPG sector.

Stores: These are the LPG vendors who specifically operate an LPG enterprise where they have a permit specifically for that.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter covers background to the study, statement of the problem, study objectives and research questions. It also covers significant of the study, scope of the study as well as limitations of the study.

1.1 Background of the Study

Petroleum is the critical factor that defines the level of economic development of any country. Prices of commodities are majorly tied to the cost of fuel which in turn affects the production cost of products. This has elicited a lot of concentration on the energy and petroleum sector (Olujobi et al., 2022). It is prudent to note that an increase in the prices of petroleum products eventually affect the prices of very many commodities (Munyua & Ragui, 2013). Many countries have come up with reforms in the regulation of energy and petroleum industries all over the world. Berument and Tascl (2002) examine how rising oil prices affected economy in Turkey. Their findings revealed that when wages and other three factors of income like profit, interest and rent are adjusted to the general price level that includes the oil price increases, the inflationary effect of oil prices becomes significant. Haron (2011) conducted research on energy issues in Malaysia and the study noted that petroleum regulation is inevitable and countries regulating oil and gas industries are cushioning the consumers. A study by Mathews (2014) on challenges as well as opportunities in the LPG industry in Sub-Saharan Africa noted legal framework, price controls and effective monitoring are some of the factors that affect the ultimate price that the end user is subjected to. Even though liberation of prizes has expanded the market, it has also led to dodging of the rules and regulations set by the LPG regulator. Colomer, Lyra, Pires-Alves and Prado (2020) revealed in their study in Brazil that liberazition

and removal of price controls have led to mergers, and this has eventually catapulted to emergence of LPG cartels since there are only a few companies involved. This has affected the level of competition in the LPG sector. In Ghana, the regulation of oil falls under the mandate of the National Petroleum Authority (NPA). In contrast, South Africa's government on the other hand sets the retail price of petrol but it does not exercise full control over the pricing of diesel in the country (Ventures Africa, 2015).

Even though very few studies have been done on energy regulation in Kenya, there is a lot of reforms that have taken place in the energy sector though implementations of some of the critical components have not been adequately done. In Kenya, Petroleum and gas is actually regulated by the Energy and Petroleum Regulatory Authority (EPRA). Established under the Energy Act of 2019 as the successor to the Energy regulatory Commission (ERC), EPRA has mandate to oversee economic and technical aspects of the electricity, petroleum as well as renewable energy sectors. Wanyama (2010) carried a study on effectiveness of energy (petroleum and gas) regulations in Kenya. The study found that Kenya has made tremendous steps in ensuring effective energy regulation by coming up with various laws meant to regulate the energy sector. However, the enforcement of the regulations has not borne fruit either since they have not been adequately implemented or due to inadequacy.

In Uasin Gishu County, there is mushrooming of small petroleum station and LPG dealers. This has caused high competition with the international petrol stations and LPG dealers. This has resulted in some losing customers leading to merging of some of their petrol stations while small stations and dealers are operating with minimum or little adherence to the laid down regulations.

Kenya's energy regulatory framework has undergone some transformations over the years. Following the enactment of the Energy Act of 2019, the Energy and Petroleum

Regulatory Authority was established to take over from the former Energy Regulatory Commission (ERC) which was dissolved due to various operational inefficiencies. Unlike its ERC, EPRA has a broader mandate. It is responsible for overseeing the generation, importation, exportation, transmission, distribution in addition to the supply of electrical energy. This mandate excludes the licensing of nuclear facilities in Kenya. EPRA also regulates the importation, refining, transportation, storage, export as well as sale of petroleum and petroleum products. This is done with the exception of crude oil.

Consequently, it supervises and monitors upstream petroleum activities in line with existing petroleum laws and agreements. The previous regulator, ERC, operated as a single-sector agency focusing primarily on the electricity and downstream petroleum sub-sectors, with functions such as licensing, tariff regulation, compliance enforcement, dispute resolution including the approval of power purchase agreements (Wanyama, 2010). EPRA has since decentralized its services by establishing regional offices, making its operations more accessible and responsive to the public.

There are still challenges even with the introduction of the new ACT especially on matters to do with fuel adulteration and sale of petroleum in undesignated areas (Wanjiku, 2011). A multi-agency effort has been identified as the best way to ensure full enforcement of the policies and regulations brought about. Even with all the legal reforms that have been undertaken in LPG sector, there are still elements of non-compliance majorly being occasioned by either inadequate enforcement and/ or moribund policies and institutional and regulatory frameworks (Wanyama, 2010). It is against foregoing background that this study sought to assess the enforcement of EPRA's policies that regulate liquid petroleum gas sector in Uasin Gishu County in Kenya.

1.2 Statement of the Problem

According to vision 2030, petroleum as well as electricity have been identified as the prime movers of the Kenyan economy accounting for about 24% of national consumption. Wanjiku (2011) noted that petroleum has accounted for about 80% of the country's commercial energy making it the major source of commercial energy hence the prevalence of misuse of pricing by the petroleum dealers as well as retailers. Liquefied Petroleum Gas (LPG), a cleaner and increasingly preferred household energy source, plays a growing role in domestic and commercial use. According to the Kenya National Bureau of Statistics (KNBS, 2023), LPG consumption rose by 14.3% in 2022, reaching 400,000 metric tonnes, underlining its significance in meeting household energy needs. Despite this, the LPG sector remains loosely regulated compared to other petroleum products like petrol and diesel, which are subject to direct price control by EPRA.

EPRA, established under the Energy Act of 2019, has the mandate to oversee all energy sub-sectors, including petroleum, yet critical challenges persist in its regulation of LPG. In Uasin Gishu County, the LPG market is marked by the proliferation of unlicensed dealers, illegal cross-filling practices, and hoarding of competitors' cylinders. Despite EPRA's requirement that all LPG dealers obtain operating licenses, field reports in addition to consumer complaints suggest that enforcement policy is weak or inconsistently applied in the sector.

Moreover, the absence of a common-user LPG storage and distribution facility, similar to what the Kenya Pipeline Company provides for liquid fuels, exacerbates regulatory challenges. Unlike petrol and diesel, LPG prices are not regulated, leading to uncontrolled pricing practices, particularly in peri-urban and rural areas. This not

only exposes consumers to exploitation but also undermines fair market competition. While some stakeholders have commended EPRA's expanded role, others have raised concerns over limited visibility, inadequate field enforcement, and weak institutional capacity, especially in rapidly growing urban areas like Uasin Gishu County. This gap between policy expectations and actual practices reinforces the need to carry out the study.

No known studies have been conducted on regulation of LPG gas in UG County. Although various studies have explored petroleum reforms, legal frameworks, and regulatory governance (Agaba & Shipman, 2007; Wanyama, 2010; Akech, 2005), none have specifically focused on EPRA's regulatory effectiveness in the LPG sector at the county level. Furthermore, the experiences of small-scale LPG retailers, who constitute a significant part of the distribution chain, have been largely overlooked. This regulatory gap poses serious public safety, economic, and consumer protection risks, necessitating a focused investigation into EPRA's policies enforcement that regulate liquid petroleum gas sector in Uasin Gishu County.

1.3 Broad Objectives of the Study

The broad objective of the study was to assess the enforcement of EPRA's policies that regulate liquid petroleum gas sector in Uasin Gishu County, Kenya.

1.3.1 Specific Objectives of the Study

The specific objectives of the study were to:

- 1) Analyse the legal, policy and institutional frameworks guiding LPG regulatory practices

- 2) Evaluate EPRA's enforcement activities in regulating liquefied petroleum gas sector.
- 3) Assess the effectiveness of EPRA in ensuring compliance among liquefied petroleum gas dealers
- 4) Examine EPRA's institutional capacity and challenges in regulating liquefied petroleum gas sector.

1.4 Research Questions

The study was guided by the following research questions:

- 1) How are the legal, policy and institutional framework of liquefied petroleum gas regulatory and operational practices?
- 2) What are EPRA's enforcement activities in regulating liquefied petroleum gas sector?
- 3) How effective is EPRA in ensuring compliance among liquefied petroleum gas dealers?
- 4) How are EPRA's institutional capacity and challenges in regulating liquefied petroleum gas sector?

1.5 Significance of the Study

The results will have policy and strategic influence on matters of regulatory framework. EPRA as well as other stakeholders will be able to formulate policies beneficial to regulatory process as well as effective of control mechanism in the liquid petroleum gas sector. EPRA will be able to come up with interventions that will improve regulatory systems in the liquefied petroleum gas sector.

Those in the academia especially researchers will benefit immensely from this study due to recommendations for further studies. It will also fill the knowledge gap;

highlight challenges of regulatory agencies; act as reference for scholars, academicians, planners and implementers on impact of regulations. It will further be a point of reference for researchers on research methodologies.

The LPG sector poses safety and environmental risks if not properly regulated. Understanding how energy regulatory authority oversees the sector is very essential for ensuring safety of residents and the protection, storage, transportation and distribution. Effective regulation of the LPG sector is equally crucial for protecting consumers from unsafe products, unfair pricing practices and fraudulent activities. Additionally, each region has unique characteristics, challenges and opportunities that influence the regulation of the LPG sector. Studying the impact of energy regulatory authority in Uasin Gishu County allows for a nuanced understanding of local dynamics, stakeholder perspectives and regulatory practices that may differ from other regions.

1.6 Justification of the Study

There has been growing concerns in Uasin Gishu County about unsafe LPG handling, illegal refilling sites as well as poor storage practices. These incidents make it important to look closely at how well EPRA is enforcing safety rules on the ground.

Kenya already has solid policies like the Energy Act, 2019, but the continued rise in non-compliance among LPG dealers shows that there might be gaps between what the law expects and what actually happens. This study helps in unpacking identified gaps. The use of LPG is increasingly expanding quickly since more homes and businesses shift to cleaner energy. With this growth, strong and reliable regulation becomes even more necessary to keep consumers safe since the inflammable nature of the LPG cannot be taken lightly.

The ability of EPRA to monitor, enforce, and respond to sector issues depends on its institutional capacity. Understanding where the authority is strong and where it struggles can guide in coming up with policy that creates improvements in addition to support for better decision making.

1.7 Scope of the Study

The scope of the study is the boundaries within which the study is conducted (Creswell, 2018). It outlines what the study focuses on including the specific objectives, variables, target population as well as the geographical area involved. The study aimed to assess the enforcement of EPRA's policies that regulate LPG sector in Uasin Gishu County in Kenya. The study specifically analyses the legal, policy and institutional frameworks of liquefied petroleum gas regulatory and operational practices; evaluating EPRA's enforcement activities in regulating liquefied petroleum gas industries; determining the impact of EPRA in enforcing compliance level of liquefied petroleum gas dealers; and assessing EPRA's capacity in regulating liquefied petroleum gas sector.

Further, the study only targets retailers and dealers of LPG gas in Uasin Gishu County only. The research covered only LPG gas dealers with more than a dozen cylinders. The research covers respondents in Uasin Gishu County only.

1.8 Limitations of the Study

Limitations of the study in research refers to the factors or constraints that may affect the validity, reliability or generalizability of the study's findings. In this study, the fear by the dealers in sharing their operations information since they thought this would unearth their non-compliance was a major limitation during data collection.

This was mitigated by ensuring that they were notified that the response was solely for research thereby building more trust and improving response.

The busy schedule of the stakeholders made it difficult to conduct the interview schedule. This was mitigated by repeat visits and organizing appropriate time for the stakeholders so that their work schedule is not interrupted.

Some respondents gave cautious or socially desirable answers because regulation is a sensitive subject. To reduce the risk of socially desirable answers, respondents were encouraged to answer freely without fear of judgment, and questionnaires were designed to allow anonymous participation where appropriate.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section covers the literature review as described by the study variables. It also covers summary of the literature review and research gaps, theoretical framework and conceptual framework.

2.1 Literature Review

The study adopted a thematic approach to the critical review of literature according to the research questions as a fore stated above. The thematic focus was on firstly, legal, policy and institutional framework of Energy Regulatory Authorities, secondly, operational activities and in regulation of petroleum industries, thirdly, petroleum industries and regulatory compliances. Fourthly, assessment of capacity and regulation of petroleum industries.

2.1.1 Legal, policy and institutional framework of energy regulation authority.

The legal, policy and institutional framework of an energy regulatory authority encompasses the laws, regulations, policies and organizational structure governing the energy sector within a particular jurisdiction. A robust legal, policy and institutional framework is essential for effective energy regulation, fostering investment, promoting competition, ensuring reliable as well as affordable energy supply and achieving broader energy policy objectives (Ines et al., 2020). Legal framework includes the primary legislations that establishes the energy regulatory authority, outlines its powers, functions and responsibilities in addition to providing the legal basis for regulating the energy sector (Symber, 2018). In some cases, it includes secondary legislations such as regulations and directives that further define specific rules and procedures. These frameworks direct the manner in which these policies are

implemented. Policies often provide the way it is supposed to be implemented and the desired results. The implementors must also be alive to the fact of such provisions of the policy so that the desired result is achieved.

Policy framework comprises the government's energy policy objectives, goals and strategies which guide the overall direction and priorities of the energy sector. Generally, it may include policies related to energy security, sustainability, affordability and market competition. Institutional framework is the organizational structure, governance arrangements and staffing of energy regulatory authority (Bulama & Nchi, 2023). It delineates the authority's relationship with other government agencies, industry stakeholders and the public at large. It is prudent to note that the key components of institutional framework may include the board or commission overseeing the authority operations, management and the entire workforce as well as the advisory bodies.

Herranz-Surrales and Fairbrass (2021) stated that regulatory framework outlines the specific regulatory functions performed by the energy regulatory authority such as setting tariffs, issuing licenses and permits, monitoring compliance with regulations, resolving disputes, promoting competition as well as ensuring consumer protection. The study concluded that effective and efficient regulatory systems are key in boosting the sector performance.

Petroleum market is very saturated, and this could be since it is a very lucrative and profitable market to venture into (Macheo & Omiti, 2003). Any business that provides for a steady profit without a lot of marketing definitely attracts many potential competitors. With the stiff controls being done and the endless energy reforms currently being experienced in Kenya, consumers are bound to benefit immensely.

Government regulations and creation of various acts of parliament to cater for the legal and policy issues in the energy sector have brought sanity in the petroleum industry (Ombungu, 2011). A further study by Ite et al. (2016) also noted that there is poor implementation of the national laws though very inadequate as well as international laws on petroleum in Nigeria. Several studies have been done on the legal policy framework, on the compliance of oil dealers, standardization of practices in the oil market as well as enforcement of the regulations and laws by the regulating authority.

Olujobi et al. (2022) studied legal framework that are used in Nigeria to combat gas flare in oil and gas industry. The aim was to determine the effectiveness in promoting sustainability in energy security. The findings showed that there are adequate legal frameworks, but the enforcement was a bit ineffective. The legal framework enables the agency to have enough powers to deal with deviators by putting in place stringent measures for opening and distribution of petroleum energy (Onyango, 2013).

Prudent legal framework enables the organization to have framework that determines how things are done in the organization. Astuti et al. (2019). The willingness of the government to ensure that there is clear policy on regulation of LPG and provision of the necessary instruments to aid regulation is very critical in ensuring a successful fuel transition in Indonesia. The laws set out the requirements for safety, licensing and compliance. The regulations may be covers technical standards, safety protocols, environmental protection and consumer rights.

Nepal et al. (2014) studied network regulation and regulatory institutional reforms in Australia where the researchers emphasized on a network regulation and institutional

reforms touching on regulatory items. A well-functioning institutional framework is essential for ensuring the sustainable, reliable and equitable provision of energy services, supporting economic development and advancing energy transition goals.

Heldeweg (2017) carried out a study in Netherlands about energy transition and legal governance shifts in relation to normative alignment as well as institutional resilience. The study was anchored on institutional legal theory, governance theory as well as Ostrom's IAD framework. The study noted that there is a need to have a strong legal governance framework that is aligned to the institutional environment that support policy framework. Aligning the legal framework and the institutional framework allows the organization to be integrated with the operational systems in the organization as well as regulatory programs (Heldeweg, 2017).

Heldeweg and Saintier (2020) carried a study across Europe about renewable energy communities viewed as socio-legal institutions in the decentralization of energy. The main objective was assessing the policy implementation and different levels of policy implementations and their effect on decentralization or even transition. The study opined that the manner in which legislative programs are carried out is very essential in promoting effective policy implementation of the energy policies.

Lenhart et al., (2021) assessed how regulations framework and governance systems across Europe and USA are related to institutional framework. The study findings showed that the long-term relationship between good government institutions is pegged on by the strong institutional and regulatory framework in the industry or even the organization. On the other hand, Astuti et al. (2019) carried a study in Indonesia about regulatory instruments in a successful fuel transition and they reasoned that

policy makers need to determine the best pathway for policy and regulatory implementation of the LPG industry.

A study in Sub-Saharan about opportunities in addition to challenges in the LPG industry. The study emphasized that there are various opportunities that have not been explored by the states and policy framework needs to be established that will catapult the use of LPG opportunities. Abdalla et al. (2013) examined the regulatory frameworks of oil and gas industry in Sudan and noted that there is lack of clear and proper coordination between the various agencies brought about probably due to confusion on responsibilities in addition to lack of involvement of the local community decision making especially in petroleum development. The confusion has led to corruption and unethical behavior being witnessed in the industry.

Olujobi (2021) studied anti-corruption legal framework in Nigeria's upstream petroleum industry and results showed that corruption has thrived so much on feeble implementation of the anti-corruption regime as well as the absence of political will in providing adequate regulatory interventions. Studies have been done on the legal policy framework, on the compliance of oil dealers, standardization of practices in the oil market as well as enforcement of the regulations and laws by the regulating authority. The studies have majorly revolved around effectiveness and availability of legal frameworks that promote sustainability in the oil and gas industry. They have also touched on policy framework and how they are easily coordinated during implementation. This study determines the legal, policy and institutional framework and how they aid regulation of EPRA.

Petroleum industry has been seen as the biggest supporter of the corporate social responsibility in Sudan even though it is the biggest emitter and polluter of environment.

Olusola and Temibola (2020) in their study on the appraisal of legal and institutional framework in Nigeria's gas industry on upstream petroleum sector noted that there is no adequate regulatory framework and coupled by the fact that there is poor enforcement by the anti-gas flaring authorities. Their findings revealed that the weak laws and poor enforcement have been the weakest point that has contributed to the menace of the problem of gas flaring.

Raufflet et al. (2014) noted that there have been efforts by the corporates to establish regulatory frameworks to curb the challenges facing the mining, oil and gas industry. This was as a result of significant challenges. Olujobi (2020) conducted a study in Nigeria where he provided a structure for a legislative structure on gas laws after a comparative study on petroleum laws in United Kingdom, Saudi Arabia and Norway. He further implored that the government should come up with incentives such as fiscal policies and gas market restructuring. Countries should come up with policy framework and a roadmap model of how the policy will be implemented as well as sustainable enforcement of the rules (Umar et al., 2018).

Bulama and Nchi (2023) legal, policy and institutional framework are very essential in promoting renewable energy in Nigeria. The institutional framework establishes regulatory bodies responsible for overseeing the energy sector. These bodies set rules, standards and guidelines to ensure fair competition, consumer protection as well as environmental sustainability. It should be noted that effective regulation promotes market efficiency, investment confidence and innovation. A study by Njoh et al. (2019) on the institutional frameworks and how they impact on renewable energy in Cameroon noted that robust institutional framework is very essential in promoting effective policy administration. The policy framework for LPG in Uganda is part of a

broader effort to increase access to clean cooking solutions and reduce reliance on biomass, which is a major source of indoor air pollution and deforestation. The government has introduced equal incentives to encourage private investors to in the LPG sector.

Heldeweg and Saintier (2020) claimed that proper policy and legal framework is dependent upon active participation of the stakeholders in the industry or the sector. Institutional frameworks facilitate policy coordination and coherence across government agencies, departments and stakeholders involved in the energy decision making system. Coordinated institutional efforts enhance policy coherence in addition to minimizing synergies in the energy sector. Heldeweg (2017) noted that organizations need to be resilient so as to deal with the various shifts both in governance as well as in environmental changes. Regulatory agencies establish environmental standards, monitor compliance in addition to enforcing regulations in order to mitigate pollution, conserve natural resources and address climatic changes.

Kyriakarakos (2022) opined that harmonization of the policy and institutional framework in order to allow for a single market for the energy sector. Clear institutional arrangements contribute to market stability by providing certainty to investors, operators and consumers. Regulatory agencies monitor market behavior, investigate complaints and enforce consumer rights to ensure that energy services meet public needs and expectations.

2.1.2 Enforcement activities of EPRA in regulating liquefied petroleum gas sector

Enforcement activities in regulating the petroleum sector involve the implementation of laws, regulations and policies to ensure compliance with environmental, safety,

operational and market standards (Elizondo & Mejia, 2023). Effective enforcement activities are essential for ensuring the responsible and sustainable management of the petroleum industry, protecting public health and the environment as well maintaining the integrity and efficiency of petroleum industry. Enforcement activities include reviewing and approving emergency response plans, conducting drills and exercises and assessing operator readiness to respond to accidents.

LPG companies are required to submit data and reports on production, reserves, sales and financial transactions to regulatory authorities for transparency and accountability purposes. Monitoring of the market is equally done by the regulators in order to prevent anti-competitive behaviour, market manipulation and price gouging (Mathews, 2014). Enforcement activities as far as market oversight is concerned include investigating price-fixing schemes, collusion among market players as well as unfair trade practices to ensure a fair and competitive marketplace. Regulators have the authority to legal actions against violators of petroleum regulations including fines, penalties and sanctions, suspending or revoking permits or licenses in addition to pursuing civil or criminal prosecution for serious violations (Chandra, 2023). Having a clear governance program on the way in which they are going to carry out enforcement activities is very essential (Rochman et al., 2023).

Environmental protection is a fundamental area that is heavily focused by the LPG regulators. Enforcement activities focus on preventing and mitigating environmental impacts associated with LPG operations such as air emission and habitat destruction (Goldstein et al., 2014). Additionally, regulatory agency enforces safety standards to protect workers, communities and infrastructure from hazards associated with LPG activities, including explosions, fires and accidents. The manner in which the organization is structured equally determines its effectiveness as well as efficiency in

service delivery (De Wit & Meyer, 2009). The structure will again have an impact on how regulations and controls are being conducted.

Situmeang (2023) carried a study on law enforcement and protection in the perspective of the consumer in Indonesia and the results indicated that the quality of law enforcement is appropriate in propelling LPG usage. Supervision of LPG activities are very essential so that the dealers and all the stakeholders don't take advantage of the consumers. Where there are no check and balances, then there is likelihood of misuse and deviations from the expectations. Frequent and sufficient activities meant to regulate the LPG industry. Another study carried in Indonesia by Rochman et al. (2023) on complexity of the governance in relation to subsidies in Indonesia's LPG industry. The main objective was to analyse the government subsidies on the basis of institutional approach. The study applied institutional theory, and the results emphasized the integration of activities on the enforcement operations so that efficiency can be achieved.

Elizondo and Mejia (2024) carried study in Mexico on petroleum industry where they analysed 24 regulatory instruments. The findings noted that there are proper and sufficient regulations, but they are not being adequately implemented since there is inadequate capacity from the regulatory agencies to carry out the enforcement.

On the other hand, Lloyd (2014) in a study in South Africa about the status of LPG industry. The study observed that the LPG industry is rapidly growing and having clear and elaborate regulatory framework that can be enforced effectively is desirable in order to manage the growth of the LPG industry. The growth of the LPG needs sufficient control systems that have enforcement activities. Growth means more players and hence stringent regulations coupled with elaborate enforcement activities.

Nevertheless et al. (2014) reviewed economic regulation of liquid fuels in South Africa. The study noted that regulation are majorly narrow fixed and this has affected various components of regulations. Meteku et al. (2019) studied how LPG is transported in Ghana and the objectives was to determine the safety measures of the transportation and how well they can be enforced. Laxity in enforcement activities can lead to accidents and eventual dangers to the public and the users as well. Establishing and enforcing safety standards for the production, storage and transportation as well as distribution of the LPG. Regular inspections and audits to ensure compliance with safety regulations, thereby reducing the risk of accidents and improving overall industry safety which is very essential.

The impact of energy regulatory authority on regulating the LPG industry can be significant, influencing various aspects of the industry from safety standards to market competition. Kimemia and Annegarn (2016) conducted a study in South Africa where they assessed interventions in the domestic LPG specifically looking at the major challenges as well as the lessons that have been learnt. The study recommended the need to roll out various projects in the country but also ensure that there is proper regulatory framework in addition to stringent enforcement of the regulations.

Additionally, Khadija (2016) studied reverse logistics and the effect it has on performance of LPG companies in Kenya while Akyuz and Celik (2015) researched on the application of CREAM human reliability model and cargo loading process of LPG tankers and they noted that safety is a critical concern for the LPG stakeholders. Safety concern especially in the slums where gas are sold everywhere and, in some cases, even in closed rooms is a cause for alarm (Oueidat et al., 2015).

Accordingly, Wabobwa (2011) conducted a study examining how oil price regulation affected the financial performance of the National Oil Corporation of Kenya (NOCK). The research focused on a twelve-month period from July 2010 to June 2012, using data obtained from the organization's audited semi-annual financial reports. The findings indicated that government-imposed price controls had a significant impact, notably contributing to the decline in profit margins among oil companies. The study only captured the price regulation activity only thereby leaving a gap in various actions and roles of the agency in regulating liquid petroleum gas sector. Regulating the pricing of LPG to protect consumers from price gouging while ensuring fair returns for producers and distributors. Implementing subsidies or price controls to make LPG affordable for lower income households, promoting its use as a cleaner energy source.

This has in effect led to many oil firms engaging in dubious means of achieving higher profits at the expense of the good of the customers. Dadoh (2013) studied price implications in regulating petroleum oil in Kenya where she used primary data collected through questionnaires and descriptive analysis carried out. The findings showed that regulation of prices have adverse effect on pricing strategy; marketing strategies used by the oil dealers were almost the same before and after introduction of the price controls and that most firms were more innovative so that they can deal with the new regulations that are brought by the agency.

Additionally, Wanyama (2010) did a study on effectiveness of energy (petroleum and gas) regulations in Kenya. The study revealed that Kenya has made tremendous steps in ensuring effective energy regulation by coming up with various laws meant to regulate the energy sector. These reforms are meant to increase operational efficiency of the regulating agency and to ensure that there is sanity and harmony in the energy

sector. These reforms have enabled EPRA to improve on various matters in relation to operations. There are still challenges even with the introduction of the new ACT especially on matters to do with fuel adulteration and sale of petroleum in undesignated areas (Wanjiku, 2011). Efforts by EPRA to coordinate with various agencies in order to reduce the fuel adulteration menace has not borne the desired fruit.

Operative activities are meant to ensure that the set regulations and procedures are followed as required. Whereas a lot of attention has been given to reforms in the institutions, very little has been done to ensure that the operations of the agencies charged with the responsibility of carrying out regulatory activities are supported so that their mandates are effectively implemented (Perderson & Bofin, 2019). Political interference by the political elite have hindered operations of the agency especially in relation to enforcement. Politicians are fond of engaging in matters that propel some political connotations. Clear regulatory framework coupled with strict implementation in addition to effective scrutiny of the process is essential.

2.1.3 Effectiveness of EPRA in ensuring compliance among Liquefied Petroleum gas dealers

Government and regulatory authorities impose safety regulations to minimize the risks associated with handling, storing and using LPG. The regulations include requirements for safe storage facilities, transportation vehicles, equipment maintenance, leak detection systems, emergency response plans and employee training programs to prevent accidents, fires and explosions (Nicolaus & Thalib, 2020).

Regulatory compliance is essential for ensuring the safe, sustainable and responsible operation of LPG sector, protecting public health and safety, minimizing environmental impacts and maintaining consumer confidence in the LPG products and services. Effective regulatory frameworks, enforcement mechanisms, industry standards and stakeholder engagement are critical for achieving and maintaining compliance across the LPG value chain. Compliance with consumer protection regulations involves transparent pricing practices, accurate product labelling, fair competition and prompt resolution of customer complaints and grievances (Olujobi et al., 2018). Compliance with quality standards involves regular testing, certification and inspection of LPG products to verify compliance with prescribed specifications for odorant content, calorific value, vapour pressure, sulphur content and other parameters.

Petroleum market is very saturated, and this could be due to the fact that it is a very lucrative and profitable market to venture into (Macheo & Omiti, 2003). Any business that provides for a steady profit without a lot of marketing will definitely attract many potential competitors. With the stiff controls being done and the endless energy reforms currently being experienced in Kenya, consumers are bound to benefit immensely. Government regulations and creation of various acts of parliament to cater for the legal and policy issues in the energy sector have brought sanity in the petroleum industry (Ombungu, 2011).

Energy consumption is widely used across the country and in fact, it has become the common denominator in production system of the country. The reforms in the energy started way back in early 90s and in 1994, the liberalization of the industry took place leading to mushrooming of independent oil and gas companies (Wanyama, 2010).

The liberalization of the oil sector has come with energy reforms which require compliance. It has been noted that violations of the set rules and procedures have been identified as the major causal factors in workplace accidents (Dahl, 2013). These violations can either be intentional or sometimes are intentional.

Samuel et al. (2013) conducted a study in Malaysia about petrochemical industry where they assessed the sustainable production indicators and established that the level of compliance depends on the level of awareness as well as cooperation among the key industry stakeholders. The study applied explanatory design and used descriptive and inferential statistics. The results noted that when the stakeholders are aware of the rules then it becomes easier for the government agencies to operate since there is likelihood of compliance.

Additionally, Willdan and Gunarto (2019) opined that law enforcement is very important in ensuring that there is sanity in the LPG industries to avoid agents manipulating the industry system to the disadvantage of the consumer. Some of the gas dealers actually engage in acts of business which may be regarded as criminal to a certain extent. Nicolaus and Thalib (2020) revealed in their study on effectiveness of enforcing the law against criminal acts in the industry and trade that there are some acts in the industry and trade which requires for more investigators and officers so that such culprits can be fished out and sanity normalized.

When rules are set then there needs to be compliance and ignorance is no defense. For effective compliance with the set regulations, there is need to ensure effective enforcement. Dahl and Kvalheim (2016) in their study on safety compliance and safety climate in oil and gas industry indicated that where there is extensive knowledge on effective management are generally a recipe for improved compliance.

Their study concluded that there is a relationship between compliance and regulation and a clear demonstration that the propensity to act according to the prevailing rules, regulations and procedures are influenced by the degree of awareness and the climate in which the firm is operating in. Enforcement activities are very vital in ensuring that rules and regulations set by the authorities are adhered to.

Enforcement ensures that actions that are prohibited by the regulating agency are stopped. It works well in curtailing the behavior of the participants in the oil industry. Enforcement of laws especially regulations on monetary penalties has been a big challenge to the petroleum industry in many African Countries (Ambituuni et al., 2014). Ambituuni et al. (2014) further noted in their study that, even though there has been a lot of environmental safety posed by activities in the petroleum industry especially downstream, institutional arrangements by many firms have not been adequate. Inspections and warning to ensure full compliance have not borne fruits and hence the need to ensure stringent enforcement activities that will ensure effective adherence to the law (Olujobi et al., 2018).

However, there are several inherent dangers that may arise due to some of the enforcement actions meant to control the behavior of market participants (Bruno et al., 2017). There are beliefs that the use of enforcement in curtailing behavior of industry players may just be short-circuit and might not achieve the desired results. Some dealers may come up with some unorthodox means to beat the rules and regulations that have been set. Stringent enforcement of the regulations is not a guarantee that there will be equal measure with compliance by the stakeholders (Olujobi et al., 2018).

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However, Muthini et al. (2017) carried a study in Kenya on how petroleum supply chain management is influenced by the government's role. The study used primary data and quantitative data was analyzed. The study concluded that there is need to involve stakeholder in all the regulatory processes so that they are made aware and

own the process. Policies should be put in place that ensures right regulations but with clear enforcement system that is allowed by the stakeholders.

Additionally, Shupler et al. (2021) studied LPG systems using pay as you in Kenya and how it has supported the utilization of the sustainable green energy especially in the urban setup. Novel smart meter data was used and results indicated that there is safety of the pay as you go system. This can be attributed to the fact that it does not require a lot of control and enforcement.

2.1.4 Institutional capacity and challenges and regulation of liquefied petroleum gas sector.

The capacity of an energy regulatory authority plays a vital role in the effective regulation of the LPG sector. The capacity of the energy regulatory authority is essential for developing, implementing and enforcing regulations that govern the LPG industry (Agarwal et al., 2021). By enhancing regulatory capacity through investment in human resource, institutional capabilities and technological infrastructure, regulatory authorities can effectively safeguard public safety, protect the environment, ensure product quality and promote sustainable development of the LPG sector.

The capacity of an energy regulatory authority to effectively regulate the LPG sector encompasses various elements such as legal and institutional framework, human resource and expertise, technical infrastructure, financial resources and regulatory processes and procedures (Mondliwa & Roberts, 2014). Regulatory authority should have a clear legal mandate and institutional structure for regulating the LPG sector. These may include statutory powers, jurisdictional scope, organizational structure and governance mechanisms for decision making, accountability and transparency.

Consequently, Regulatory capacity relies on skilled personnel with expertise in energy policy, technical standards, safety regulations, environmental management, economics, law and enforcement. There is need for the authority to have qualified staff that are responsible for policy analysis, regulatory development, and compliance monitoring, enforcement and stakeholder engagement. On the other hand, technical infrastructure is essential for regulatory activities such as data collection, analysis and reporting (Kivevele et al., 2010). They include information systems, databases, laboratory facilities, monitoring equipment and communication networks to support regulatory decision-making, risk assessment and enforcement efforts.

Sufficient financial resources are equally necessary to fund the operations and activities of the regulatory authority (Mittal et al., 2018). The resources include budget allocations for staffing, training, infrastructure development, enforcement actions, public outreach and regulatory research and analysis. It is worth noting that sustainable funding mechanism such as user fees, government appropriations or even sector levies may be established to support regulatory operations of the regulating agencies. Having adequate funds without proper processes and procedures is not helpful to the organization (Agarwal et al., 2021). Effective regulatory capacity requires well-defined processes and procedures for regulatory decision-making, rulemaking, licensing, permitting, inspections, enforcement actions and appeals (Colomer et al., 2020). This also requires clear guidelines, timelines and performance metrics to be established in order to ensure consistency, transparency and accountability in regulatory actions.

According to De Wit and Meyer (2009), the effects of organizational structure can stretch into nearly every type of measurable performance. The manner in which the organization is structured determines its effectiveness as well as efficiency in service

delivery. The structure will again have an impact on how regulations and controls are being conducted. Melyoki (2017) examined petroleum sector in Tanzania where he focused on the institutional context and noted firms with greater governance reforms will advocate for more resources that will enable it to comply with the regulations that have been put in place.

Dospial-Borysiak (2017) in a study in Norway on model of state management of petroleum found out that a mature institutional capacity coupled with adequate involvement of the industry stakeholders is fundamental in regulations of the petroleum industry. Marcel (2013) carried out a study on prospects for good governance in petroleum sector in Lebanon and the findings showed that the slow institutional and legal framework has been occasioned by the low administrative capacity, transparency and risk for corruption. It is prudent to note that availability of adequate human and financial staff are very essential in ensuring that there is successful regulatory practice in the sector.

Managers are the key players in ensuring full adherence to the regulations that are set. Hanretty and Koop (2013) studied the both the formal as well as the actual independence of the regulatory institutions concluded that the chiefs as well as senior managers are just appointed as proxies for politics and in fact, they don't have independence. They however noted that formal independence enhances regulations since the managers can effectively allocate resources in such a way that ensures the fullest potential of the agency is achieved. Kabakova and Plaksenkov (2018) on their study where they sought to determine the factors that affect financial inclusion reasoned that political factors have been the major cause of capacity determinants for regulators. There has been political interference, and it has affected resource

allocation, appointments as well as enforcement of agency activities (Kabakova & Plaksenkov, 2018).

The capacity for a firm to expand its operations or increase its efficiency is dependent on a number of factors including the type of the firm whether private or public and the market share of the firm. Sheen (2020) studied the behaviour of both public and private firms in chemical industries in the United States of America and concluded that private firms are more likely to make incremental operational capacity much faster and effective than public firms. Public firms are slow in increasing their capacity even during high public demand due to several constraints that are inherent with the nature of public administration. Establishment of institutional framework alone is not enough but strengthening the regional administration and creating a functional relationship between the central and regional administrators in addition to the stakeholders would surely contribute to increased capacity by the firm to handle regulatory roles (Jovanic & Sredojevic, 2017).

Capacity building in the regulatory agency is also a factor that increases the operational efficiency of the institution. Regular capacity building of the staff especially in the areas that require day to day operations is very vital especially for an organization carrying out regulatory operations or security issues (Kagame & Ndahiriwe, 2021). Ensuring that the staff employed are sufficient and that they are further equipped with necessary knowledge and skills to enable them carry out their mandates effectively and efficiently. Having sufficient staff is not enough but ensuring that they are well equipped with the technical skills that conforms to the positions that they are allocated. Ensuring that the firms utilize high level of equipment makes the operations much easier. Technology is an essential in

determining the capacity of a firm to carry out its mandates as stated in the vision and mission.

Additionally, Kariuki and Karihe (2023) in a study in Nairobi about strategies that are competitive that can be utilized by LPG companies in Nairobi. The study used questionnaires in collection of data and the study was based on three theories namely: competitive strategic theory, RBV theory as well as dynamic capabilities theory. The study recommended the use of prudent systems but with improved organizational capacity.

2.2 Summary of research gaps

Studies have been carried out in oil industry in various countries in relation to regulatory framework. However, very few studies have been conducted on regulation of LPG gas in Uasin Gishu County. Further, many studies carried out have revolved about practices in the regulatory framework in the oil sectors leaving out EPRA. Studies have likewise been undertaken on legal and policy framework of regulatory practices of oil industries, but hardly a study have been conducted on EPRA regulatory laws, policy as well as institutional framework. The studies have further dwelt on institutional structure and governance systems that are applied to ensure regulatory systems are enforced. This has left a gap that was explored by this study. This study emphasizes on institutional capacity in regulating liquid petroleum gas sector in Uasin Gishu County, Kenya. Mathews (2014) noted that institutions should be structured in such a way that they solve the problems they were intended for.

Additionally, studies undertaken have targeted the established companies especially major dealers leaving out even the small retailers in the LPG sector. This study filled the gap by undertaking a study by looking at all the key players including vendors

with a dozen cylinders. With only one importer of LPG gas in the country, this has created a gap where there is monopoly of distribution since there is no competitor. This has left a gap in supply and given room for manipulation by the distributor and further strain the enforcement of the regulations set by the authorities.

Previous studies from Agaba and Shipman (2007) who did a study on oil fuel energy reforms; Wanyama (2010) studied effectiveness of energy (oil and gas) regulations in Kenya whereas Akech (2005) studied development partners and governance of Oil fuel energy in Kenya but no known studies have been done on the impact of the regulator. In the recent past there have been mushrooming of petrol stations and the cooking gas dealers within estates, small shopping centres without licensing or with minimum requirement by law. This has resulted in the liquid petroleum gas sector being very crowded causing not only a cut-throat competition but also posing security and safety concerns among citizens and the authorities as well.

Research on the impact of energy regulatory authority in regulating the LPG sector has made significant strides, but several gaps remain to be addressed. There is need for empirical studies assessing the effectiveness of regulatory interventions implemented by energy regulatory authorities in LPG sector. Likewise, limited research examined the perspectives, interests and experiences of diverse stakeholders affected by LPG regulation, including LPG companies, distributors, regulatory authorities, government agencies among others. Studies equally need to identify barriers to compliance, enforcement challenges and best practices for improving regulatory compliance and enforcement outcome. These have left gaps in supply and given room for manipulation by the distributor and further strain the enforcement of the regulations set by the authorities.

2.3 Theoretical framework

The study will be informed by the following two theories: Stakeholder theory and institutional theory. Stakeholder theory applies to objective one while institutional theory applies to objectives two, three and four.

2.3.1 Stake holder theory

Edward Freeman (1984) proposed the stakeholder theory. He stated that effectiveness of institution is determined by the ability of the organization to satisfy stakeholders as well as other agents that have a stake in the organization. The stakeholder theory is grounded in the idea that organizations exist to serve a wider societal role, not just to generate profits for shareholders.

It views corporations as part of a broader social framework, where their operations influence and are influenced by various groups and individuals. These stakeholders, ranging from employees and customers to communities and investors, are all linked to the organization's goals and outcomes (Wabwa, 2011). An organization's success, therefore, is increasingly measured by how well it creates value for all its stakeholders, not just its owners. Stake holders in this case that are affiliated to EPRA are oil marketers, Kenya Pipeline Company, petrol stations as well as the government through ministry of energy of Kenya.

According to Freeman and Reed (2010), the term "stakeholder" can be understood in both narrow and broad contexts. In its broader usage, it refers to any individual or group that either affects or is affected by the achievement of an organization's objectives. This includes a wide range of actors such as employee groups, customers, investors, business associations, competitors, and the general public. Scholars like Donaldson and Preston (2005) and Ulrich (2008) emphasize that the role of

stakeholders in an organization is too significant to ignore. As such, corporate leaders are encouraged to factor in stakeholder interests when making key decisions (Blair, 1995; Manville & Ober, 2013). Involving stakeholders in decision-making processes can improve organizational effectiveness and reduce potential conflicts (Turnbull, 2004).

Stakeholder theory is highly relevant in understanding the impact of an energy regulatory authority on regulating the LPG sector because it provides a framework for identifying, analyzing and managing the interests and concerns of various stakeholders affected by regulatory decisions and policies. By applying stakeholder theory to the regulation of LPG industry, regulatory authorities can develop more inclusive, responsive and sustainable regulatory frameworks that balance the interests of stakeholders while promoting the safety, efficiency and sustainability of the sector. This theory is relevant because EPRA officers are serving the interest of the public and other general stakeholders. Their actions should be to serve the people and ensure satisfaction for all stakeholders in the sector. The policies and regulations brought on board should be well thought and all stakeholders involved in formulation. This theory applies to objective one.

2.3.2 Institutional theory

Institutional theory is a concept from organizational studies that examines how institutions defined as enduring structures, rules, norms and routines, influence the behaviour of individuals and organizations within a given context. It explains the process through which structures, including schemes, rules, norms and routines become established as authoritative guidelines for social behaviour.

Institutional theory primarily examines the enduring and deeply rooted aspects of social structures. It emphasizes the processes through which organizational structures

like rules, norms, routines and established practices, are created and gradually accepted as authoritative frameworks guiding societal behaviour (Scott, 2014). The theory explores how these elements emerge, spread, become embedded in systems, are adapted over time, and eventually decline or are phased out. In the context of regulatory institutions like EPRA, the development of such institutional structures provides a foundation for establishing effective regulatory frameworks and enforcing compliance with legal provisions.

Those in support of this theory tend to argue that organizations are different and they exist in different economies thus reacting differently in similar economy or situations or challenges. Social, economic, political and technological factors comprise of the institutional structure of a certain environment which in effect provides firms with advantage engaging in specific types of actions where organizations will perform better when there is institutional support.

According to Scott (2014), institutional theory outlines three core pillars that support institutional structures: the regulatory, normative plus cultural-cognitive pillars. The regulatory pillar focuses on the enforcement of laws, rules in addition to sanctions, with compliance typically driven by formal authority and structured oversight. The normative pillar, on the other hand, centres around societal norms and values, what is considered appropriate behaviour, where compliance arises from a sense of moral or social obligation. Finally, the cultural-cognitive pillar is based on shared beliefs, meanings, and symbols that shape collective understanding and guide behaviour through commonly accepted interpretations of reality.

This theory helps explain how regulatory institutions respond to external pressures, internal dynamics and institutional change. By examining the institutional

environment, regulators can better understand the constraints and opportunities for regulatory interventions and anticipate potential challenges or resistance from the industry stakeholders. Institutional theory provides a valuable lens for understanding the dynamics of regulatory governance in the LPG sector, guiding regulatory authorities in navigating institutional landscapes, building regulatory legitimacy, fostering institutional change and promoting regulatory effectiveness to societal needs and demands. This theory applies to the study since it applies to objectives two, three and four that deals with capacity of EPRA.

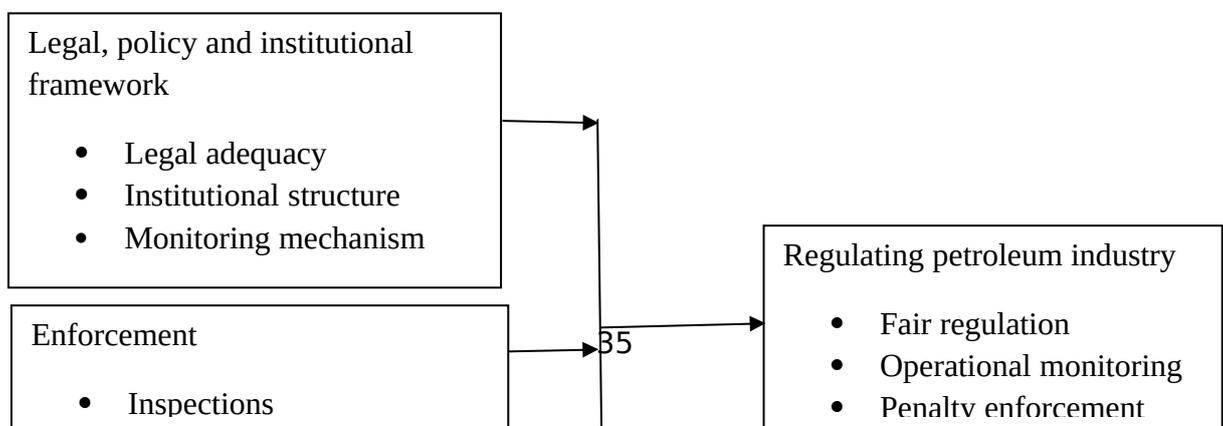
2.4 Conceptual framework

Conceptual framework is a theoretical structure or model that outlines the key concepts, variables, relationships and assumptions underlying a research study or inquiry. It further provides a systematic framework for understanding, analyzing and interpreting the phenomenon under investigation by organizing ideas, theories and empirical evidence into a coherent framework. The anticipated link between independent and dependent variables is depicted in the conceptual framework. Independent variable is energy and regulatory authority which is measured in terms of legal, policy and institutional framework; enforcement; compliance; as well as institutional capacity. The dependent variable is regulating liquid petroleum gas sector.

Independent variable

variable

Dependent



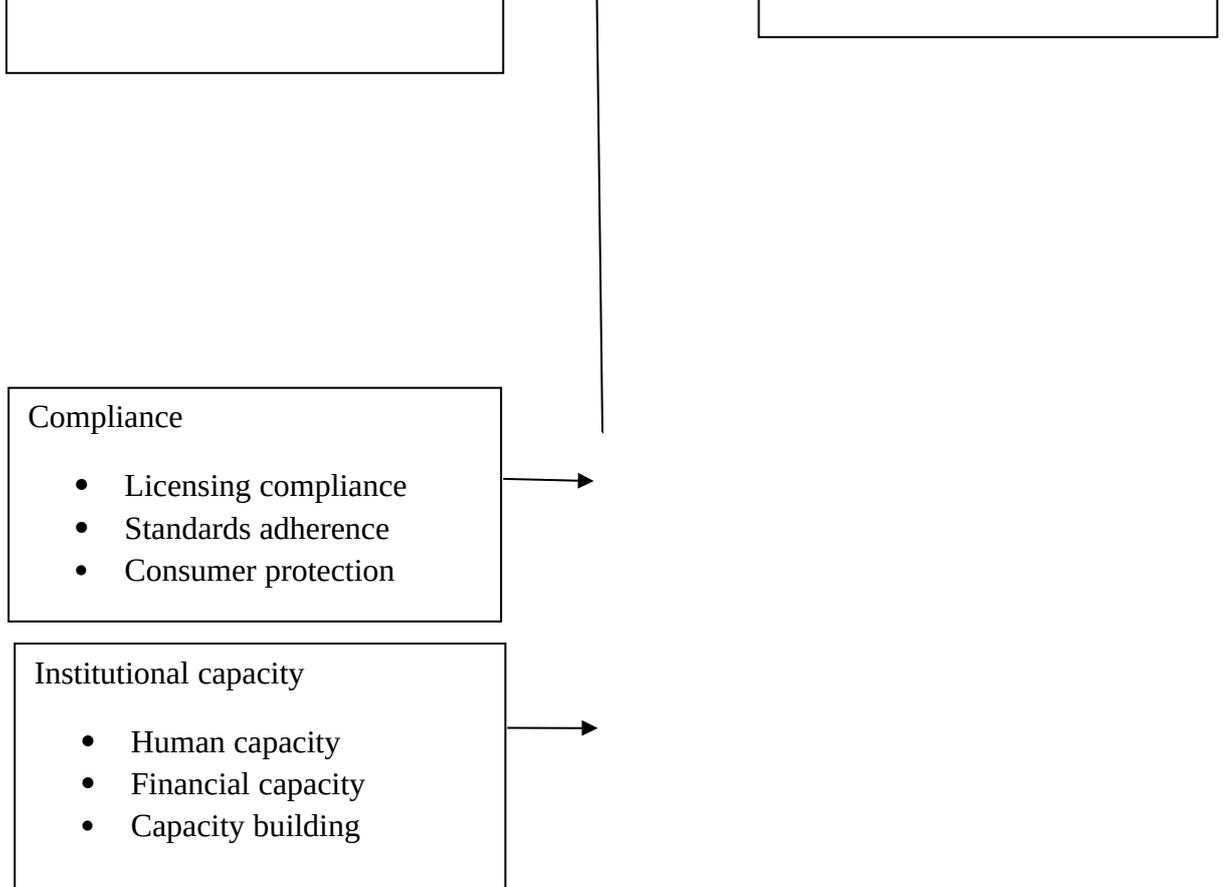


Figure 2.1 Conceptual framework

Source: Researcher, 2025

Legal, policy and institutional framework: Legal framework includes laws and regulations governing the production, distribution and use of LPG; policy framework are the manner in which the regulator wants to handle a certain matter; and institutional framework involves structures and institutions responsible for implementing and enforcing LPG regulations

Enforcement: This is the process of ensuring compliance with safety, environmental, quality and consumer protection regulations through monitoring, inspections and enforcement actions. It is about application of legal, administrative and regulatory measures to non-compliance, address violations and promote adherence to regulatory standards.

Compliance: This is the act of adhering to or conforming with the laws, regulations, policies, standards or guidelines relevant to a particular industry such as LPG industry.

Institutional capacity: This is the ability of an organization, institution or system to effectively carry out its functions, achieve its objectives and respond to the challenges or demands. It includes aspects of human resource, financial management, infrastructure, technical expertise, and organization culture and governance mechanism.

2.5 Interactions between the independent and dependent variables

Understanding interactions between variables allows for a more comprehensive analysis and can significantly impact the conclusions drawn from the study. However, regulatory functions help ensure that the liquid petroleum gas sector operates efficiently, safely and fairly. Legal, policy and institutional framework of Energy Regulatory Authority, operational activities, regulatory compliances in addition to capacity and regulation of petroleum industries have interaction so that regulatory functions are done. The legal, policy and institutional frameworks create the platform or the basis for regulation. The study seeks to draw the impact of energy and petroleum regulatory authority on regulating petroleum industry.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This section covers research design, study area, target population, sampling procedure in addition to sample size, data collection as well as data analysis.

3.1 Research design

According to Kothari (2017), study design is the overall plan employed in a research study so that the research questions can be answered. It shows the steps to be taken in carrying out the study. The study employed explanatory research design and adopted a mixed method approach. Explanatory research design is an empirical research design that is usually used in investigating contemporary phenomenon and focuses on the case's dynamics usually within the context of the real-life situation. This research design was used to explore a phenomenon and get an understanding of how and why something occurs. It explains the causes and consequences of a well-defined problem. It mainly focuses on the use of qualitative data where interviews, observation as well as analysis of both primary and secondary data sources are utilized (Hancock et al., 2021). In other cases, this type of design also employs quantitative data collection methods. Both secondary and primary data were used in the study.

Explanatory design captures an array of various perspectives compared to a single view from a person thereby giving a greater opportunity to gain an in-depth understanding of the subject matter by reducing any form of biasness (Ridder, 2017). It is relevant to this study since it requires one to engage in the investigation of a problem in the business, examination of the alternative solutions to the said problems and eventually proposes the most effective solutions by providing evidence supporting the solutions (Ternowsk, 2015). EPRA's regulatory work is to ensure that

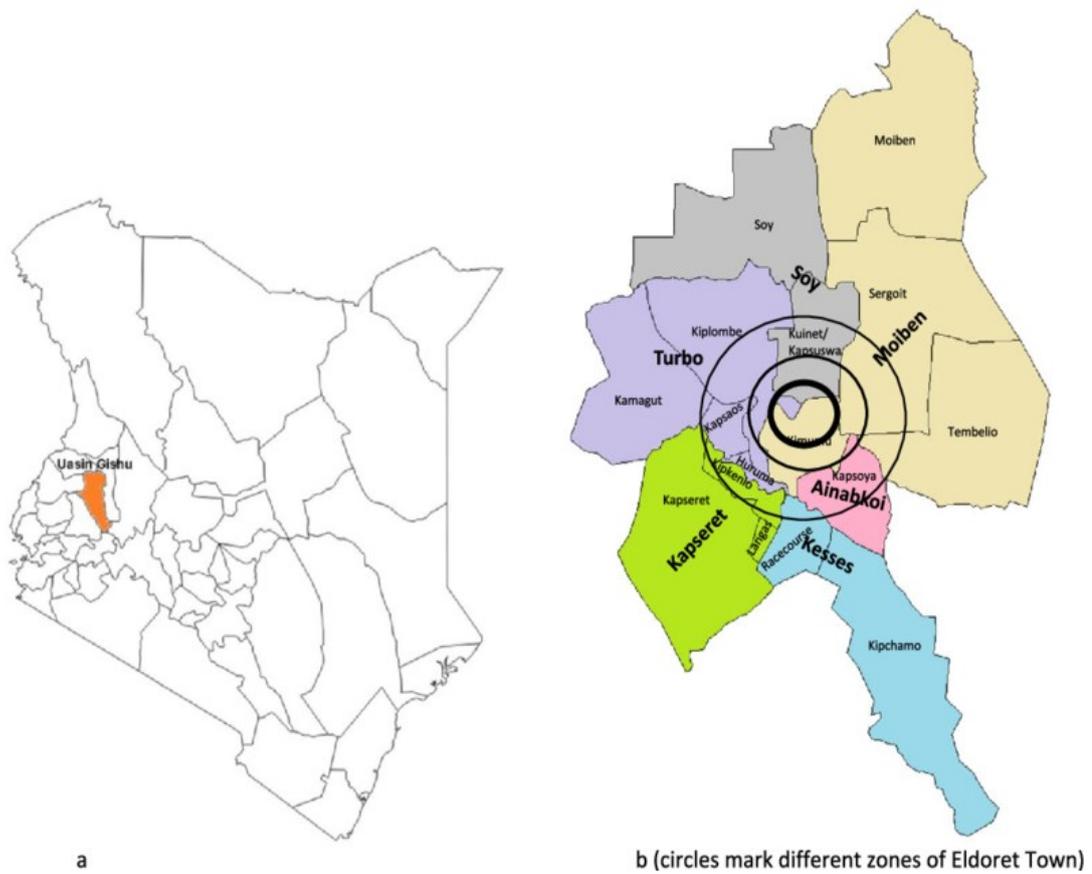
the regulatory framework set by the agency is adhered to so that the business can effectively survive within the provisions of the law and regulations.

3.2 Study Area

The study was carried out in Uasin Gishu County. The study covers all the sub-counties in Uasin Gishu. The study area was ideal since it has an LPG depot and the highway for transit goods passes the county and hence easy for infiltration of export liquefied petroleum products. LPG plays a significant role in providing clean energy for cooking and heating. The demand for LPG in the study area has been increasing due to its efficiency and environmental benefits compared to traditional fuels like wood and charcoal. The county has several suppliers and retailers of LPG who contribute to local business and enhance energy access to residents. Additionally, the government and private sector have been working on improving the distribution infrastructure to ensure a steady and reliable supply of LPG in the area.

This study focused on Uasin Gishu County, situated in Kenya's Rift Valley region and included all six of its sub-counties: Kesses, Ainabkoi, Moiben, Soy, Turbo, and Kapseret. Uasin Gishu is home to a diverse population of over 1.1 million people and includes both urban centers. A map that outlines all the sub-counties of Uasin Gishu County is attached in figure 3.1.

Figure 3.1 Map of Uasin Gishu County



Source :Google map (2025).

3.3 Target Population

The populace that a scientist needs in generalizing the results of the research is known as target population (Kothari, 2017). This is the specific group of individuals or entities that the research aims to study or make inferences about (Flick, 2015). Target population is crucial because it allows researchers to gather relevant data from the specific groups having dealings with regulatory authority, EPRA. It ensures that the research findings of the study accurately reflect the realities and dynamics of the industry. In this context, target population has been set to include various stakeholders in the LPG sector such as distributors, retailers, dealers, regulators and policy makers. The kiosks, stores and sidewalks were deemed to represent the consumers since they are consumers, and they equally interact with the consumers on a daily basis. The target population is stated in table 3.1 and table 3.2.

Table 3.1 LPG dealers in Uasin Gishu County

	Sub-Counties						Total
	Turbo	Moiben	Soy	Ainabkoi	Kesses	Kapseret	
Petrol stations	33	21	22	18	29	19	142
Supermarkets	49	26	36	25	37	29	202
Sidewalks (consumers)	27	29	18	26	23	16	139
Stores (consumers)	41	56	36	28	42	27	230
Kiosks (consumers)	26	11	9	12	20	18	96
Total	176	143	121	109	151	109	809

Source: Researcher, 2025

Table 3.2 LPG stakeholders

No	Stakeholders	Number
1	EPRA officials (department of petroleum and gas)	3
2	LPG Importer	1
3	LPG distributors (Depots)	15
4	KRA officials (department of petroleum and gas)	7
	Total	26

Source: Researcher, 2025

3.4 Sampling design and Procedure

According to Gay (2009), sampling technique is the process by which a number of people are selected for the study from a larger group in a manner that the individuals selected are representation of the larger group. Sampling means selecting a given number of subjects from a defined population as representative of that population. According to Creswell (2018), any statement made about the sample should also be true of the community. This study adopted purposive sampling to participants from all LPG dealers and retailers. A sampling procedure is a method used to select a subset of

individuals or entities from a larger population for the purpose of conducting research (Kothari, 2017).

In order to determine the sample of the population; the researcher used Yamane's (1967) formula which is as follows. It is useful since inferences and conclusions reached after the study can be generalized to the entire population from which the sample was gotten. It is also best suited when using categorical variables, especially when the confidence coefficient is 95%.

$$n = \frac{N}{1 + Ne^2}$$

Where n = the sample size

N = the size of population

e = the error of 5 percent

$$n = 809 / 1 + 2.0225 = 809 / 3.0225$$

$$n = 267$$

Table 3.3 Sample size for LPG dealers in Uasin Gishu County

	Sub-Counties						Total
	Turbo	Moiben	Soy	Ainabkoi	Kesses	Kapseret	
Petrol stations	11	7	7	6	10	6	47
Supermarkets	16	8	12	8	12	10	66
Sidewalks (consumers)	9	10	6	8	8	5	46
Stores (consumers)	14	19	12	9	13	9	76
Kiosks (consumers)	8	3	3	5	7	6	32
Total	58	47	40	36	50	36	267

Source: Researcher, 2025

The sample size is 267 drawn from 809 dealers. Yamane formula was used in distributing the samples to various strata. Kiosks, small stores, and sidewalk vendors

are treated as consumers because they buy LPG in small quantities mainly to serve nearby households and low-income users. Their experiences reflect the daily realities of the ordinary citizens, who relies on these outlets for convenient and affordable access to LPG. They therefore provide a reliable picture of the concerns, challenges, and safety issues faced by the wider public. Table 3.4 Sample size for LPG stakeholders

No	Stakeholders	Amount
1	EPRA officials (department of petroleum and gas)	3
2	LPG Importer	1
3	LPG distributors (Depots)	15
4	KRA officials (department of petroleum and gas)	7
	Total	26

Source: Researcher, 2025

Since the population on the LPG stakeholders are generally small, a census was applied on the population (26) in number. This group was interviewed.

3.5 Data collection instruments

Data collection instrument is the tool that is used to gather specific information. Data collection instruments are selected based on the research objectives, the type of data needed, the characteristics of the target population, and practical considerations such as budget, time constraints and access to participants. Primary data was collected using research questionnaires and interview schedule. Saunders et al. (2007) contend that questionnaires are a useful data collection device because they allow the researcher to anticipate what is essential plus how to quantify the variables of concern. By the use of questionnaire, data was collected by questions and answers arrived at through a 5-point Likert scale format to obtain individual ratings. The study further used interview schedule on liquefied petroleum gas stakeholder (LPG stakeholder) who were twenty-six (26) in number.

3.5.1 Piloting

Piloting refers to the preliminary testing or trial run of a research study's methods, procedures, instruments as well as interventions before the full-scale implementation of the tools is done. Piloting allows the researcher to identify and address any potential issues or problems that may arise during the actual study, ensuring the validity and reliability of research findings (Flick, 2015). A pilot study was carried out in Bungoma County since it is near the border where some dealers preferred to purchase cheaper LPG from Uganda and due to the fact that there is a lot of infiltration of LPG from Uganda. The problems being faced in Uasin Gishu County concerning LPG are similar to those in Bungoma County. Uasin Gishu County, like Bungoma County is infiltrated by cheap LPG from Uganda (cite sources).

The sample for the study was 26 respondents (22 dealers & 4 stakeholders) which were about 10% of the sample population. This is a significant number to draw the conclusion on reliability and validity of the instruments. These respondents were not part of the main study for this study but only used to ascertain the reliability of the data instruments. This is meant to ascertain the reliability of the instruments used in data collection. The study applied Cronbach's alpha to determine reliability in the pilot study.

Pilot study allows one to refine the instruments, ensuring that they are reliable and valid for the main study. It helps in obtaining accurate and consistent measurements, which is crucial for validity of the study findings. Data was collected from the 26 respondents and entered into SPSS for analysis where Cronbach's alpha was calculated. The results of the pilot study produced alpha value of 0.8 which stated that there is good internal consistency.

3.5.2 Validity of the research instruments

Kothari (2012) defines validity as the accuracy, truthfulness and meaningfulness of inferences that are based on the data obtained from the use of a tool or a scale for each construct or variable in the study. Polonsky and Waller (2010) maintain that methodology must be for internal validity to ensure data measures to provide valid answers to the research questions. He further notes that validity is the degree to which an instrument measures what it purports to measure. Discussing the instruments by the supervisors for both questionnaires and interviews as well as correlating scores where (x is continuous) with scores or classifications from the measure being predicted(y) was used to determine validity of the instruments. An appropriate correlation coefficient was computed, and this depended on the measurement scale. The Pearson Product Moment Correlation was employed to determine the predictive validity of the data. If correlation value is ($>$) 0.8 for values positively related or ($<$) - 0.8 for variables inversely related, data (x) was 0.8 said to have a good concurrent validity.

3.5.3 Reliability of the research instruments

To ensure reliability of the research instrument used, the questionnaires was subjected to a re-test study. Creswell (2018) stated that reliability of research instruments refers to the consistency and stability of the measurements or data collected using those instruments. Reliability of research instruments concerns the degree to which a particular measuring procedure gives similar results over a number of repeated trials (Willimack 2013). Ensuring the reliability of research instruments is essential for producing trustworthy, credible and meaningful research findings that can advance knowledge, inform practice and guide decision making. Test retest was applied in determining the reliability of interview schedule instruments.

The study employed a Cronbach's alpha coefficient to measure the internal consistency of questionnaire. As a general rule a value of $\alpha > 0.7$ was determined as reliable enough for each of the data sets where α is the item being tested for reliable. Cronbach's Alpha is the most widely used coefficient of internal consistency and is computed as follows:

$$\text{Alpha} = \frac{Nr}{1+r(N-1)}$$

Where:

r is the mean inter-item correlation

N is the number of items in the scale

The result of the re-test was used to carry out analysis that helped to determine the reliability of the research questions α was 0.8 stating that the research tools were reliable.

3.6 Data Collection method

Data collection method is the system that is used to gather and analyze specific information and provide solutions to questions and evaluate the results (Willimack, 2013). Study relied on both secondary and primary data. Secondary sources of data critically reviewed, included books, referred journals, legislations Acts, statues, policy documents and accredited sources will be used in the study. The study reviewed reports, literature as well as journals in a bid to collect qualitative data. The interview method was equally used by asking questions. The interview method is a good data collection method since it allows the data collector to get a clear understanding, exploring research subject's views, traits, experiences as well as phenomenon. It also helped in getting the right candidates for the interview, getting a detailed evaluation. The study further employed survey method through the use of survey questionnaires

3.7 Data Collection procedure

Data collection procedure refers to the steps that were used in the study when collecting the data from the respondents. According to (Kothari, 2017) data collection procedure is a step-by-step process that guided the study while the field work is being undertaken. Most techniques for measuring perceptions and attitudes rely heavily on verbal material in the form of interviews or questionnaires. Interviews were conducted by the researcher where each interview lasted for about 30 minutes and themes noted and analysed. The questionnaires were administered to the respondents (LPG dealers) by the researcher and help of research assistant. Structured interview schedule was used to collect data from the LPG stakeholders. A letter of introduction was requested from the University in order to give the researcher authority to collect data. National Commission of Science Technology and Innovation (NACOSTI) for the permit to collect data will also be sought.

3.8 Data Analysis and presentation

The study utilized two methods in the analysis of data. Descriptive statistics were applied on the questionnaires whereas interview schedule data and secondary data were analyzed through thematic analysis. Study used mixed data analysis which enables the researcher to offset the weaknesses inherent in both quantitative data and qualitative data research methods (Creswell & Plano-Clark, 2007). Data analysis of all the variables was done using Statistical Package for the Social Sciences (SPSS) version 21. Qualitative data was grouped in themes having undertaken thematic analysis and presented in narrative form.

Data collected was then sorted and coded before being analyzed using percentages and graphs. Descriptive statistics were used in primary data analysis presented in tables. Descriptive statistics: frequencies, means, percentages and standard deviation (SD) were generated to explain various attributes of the variables under study.

3.9 Ethical issues

An adequate and high degree standard of ethics supported by consistent and well-founded reasons will be adhered to. The information that was provided remained confidential between the researcher and the respondents. This was mitigated by ensuring that no respondents' personal details are on the questionnaire. Mugenda (2008) opines that ethics focuses on the application of the ethical standards in the planning of the study, data collection and analysis, dissemination and use the results. Information on the nature and purpose of the study was adequately explained to the respondents as a means of providing sufficient information before they decide to participate in the research. Permission to carry out the study was sought from Moi University, NACOSTI and from the respondents who participated in the study. The nature and the rationale for the study were thoroughly explained to the respondents by the researcher. The researcher also respected individuals' rights and also safeguard their personal integrity.

CHAPTER FOUR

DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

4.0 Introduction

This chapter presents the data derived from answers to questionnaire and interviews conducted. It also covered background information which comprised of the respondents' age bracket, highest level of education, years the business has been in operation as well as years the respondent has worked in the enterprise.

4.1 Response rate

4.1.1 Questionnaire Response Rate

Respondents were issued with 267 questionnaires. Two hundred and forty-one (241) were dully filled and returned. This amounted to 90.3% questionnaires return rate. This response rate is regarded as adequate for one to conduct research and give a good representation of the sample (Creswell, 2018).

Table 4.1 Questionnaire response rate

Questionnaires issued	Questionnaires returned	Response rate (%)
267	241	90.3

Source: Researcher, 2025

4.1.2 Interview response rate

Table 4.2 Interview response rate

Respondents to be interviewed	Respondents interviewed	Response rate
26	23	88.5

Source: Researcher, 2025

The respondents that were due for interview were 26. However, 23 respondents were available for interview as shown in Table 4.2 gave an interview response rate of

88.5%. This was considered adequate to make conclusive results that represent the entire population.

4.2 Background information

The study sought to find out the gender, age bracket, highest level of education, years the business has been in operation as well as the years the employees have worked in the enterprises. The table also gives the details and summary of the background information and its importance to the study. The inclusion of background information helps in strengthening credibility of the information being provided by the respondents concerning regulatory compliance. It equally makes it possible to see if perceptions of EPRA's regulatory role is different across age groups, educational levels or years of industry experience of the respondents.

The demographic characteristics were important because they help explain the different ways people interact with LPG and respond to regulatory enforcement. Things like age, gender, education, and work experience can shape how individuals understand safety rules, follow guidelines, or notice compliance issues. Including these details ensures the study reflects a variety of perspectives and captures patterns that might be tied to specific groups, making the findings more meaningful and practical.

Table 4.3 Background information

Categories		Frequency	%	Valid%	Cumulative %
Gender	Male	137	56.8	56.8	56.8
	Female	104	43.2	43.2	100.0
	Total	241	100.0	100.0	
Age bracket	21-25	3	1.2	1.2	1.2
	26-30	11	4.6	4.6	5.8
	31-35	78	32.4	32.4	38.2
	36-40	83	34.4	34.4	72.6
	41-45	36	14.9	14.9	87.5
	Above 40	30	12.5	12.5	100.0
	Total	241	100.0	100.0	
Highest level of education	Secondary	104	43.1	43.2	43.2
	Certificate	47	19.5	19.5	62.7
	Diploma	47	19.5	19.5	82.2
	Undergraduate	34	14.1	14.1	96.3
	Postgraduate	9	3.7	3.7	100.0
	Total	241	100.0	100.0	
Years business in operation	0-5 years	108	44.8	44.8	44.8
	6-10	93	38.6	38.6	83.4
	11-15years	29	12.0	12.0	95.4
	Over 16 years	11	4.6	4.6	100.0
	Total	241	100.0	100.0	
Years worked in the enterprise	0-5	129	53.5	53.5	53.5
	6-10	85	35.3	35.3	88.8
	11-15	21	8.7	8.7	97.5
	16-20	6	2.5	2.5	100.0
	Over 20	241	100.0	100.0	

Source: Researcher, 2025

4.2.1 Gender

Study sought to determine which gender dominates the liquefied petroleum gas. The results showed that male respondents were 137 (56.8%) while the female were 104 (43.2%). This indicated that this field of petroleum gas is dominated by male participants. Thompson et al., (2018) noted in a study in Guatemala about LPG stoves

and noted that men are the main decision makers in the usage of LPG in the household.

4.2.2 Age bracket

The age of the respondents was sought in order to determine the majority in the liquefied petroleum gas. Respondents aged 21-25 years were 3(1.2%) while those aged 26-30 years were 11(4.6%). Additionally, those aged 31-35 years were 78(32.4%) whereas those aged 36-40 years were 83(34.4%). The results equally showed that respondents aged 41-45 years were 36(14.9%) and those aged above 40 years were 30(12.5%). The results showed that majority of gas dealers and stakeholders are aged 36-40 years followed closely by those aged 31-35 years. The minority are those aged between 21 and 25 years.

4.2.3 Highest level of education

The level of education was equally important. This could determine the level of understanding of the policies and regulations that have been put in place. Secondary 104(43.1%) whereas the certificate holders were 47(19.5%). Moreover, the results showed that diploma holders were 47(19.5%) and undergraduate degree were 34(14.1%) while postgraduate were 9(3.7%). From the results, the majority of respondents were secondary school dropouts while the minority were those with postgraduate degrees. Nyabuto (2021) established that gas handling is significant with the LPG sector. Those who are educated are more likely to handle the gas better than those with less or little education.

4.2.4. Years in business operation

The years the business has been in operation was important so that the results could determine the resilience the business has gone through on matters compliance and

regulation. This is so because many businesses are not able to conform to the regulations and hence go under. The business that have operated for not more than 5 years were 108(44.8%). Those that have been in operation for 6-10 years were 93(38.6%), while 29 (12%) have existed in liquid petroleum gas for 11-15years. Consequently, the enterprises that have been operations for over 16 years were 11(4.6%). From the results, the findings indicated that majority of the enterprises have been operation for less than 5 years while enterprises that have been operations for more than 16 years were the least.

4.2.5 Years worked in the enterprise

To get the general understanding of the employees and proprietors of the liquefied petroleum gas on matters gas and gas sector, it was prudent to determine the years they have worked in the enterprise and industry at large. Some 129 (53.5% have been working in the enterprises for less than 5 years. The findings further indicated that those that have worked in the business enterprises for between 6-10 years were 85(35.3%). On the other hand, the results showed that employees and proprietors that have been in the business for 11-15 were 21(8.7%). While those that have worked in the liquefied petroleum gas for 16-20 were 6(2.5%). Majority of those in the LPG sector have worked in their organization for less than 5 years.

CHAPTER FIVE

LEGAL, POLICY AND INSTITUTIONAL FRAMEWORKS OF LPG

5.0 Introduction

This chapter deals with the first objective of the study, which is an analysis of the legal policy and institutional frameworks of LPG regulatory and operational practices as highlighted In Table 5.1

Table 5.1 Legal, policy and institutional framework of liquefied petroleum gas

Statement	N	Mean	Std. Deviation
EPRAs legal framework formulation and implementation is adequate	241	4.1762	0.6543
There is clear institutional structure to deal with LPG sector	241	4.7540	0.7976
Mechanism for monitoring of LPG dealers is well structured	241	3.0324	1.8754
There is adequate policy instruments in LPG sector	241	4.1926	0.9102
Stakeholders are involved in policy and legal framework formulation	241	4.8642	0.4328

Source: Researcher, 2025

As indicated in Table 5.1 EPRA’s legal framework formulation and implementation is adequate as represented with a mean of 4.1762 and standard deviation (Std. deviation) of 0.6543. High mean shows that there was agreement among the respondents on the statement. It is the responsibility of EPRA to set safety standards, come up with licensing procedures, determine market competition and ensure effective environmental considerations as well as protection of the consumers. This could be deduced to mean that there are adequate laws and regulations that have been put in place to regulate the LPG sector.

LPG being a very dangerous product, it is vital to have adequate laws since if misused, then there is danger of fire and other harmful hazards. EPRA’s role is essential in maintaining the safety, efficiency and fairness of the LPG sector in Kenya. Countries should come up with policy framework and a roadmap model of how the policy will be implemented as well as sustainable enforcement of the rules (Umar et al., 2018). Key policies that are important are the safety standards and

market regulations. Coming up with enforcing safety regulations to minimize risks associated with LPG usage is very essential.

The findings also indicated that there is clear institutional structure to deal with LPG sector as evidenced by a mean of 4.7540 and std. deviation of 0.7976. A structured institution is very efficient in dealing with regulatory issues. This level of agreement suggests that structural gaps may not be the problem; instead, the challenge may lie in how well these structures are put into action. Structuring ranges from the laws and regulations, policies set and how personnel are arranged. Structuring equally provides operational efficiency thereby making regulatory operations effective and efficient. Legal framework of EPRA involves the energy Act 2019 and LPG (importation and distribution) regulations 2007.

However, respondents only agreed to a moderate degree that mechanism for monitoring of LPG dealers is well structured as represented with a mean of 3.0324 and std. deviation of 1.8754. A good number agreed that mechanisms for monitoring is well structured whereas an equal number did not agree with the mechanisms for monitoring of LPG dealers is well structured. This is contradictory to the statements they made that EPRA has clear institutional structure. This inconsistency indicates that despite having a clear institutional structure on paper, actual monitoring appears uneven or inconsistently applied across LPG dealers. Nevertheless, having not so good and not so bad mechanisms for monitoring of LPG dealers means that the institutional structures that are available are not well utilized by the regulatory staffs, hence creating the gaps.

On the other hand, majority of the respondents agreed to a great extent that there is adequate policy instruments in LPG sector as evidenced in Table 4.4 with a mean of 4.1926 and std. deviation of 0.9102. The high mean is as a results of respondents

recognizing EPRA has put in place adequate policy instruments for guiding the sector. However, the moderate spread in responses shows that while policies exist, their implementation may not be equally felt across all stakeholders. The fact that the organization has adequate institutional policies is a reflection of the need for EPRA to institute clear regulatory framework that is understood by the stakeholders. Policies enable the organization to come up with frameworks to handle various activities and programmes in the organization (Elizondo & Mejia, 2024).

Likewise, majority of the respondents noted that stakeholders are involved in policy and legal framework formulation as presented with a mean of 4.8642 and std. deviation of 0.4328. This high means show there is level of consensus implies that consultation is one of EPRA's most successful regulatory functions, though it also raises the expectation that stakeholder input should translate into better enforcement and compliance outcomes. Involving the stakeholders in policy making makes it easy for ownership of the policy by majority if not all the stakeholders. Participation by the stakeholders ensures that their inputs and opinions are taken into consideration when drafting the policy statement that governs them. Establishment of institutional framework alone is not enough but strengthening the regional administration and creating a functional relationship between the central and regional administrators in addition to the stakeholders would surely contribute to increased capacity by the firm to handle regulatory roles (Jovanic & Sredojevic, 2017). Establish a framework that allows for involvement of various key stakeholders in the LPG sector.

Interview was equally conducted among the key stakeholders. The respondents interviewed were of the view that EPRA typically establishes legal, policy and institutional frameworks for various energy sectors including liquefied petroleum gas. It oversees and regulates the LPG sector to ensure compliance with safety standards,

pricing regulations and environmental policies. It is actually responsible for licensing and monitoring of compliance of various LPG businesses.

“The adequacy of legal and policy frameworks is fundamental for creating a stable, fair and conducive environment for economic activities, promoting compliance, protecting stakeholders and fostering overall societal being. In particular adequate legal and policy framework promotes clarity and certainty on rules and regulations; operations within the established regulations (regulatory compliance), consumer protection, investor confidence; ensures enforcement of contracts and provision for remedies in cases of breach; instrumental in establishing and enforcing safety standards and environmental regulations; and it provides a framework that allows for periodic reviews and adjustments” (DSTR, 1).

Respondents interviewed further noted that EPRA involves stakeholders in policy formulation as well as legal formulation. Involving stakeholders is integral to success of projects, policies or initiatives as it enhances decision making, fosters collaboration and contributes to the overall sustainability and legitimacy of actions taken. It is prudent to note that in Kenya certain contexts require legal and ethical considerations that ensures that stakeholders are involved. An interviewee noted that

“Involvement of the stakeholders can equally enhance the legitimacy and credibility of decisions, helps in alignment of interests and ownership and commitment towards the policy and law” (EPRA 2).

Legal, policy and institutional framework for the LPG sector is essential for ensuring safety, promotion of fair competition, protecting the environment, enhancing economic development as well as building public trust (DISTR 4).

Astuti et al., (2019) carried a study in Indonesia about regulatory instruments in a successful fuel transition and they reasoned that policy makers need to determine the best pathway for policy and regulatory implementation of the LPG sector. A well-regulated LPG sector fosters public trust as consumers feel confident that their safety and interests are being protected by the authorities. There is a need to ensure clear institutional frameworks. *“Institutional frameworks often include public awareness campaigns, educating consumers on safe handling practices and the benefits of LPG” (EPRA 7).* Consumers are better protected when there is a legal basis for addressing grievances related to LPG supply, pricing or even safety. In the event of a dispute, a legal framework provides clear guidelines for resolution, reducing conflicts and ensuring justice for all parties involved.

These findings are in line with the results of the study carried out by Heldeweg and Saintier (2020) who emphasized the policy and institutional framework since institutional framework facilitates policy coordination and coherence across government agencies, departments and stakeholders. Interview responses are a confirmation of quantitative results by showing that key stakeholders recognize EPRA’s mandate and acknowledge the significance of strong legal and policy frameworks in stabilizing the LPG sector. The interviews additionally reveal that although frameworks exist, the real test is on how consistently they are implemented, particularly in areas like monitoring, dispute resolution and safety enforcement among others.

CHAPTER SIX

EPRA’S ENFORCEMENT ACTIVITIES

6.0 Introduction

This chapter covers results from the second objective which was about evaluation of EPRA’s enforcement activities in regulating LPG industries.

6.1 EPRA’S enforcement activities

Table 6.1 EPRA’s Enforcement activities

Statement	N	Mean	Std. Deviation
There is regular field checks to contain breaking of the rules and regulations by dealers	241	3.0002	0.8762

rules and regulations by dealers

Am satisfied with the ability of EPRA to ensure that	241	3.9982	0.7852
there is no alteration on the cylinders			
EPRA ensures that all cylinders are in shape and safe	241	3.8290	0.9420
EPRA task on ensuring the dealers are properly	241	3.3004	0.6988
licenced is adequate			
EPRA ensuring that there is proper refiling is	241	2.6822	0.8357
satisfactory			

Source: Researcher, 2025

The findings presented in Table 6.1 suggest that respondents had mixed perceptions regarding the effectiveness of EPRA’s enforcement activities in the LPG sector within Uasin Gishu County. To begin with, respondents expressed only moderate agreement that regular field inspections are conducted to curb violations by LPG dealers, as reflected by a mean score of 3.0002 and a standard deviation of 0.8762. This lukewarm response could imply that EPRA’s presence on the ground is either insufficient or inconsistent. The moderate low mean suggests that many respondents are unsure whether EPRA is really consistently visible on the ground, which in turn points to enforcement gaps that may be affecting compliance levels. The uncertainty surrounding the frequency of these inspections may be attributed to logistical challenges such as limited personnel, inadequate operational funding, or logistical constraints, which hinder the execution of regular and impromptu compliance checks. When enforcement becomes predictable or infrequent, dealers may take advantage of the regulatory gaps to engage in unsafe or unauthorized practices. As Oueidat et al. (2015) highlight, the absence of proactive monitoring in informal urban settlements heightens the risk of unsafe LPG usage, especially where LPG is sold and stored under unsafe conditions.

On a more positive note, most respondents expressed satisfaction with EPRA's efforts to safeguard the physical integrity of LPG cylinders. A high mean score of 3.9982 (SD = 0.7852) for EPRA's ability to prevent cylinder alteration, and 3.8290 (SD = 0.9420) for ensuring that cylinders are in safe condition, reflects the public's trust in EPRA's commitment to quality control. These strong ratings as seen by the mean imply that EPRA's oversight in this area is the most reliable part of its enforcement work and that respondents seem to notice this consistency in their operations. These findings align with Oueidat et al. (2015), who emphasize that regulatory vigilance on cylinder maintenance and tampering is crucial in preventing gas leaks and potential explosions. Since cylinder interference typically occurs during refilling, often at the wholesale level, EPRA's enforcement of strict standards at refilling plants appears to be effective, reducing the chances of consumer exposure to faulty cylinders.

Despite this, respondents were less convinced about the adequacy of EPRA's licensing oversight, with a moderate mean of 3.3004 (SD = 0.6988). This gap signals a structural challenge where formal businesses might be monitored more closely than small vendors who interact with consumers on a daily basis. This perception reveals a disconnect between the formal regulatory framework and the realities on the ground. Many LPG vendors operating in residential areas, on sidewalks, and from small general shops are reportedly unlicensed and unregulated, yet they serve the majority of ordinary consumers due to their accessibility and affordability. By contrast, outlets located in petrol stations and supermarkets, which are more visible and subject to regular inspections, are more likely to be compliant and hold valid EPRA licenses. This observation reinforces the findings of Mondliwa and Roberts (2014), who argue that effective regulation depends not only on having sound policies but also on strong enforcement and institutional reach across the supply chain.

Finally, the lowest-rated enforcement activity was EPRA's oversight of proper LPG refilling practices, with a mean score of 2.6822 and a standard deviation of 0.8357. Concerns about underweight cylinders and careless handling indicate that consumers experience these problems frequently enough for the issue to stand out sharply. Findings as indicated by the respondents raised concerns about underweight cylinders and improper handling by informal vendors. This is very visible by the low mean that was realized. The lack of regulatory presence in these areas raises questions about safety, accuracy in quantity, and the quality of gas sold. As Situmeang (2023) underscores, continuous monitoring and supervision of LPG activities are essential to ensure that all dealers, including small-scale and informal vendors, maintain safety and service standards. Without regular audits and consumer protection mechanisms, dishonest practices can thrive, compromising both safety and consumer trust.

In summary, while EPRA has made notable strides in ensuring cylinder safety and preventing tampering, its effectiveness in conducting routine inspections, enforcing licensing requirements, and overseeing proper refilling practices remains constrained by capacity and resource limitations. (Astuti et al., 2019). There is a clear need for enhanced enforcement strategies, especially targeting the informal retail sector, to ensure uniform compliance and safeguard public welfare.

Results from the interview schedule were as follows: Respondents interviewed were of the view that EPRA engages in various enforcement activities within the LPG sector to ensure compliance and safety. It conducts regular inspections of LPG facilities, distribution points and storage sites to verify compliance with safety standards, licensing requirements and operational protocols. It also issues licenses and permits to LPG dealers, ensuring that only qualified and compliant entities operate within sector Whereas a lot of attention has been given to reforms in the institutions, very little has been done to ensure that the operations of the agencies charged with the

responsibility of carrying out regulatory activities are supported so that their mandates are effectively implemented (Perderson & Bofin, 2019).

Interview results resonated these themes, as respondents acknowledged EPRA's enforcement efforts though pointed out that resource inadequacy limit full implementation. Their concerns underscore that while EPRA has the right regulatory tools, its operational reach remains uneven, which weakens overall regulatory effectiveness. *“EPRA targets illegal refilling of LPG cylinders, a practice that poses significant safety risks, enforcement activities include raids on illegal refiling stations and confiscation of equipment (EPRA 6). “EPRA in collaboration with other law enforcement agencies conduct operations to seize counterfeit or substandard LPG products, protecting consumers from unsafe good (KRA3).*

Consequently, majority of the respondents interviewed felt that EPRA equally has the authority to impose penalties and fines on LPG dealers found to be in violation of regulations. Further, it facilitates mechanisms for consumers to report concerns or file complaints against LPG dealers. Additionally, EPRA also engages in educational initiatives, providing training and resources to LPG sector participants to enhance awareness of safety protocols and regulatory requirements and best practices. They further ensure that there isn't any form of alterations on the cylinder in any way that may compromise competition or safety. There are cases where some vendor alters the brand names of the gas in order to cheat the customers. Deviations from the set rules leads to revocation of the license or even prosecution.

Equally, the results from the interview noted persistent issues like illegal refilling, counterfeit cylinders and brand tampering. These reflections reinforce the quantitative statistics through the show that the areas with low mean scores are also the areas

where real-world violations are most common. *IMP1 noted that “EPRA’s enforcement activities are vital in maintaining the integrity, safety and efficiency of the LPG sector in Kenya. Through rigorous inspections, licensing enforcement, market surveillance and legal action, EPRA ensures that the sector operates within the legal and regulatory framework safeguarding both the industry and the public”.* Majority of respondents highlighted that penalties, raids and education efforts are in place but may not be applied frequently enough. This suggests that enforcement actions exist on paper but may lack the frequency and consistency needed to change behaviour across the entire LPG market. Elizondo and Mejia (2024) observed that there are adequate regulations and legal framework, however, there isn’t proper implementation of the regulations in the LPG sector creating several incidents of failure to subscribe to the regulations.

CHAPTER SEVEN

COMPLIANCE LEVEL OF LIQUEFIED PETROLEUM GAS DEALERS

7.0 Introduction

This chapter covered the third objective which was about determining the impact of EPRA in ensuring compliance level of LPG dealers.

7.1 Compliance level of liquefied petroleum gas dealers

Table 7.1 Impact of EPRA in ensuring compliance level of liquefied petroleum gas dealers

Statement	N	Mean	Std. deviation
Ensuring that dealers are licenced	241	3.9034	0.8734
Review of standard procedures on testing and certification	241	2.9004	0.9860
There are enough certified energy managers and licensed energy auditors	241	3.8948	0.7120
EPRA ensures that both the consumer, investor and stakeholder is protected	241	4.8540	0.7966
EPRA ensures that all disputes and complaints are handled accordingly	241	4.2038	0.8822

Source: Researcher, 2025

Table 7.1 showed results on compliance level of liquefied petroleum gas dealers. The findings in table 7.1 indicated that as represented with a mean of 3.9034 and std. deviation of 0.8734 that EPRA is ensuring that dealers are licenced. The strong rating suggests that licensing is one of the areas where EPRA's presence is most felt, though the persistence of unlicensed roadside dealers shows a gap that the results find it hard to ignore. It is the mandate of EPRA to issue licenses to the dealers and to ensure that all dealers are properly licensed. Dealers operating without proper licensing from the

regulator risk closure and prosecution. That's why dealers are keen on ensuring that they have proper licenses. However, sidewalks and general stores still don't have proper licensing, and others are operating in a manner that it is difficult for EPRA officers to notice them.

The findings further revealed that review of standard procedures on testing and certification is not very effective as evidenced by a mean of 2.9004 and std. deviation of 0.9860. This an indication that many dealers operate without knowing these requirements, which raises questions about how consistently EPRA communicates or enforces these standards. Majority of the dealers are not aware of the reviewing of standard procedures as well as certification. Many business dealers have always only thought of acquiring business permit from the county government. Sensitization of dealers on certification and licensing is very important in ensuring that majority if not all the dealers are operating with the required licenses.

Willdan and Gunarto (2019) opined that law enforcement is very important in ensuring that there is sanity in the LPG industries to avoid agents manipulating the industry system to the disadvantage of the consumer. Some of the gas dealers actually engage in acts of business which may be regarded as criminal to a certain extent. The findings support this concern, particularly the low mean scores on proper refilling practices and the weak awareness of certification procedures, which point to practices that directly violate EPRA regulations and put consumers at high risk when it comes to safety matters.

Nonetheless, there are enough certified energy managers and licensed energy auditors as evidenced by a mean of 3.8948 and standard deviation of 0.7120. This could be interpreted to mean that while the technical expertise exists, the real test is whether these professionals reach all dealers, especially those operating in informal spaces.

Auditors ensure that the procedures and regulations that have been set are followed and where there are some deviations then corrective measures are applied in order to ensure full compliance. With a mean of 4.8540 and std. deviation of 0.7966, the findings showed that EPRA ensures that both the consumer, investor and stakeholder is protected. The public recognizes EPRA's protective role, though it also calls attention to whether this protection is equally available in both formal and informal markets.

Having adequate legal framework and policy framework makes it easy to protect all the stakeholders in the LPG sector. Whenever there is any form of violation by any stakeholders then legal frameworks provide solace for redress among the conflicting parties. The findings further indicated that EPRA ensures that all disputes and complaints are handled accordingly as evidenced by a mean of 4.2038 and std. deviation of 0.8822. Having a disputes and complaints handling committee makes it possible to handle disputes and complaints.

Workplace accidents in high-risk sectors such as the energy and petroleum industry are often traced back to violations of established rules and procedures. As Dahl (2013) rightly pointed out, non-compliance with safety protocols remains a key driver of accidents, injuries, and avoidable losses. In the context of the liquefied petroleum gas (LPG) sector, where the handling, transportation, and storage of highly flammable gas present constant safety risks, enforcement of regulations is not only a legal requirement but a moral imperative. Without consistent and visible enforcement, rules risk becoming symbolic rather than practical deterrents of risky behavior.

This view was echoed in the interviews conducted for this study. Interview findings revealed that enforcement helps curb prohibited practices. Their comments highlight

the same pattern seen in the descriptive statistics data, where enforcement works in some areas but is less visible in others. A local regulatory official (KRA 3) remarked, *“Enforcement activities are very vital in ensuring that rules and regulations set by the authorities are adhered to. Enforcement ensures that actions that are prohibited by the regulating agency are stopped. It works well in curtailing the behavior of the participants in the oil sector.”* This statement underscores the critical role of enforcement as a behavioral control mechanism. It is not enough for regulatory frameworks to exist; they must be actively implemented and enforced to influence the conduct of stakeholders, especially in a market increasingly characterized by the presence of informal, small-scale dealers who may not be familiar with or committed to the regulations.

Interview findings pointed out that EPRA’s enforcement strategy covers licensing, monitoring and penalties. These insights match the high scores on licensing and consumer protection, but they also help explain the lower ratings on certification and refilling oversight. The interviews further confirmed that the Energy and Petroleum Regulatory Authority (EPRA) is widely recognized by stakeholders as a key factor in promoting compliance among LPG dealers. EPRA’s mandate encompasses a range of functions aimed at protecting public interest and ensuring orderly operations within the sector. These include setting operational standards, issuing licenses, inspecting facilities, investigating complaints, and sanctioning violators. One EPRA officer (EPRA 5) described this mandate as *“a combination of monitoring, inspections and regulatory measures such as documentation audits, adherence to standards, enforcement of penalties, educational training, as well as feedback mechanisms.”* This layered enforcement strategy is designed to both prevent and respond to non-compliance while creating an ecosystem of continuous learning and improvement among dealers.

One of the major strengths of EPRA's regulatory approach is its multi-stakeholder focus. Rather than limiting its efforts to enforcement alone, EPRA actively works to safeguard the interests of multiple actors, consumers, dealers, investors, and the general public. By promoting fair competition, transparent pricing, and quality assurance, the Authority helps foster a more trustworthy LPG market. Furthermore, mechanisms for consumer feedback and dispute resolution create an important two-way communication channel that strengthens accountability and responsiveness. This integrated model ensures that regulation is not simply top-down but also informed by the realities and feedback from stakeholders on the ground.

Nonetheless, the effectiveness of this model is not without challenges. As highlighted by several respondents, enforcement remains inconsistent in certain regions, particularly where EPRA has limited staff presence or where logistical challenges hinder routine inspections. These gaps are often exploited by unlicensed dealers, some of whom engage in dangerous practices such as illegal cross-filling, tampering with branded cylinders, or selling underweight gas. These practices not only threaten public safety but also undermine confidence in the broader regulatory system. In such an environment, consumers may struggle to distinguish between compliant and non-compliant dealers, which makes enforcement even more critical. This concern directly reflects the lower mean scores for certification and refilling oversight, making the gaps more visible in both data sources.

The literature supports the view that compliance is strongly tied to the regulatory environment and the culture of enforcement. Kvalheim (2016), in a study of the oil and gas industry, found that organizations with a strong safety culture and clear regulatory expectations tended to exhibit higher compliance levels. The study

highlighted that awareness, education, and consistent enforcement shape the "climate" within which industry players operate. When regulatory bodies maintain a visible and consistent presence, actors are more likely to conform to rules, not just out of fear of penalties, but because compliance becomes normalized and expected behavior.

The findings suggest that EPRA's role must evolve alongside the sector's growth and diversification. As more dealers enter the market, including informal vendors and rural distributors, EPRA must scale its regulatory strategies to remain effective. This could involve leveraging technology for real-time monitoring, increasing partnerships with local authorities for decentralized enforcement, and expanding public awareness campaigns on safety and consumer rights. Such efforts would not only improve compliance but also build public trust in the regulatory framework.

The findings in general suggest that there is need for EPRA to adjust its strategies to match the growing and changing LPG sector. This interpretation fits the data obtained from the descriptive statistics, especially the contrast between high stakeholder-protection scores and low awareness of certification procedures.

In general, the qualitative findings highlight that enforcement is more than just punishment, it is a preventive and developmental tool that ensures the LPG sector operates safely, fairly, and transparently. EPRA's current efforts in licensing, monitoring, and education are commendable, but the Authority must be supported with adequate resources and institutional capacity to extend these efforts equitably across both formal and informal market players. As the LPG sector continues to grow, regulation must remain adaptive, proactive, and inclusive to sustain public safety and investor confidence.

CHAPTER EIGHT

EPRA'S INSTITUTIONAL CAPACITY

8.0 Introduction

This chapter covered results of the fourth objective which was to assess EPRA's capacity in regulating LPG sector.

8.1 EPRA'S institutional capacity

Table 8.1 Institutional capacity

Statement	N	Mean	Std. Deviation
Shared institutional development is helpful in regulatory operations	241	2.0958	1.3092
Workforce development makes the staff very versatile and effective	241	4.7526	0.7825
Financial capacity determines operational efficiency of the institution	241	4.4487	0.8732
Partners have helped my organization increase institutional capacity	241	2.0498	0.7996
Capacity building of our organization has made us very effective	241	3.9456	0.9742

Source: Researcher, 2025

The findings from Table 8.1 provide valuable insights into the institutional capacity of the Energy and Petroleum Regulatory Authority (EPRA) in discharging its regulatory mandate in the LPG sector within Uasin Gishu County. Overall, the responses present a mixed picture, highlighting notable strengths in internal capabilities such as staffing and financing, while also revealing critical weaknesses in external collaboration and institutional integration.

To begin with, the data reveals a low perception of the usefulness of shared institutional development, with a mean score of 2.0958 and a relatively high standard deviation of 1.3092. This indicates that efforts aimed at collaborating with other institutions, such as government bodies, industry associations, or development partners, are either minimal or poorly coordinated. Respondents are of the view that even though there is EPRA they don't see it working closely with other actors in the LPG chain. This weak score suggests that the regulator may be carrying the enforcement burden alone, which reduces its reach on the ground. Several respondents indicated that EPRA appears to function in isolation, with limited evidence of inclusive programs that support the development of other actors within the LPG value chain, especially at the retail level. This is a significant concern because effective regulation requires a whole-of-sector approach, not just top-down enforcement (Willdan & Gunarto, 2019). If LPG dealers and distributors are not engaged in the broader regulatory ecosystem, the burden of enforcement remains centralized, often overstressing EPRA's already limited resources.

Moreover, this lack of integration undermines regulatory uniformity. It was suggested during interviews that many informal dealers, particularly those operating in peri-urban or estate settings, often remain outside the purview of regulatory checks due to their limited exposure to EPRA's standards or training. The findings imply that many informal dealers remain outside EPRA's support systems, which explains the weak monitoring and persistent unsafe practices. This gap reflects a regulator that has strong rules but limited integration with the people it regulates. Without extending institutional support to these players, issues such as illegal refilling, brand cross-filling, or sale of underweight cylinders are likely to persist (Pederson & Bofin, 2019). Shared institutional development would ideally include collaborative training,

joint safety campaigns, and co-regulation initiatives that involve county governments, traders' associations, and even community policing frameworks.

In contrast, workforce development stood out as EPRA's most significant internal strength, reflected in a remarkably high mean score of 4.7526 (SD = 0.7825). Workforce development earned the highest score, showing that respondents clearly recognize EPRA's technical strength. This strong approval suggests that staff competence is one of the regulator's most reliable assets. This suggests that EPRA has invested heavily in building the capacity of its personnel through training, continuous professional development, and knowledge acquisition.

A technically competent and versatile workforce is essential, especially in a complex sector like LPG that is susceptible to operational risks, consumer complaints, and fast-changing market dynamics. Respondents acknowledged that EPRA staff demonstrate professionalism and technical know-how, particularly during inspections and licensing procedures. This human resource capacity is critical in maintaining enforcement consistency and public trust in the regulator. The findings equally hint that while internal systems are strengthening, external uptake of regulations still needs attention.

Alongside its human resource capacity, EPRA's financial muscle was also rated highly, with a mean score of 4.4487 and a standard deviation of 0.8732. Adequate financial resources were identified as a core driver of EPRA's effectiveness in executing its field operations, training sessions, consumer awareness campaigns, and regulatory technology adoption. The high score on financial capacity indicates that funding plays a direct role in EPRA's ability to conduct inspections and respond to complaints. This suggests that when resources dip, enforcement visibly suffers. Participants noted that when funds are readily available, the Authority can conduct

timely and unannounced inspections, respond swiftly to safety complaints, and maintain its physical and digital presence in the market. On the flip side, lapses in enforcement and communication were often attributed to resource constraints, highlighting the importance of consistent government funding and budgetary autonomy to sustain regulatory impact.

However, despite its internal strengths, EPRA's capacity is clearly weakened by limited collaboration with external partners, a factor underscored by the low mean score of 2.0498 (SD = 0.7996). This suggests that partnerships, whether with NGOs, development partners, or private sector actors, have not significantly enhanced EPRA's operations. In many industries, partnerships are used to leverage technical expertise, share resources, and amplify outreach; unfortunately, this synergy seems to be underutilized in the case of EPRA. As Jovanic and Sredojevic (2017) argue, effective institutional development goes beyond formal structures, it requires building trust, aligning missions, and reinforcing local engagement, especially in decentralized or emerging sectors.

Limited partnerships also mean missed opportunities in areas like data sharing, public sensitization, innovation, and localized enforcement. For example, engaging universities or technical institutions could support research on LPG safety innovations, while working with county governments could improve local licensing and monitoring systems. Additionally, public-private partnerships could help expand access to safer, certified LPG infrastructure, especially in informal markets where demand is growing but regulation is lacking.

The study also found a generally positive perception of EPRA's internal capacity-building efforts, reflected in a mean score of 3.9456 (SD = 0.9742). Capacity-building was viewed not just as training staff, but also strengthening the organization's

systems, policies, and culture of performance. Respondents cited improvements in communication flow, responsiveness to public queries, and adaptability to emerging regulatory challenges. These gains are particularly important in sectors where change is rapid, and oversight must remain proactive rather than reactive. Investments in institutional learning, digitization of licensing and inspection processes, and modernization of safety standards are steps in the right direction.

In general, the findings portray EPRA as a relatively strong institution in terms of human and financial capital, but one that faces structural limitations due to insufficient inter-agency collaboration and stakeholder integration. Its internal programs are functional and improving, yet without external alignment and grassroots engagement, the full potential of its regulatory mandate cannot be realized. To improve its effectiveness in regulating the LPG sector, EPRA must adopt a more inclusive approach, one that builds bridges with dealers, community leaders, and other regulatory stakeholders. The pattern in the data as seen in the descriptive results points to strong internal capacity though weak collaboration with outside stakeholders. This imbalance might be limiting the EPRA's overall effectiveness, particularly in fast-growing informal segments of the LPG market.

Addressing these capacity gaps calls for a strategic shift toward decentralization, stronger regional presence, and participatory regulation. These steps will ensure that regulatory standards are not only enforced at the top, but also understood, accepted, and implemented across the broader ecosystem. By anchoring its institutional capacity in both internal excellence and external partnerships, EPRA will be better placed to ensure safety, fairness, and sustainability within Kenya's growing LPG sector. The study equally conducted an interview to key informants.

The findings revealed that workforce development ensures that there is enhanced expertise by the employees, gives room for the adaptability and that they will be more likely to understand and enforce regulations accurately. Additionally, skilled workforce is more efficient in carrying out tasks which in event can streamline processes. Further, workforce development encourages a culture of innovation and that investing in professional development of employees can equally boost morale and job satisfaction. Financial capacity of the organization ensures effective resource allocation in the organization, ensures the organization to attract and retain top talents, ensures the organization to invest in up-to date technology and robust infrastructure, supports research and development, and enables organization to handle risks and unexpected challenges and that financial strength facilitates compliance with regulatory standards.

Interviewees as seen in the qualitative results emphasized that a well-trained workforce makes it easier for EPRA to carry out inspections and enforce standards. Interviewees were of the views that reinforce the high quantitative score on staff competence. Capacity building in areas such as legal and regulatory compliance, ethical standards and good governance practices ensures that the organization operates within established guidelines reducing the risks of legal issues and reputational damage (Astuti et al., 2019). Capacity building further improves processes and efficiency, strategic planning, innovation and adaptability, effective communication, stakeholder confidence as well as enhanced organizational culture. A member interviewed stated that *“capacity building for all stakeholder is very crucial in creating awareness and ensuring compliance. This creates good blood between the regulator and other stakeholders”* (DEPT 2). The capacity of an energy regulatory authority to effectively regulate the LPG sector encompasses various elements such as legal and institutional framework, human resource and expertise, technical

infrastructure, financial resources and regulatory processes and procedures (Mondliwa & Roberts, 2014).

The need for highly skilled staff who can understand safety, legal and technical issues in LPG regulation is desirable and this is the case with EPRA that has well trained staff. This supports the quantitative finding that EPRA's staff capacity is one of its strongest advantages.

An interview noted that "Regulatory capacity relies on skilled personnel with expertise in energy policy, technical standards, safety regulations, environmental management, economics, law and enforcement. There is need for the authority to have qualified staff that are responsible for policy analysis, regulatory development, and compliance monitoring, enforcement and stakeholder engagement. There is need for more financial resources that can ensure adequate capacity building for the staff so that they are equipped with enough and sufficient skills and knowledge to mitigate the murky waters in the LPG sector" (DSTR 10).

The respondent emphasizes that regulatory capacity is directly tied to the expertise and qualification of EPRA's personnel. It is not enough for the authority to have a regulatory mandate; it must also be backed by skilled professionals who are well-versed in the multiple dimensions of LPG regulation. These areas include energy policy formulation, technical and safety standards, environmental oversight, legal enforcement, economic regulation, and stakeholder engagement.

Interview findings highlighted that financial strength supports almost every enforcement activity, which aligns with the strong mean score for financial capacity. Respondents made it clear that without steady funding, enforcement quickly loses momentum. The respondent also underlines a pressing need: adequate financial resources. Financial strength is portrayed as the foundation for effective capacity building, training staff, retaining qualified professionals, and enabling them to respond to the evolving complexities of the LPG market. Without sufficient funds,

even the best regulatory policies may fall short during implementation. This perspective aligns with global best practices in regulatory governance. Effective energy regulation, particularly in high-risk sectors like LPG, requires a multi-disciplinary team. Regulatory staff must understand not only technical operations (e.g., safe handling and storage of LPG) but also policy implications, economic dynamics, and the legal landscape in which regulation operates. Moreover, they must be trained to engage with stakeholders, including consumers, sector players, and other government agencies, with professionalism and clarity.

In the context of Kenya and Uasin Gishu County in particular the LPG market has seen rapid growth and increased complexity. The mushrooming of unlicensed dealers, incidents of illegal refilling, and consumer complaints about underweight or tampered cylinders all point to regulatory pressure points. If EPRA's personnel are inadequately trained or too few in number, their capacity to enforce regulations or respond effectively to violations is diminished. The interviews further confirmed that Uasin Gishu County's growing LPG market puts pressure on EPRA to expand its reach. This reflects the data's suggestion that internal strength alone is not enough without stronger external engagement. The respondent's concern about insufficient funding is especially important. Regulatory activities like routine inspections, legal proceedings, public awareness campaigns, and emergency response require a strong financial backbone. Without it, regulators may become reactive rather than proactive, leading to regulatory capture or ineffective oversight.

Furthermore, building capacity is not a one-time event. The LPG market is dynamic, with new technologies, changing safety standards, and evolving business models. Continuous professional development is therefore essential to keep regulators ahead of industry practices. The respondent rightly points out that ongoing training and

strategic resourcing are essential to “*mitigate the murky waters*” a phrase that vividly captures the challenges and risks within the current LPG sector. This statement also reflects what scholars such as Jovanic & Sredojevic (2017) have argued that regulation is not just about laws, but about institutions and people. A law is only as effective as the team responsible for interpreting and enforcing it.

CHAPTER NINE

REGULATING LIQUEFIED PETROLEUM GAS SECTOR

9.0 Introduction

This chapter covered the dependent variable which was regulating liquified petroleum gas sector.

9.1 Regulating liquefied petroleum gas sector

Table 9.1 Regulating liquefied petroleum gas sector

Statement	N	Mean	Std. Deviation
Setting of tariffs and other regulations is generally fair	241	3.0018	0.6692
Monitoring of operations of LPG dealers is done according to set guidelines	241	4.7834	0.8011
There is periodic checks on the status of the dealers and compliance level	241	4.0044	0.7834
Setting and review of contracts are done procedurally	241	4.9674	0.9758
EPRA regularly applies penalties on LPG dealers	241	4.9228	0.8748

Source: Researcher, 2025

The findings from Table 9.1 and the accompanying interview data underscore a multifaceted perspective on the role and effectiveness of EPRA in enforcing regulatory standards within the LPG sector in Uasin Gishu County. Respondents expressed mixed opinions on the fairness of tariffs and related regulations, with a mean score of 3.0018 and a standard deviation of 0.6692. This indicates a moderate level of agreement, some stakeholders felt the tariffs were justifiable, while others, particularly small enterprise owners and vendors, viewed them as restrictive. As some respondents noted, regulations and tariffs are often perceived through the lens of profitability. For dealers operating on thin margins, stricter compliance requirements and price ceilings may be seen as constraints rather than protective mechanisms. This tension between regulation and business interest is common in liberalized markets,

especially when enforcement is uneven or not well communicated by the respective authorities.

In contrast, the monitoring of LPG dealers' operations was rated very positively, with a high mean score of 4.7834 (SD = 0.8011). This finding suggests that EPRA has in place structured and consistent monitoring mechanisms, supported by standardized inspection manuals and compliance checklists. Respondents noted that such manuals serve as both a reference and an enforcement tool, ensuring that dealers are well-informed of the expectations and standards they must meet. This transparency not only enhances regulatory compliance but also reduces conflict between regulators and businesses. Monitoring is essential to public safety, fair competition, and consumer protection, especially in the LPG sector, where operational lapses can have catastrophic consequences.

Similarly, periodic compliance checks received strong endorsement, with a mean score of 4.0044 (SD = 0.7834). Respondents agreed that regular inspections and audits by EPRA help assess dealers' adherence to safety protocols, storage requirements, and handling standards. These inspections are not only evaluative but also corrective, providing opportunities for education and immediate redress of non-compliance. As one interviewee explained, combining inspections with structured dealer reporting systems can strengthen ongoing monitoring. This hybrid approach of external checks and internal reporting builds a more resilient and proactive regulatory framework.

The contractual oversight practices by EPRA also received high approval, with a mean score of 4.9674 and a standard deviation of 0.9758. Contracts, when set and reviewed procedurally, offer clarity and predictability to all parties involved. As noted

by a regulatory official (KRA 1), “It establishes clear expectations and terms, reducing the likelihood of misunderstandings between parties.” This finding highlights the importance of institutionalizing contract review processes to align with market dynamics and emerging risks. Such contracts often include stipulations on safety compliance, pricing structures, timelines, and roles, serving as the foundation for regulatory enforcement and dispute resolution.

A critical component of EPRA’s role, penalizing non-compliant dealers, was also strongly affirmed by respondents, with a mean of 4.9228 and a standard deviation of 0.8748. Penalties are not only a mechanism for punishing wrongdoing but also serve as a deterrent that discourages unsafe or unfair practices. As emphasized by a respondent from EPRA (EPRA 3), “*EPRA applies penalties on those who deviate from the set standards. The imposition of penalties could be a means to address environmental concerns, ensure fair business practices as well as serve as deterrents.*” This regulatory function is vital, especially given the proliferation of informal vendors and concerns over illegal practices such as cross-filling, underweight gas sales, and branding misrepresentation. The imposition of penalties by the Energy and Petroleum Regulatory Authority (EPRA) serves as a critical enforcement mechanism within the regulation of the liquefied petroleum gas (LPG) sector. As highlighted by one respondent, “*EPRA applies penalties on those who deviate from the set standards. The imposition of penalties could be a means to address environmental concerns, ensure fair business practices as well as serve as deterrents.*” (DISTR 7). This statement underscores the multifaceted role that penalties play not merely as punitive tools, but as strategic instruments for ensuring regulatory compliance, safeguarding public interests, and sustaining market integrity.

In the context of LPG regulation, where risks to safety, environment, and consumer welfare are high, penalties become a necessary safeguard. By holding non-compliant dealers accountable, EPRA reinforces the importance of adhering to safety protocols and legal requirements. This includes issues such as the illegal refilling of gas cylinders, cross-branding, sale of underweight cylinders, and operating without licenses, all of which compromise both consumer safety and fair competition in the market.

Penalties also help maintain a level playing field. Dealers who comply with regulations often face unfair competition from those who cut corners to reduce costs. When EPRA imposes fines or other sanctions on violators, it deters unethical practices and protects honest businesses. This enhances the credibility of the regulatory environment and builds trust among stakeholders, including investors, dealers, and consumers.

Moreover, penalties serve as a deterrent, signalling to all actors in the sector that non-compliance carries tangible consequences. This deterrence is crucial in a sector that is rapidly expanding and becoming increasingly decentralized, as seen in Uasin Gishu and other counties in Kenya. Consistent and well-publicized enforcement actions can reshape behaviour, ensuring that industry players take regulations seriously and implement safety and quality standards in their operations.

However, for penalties to be effective, they must be applied consistently, proportionately, and transparently. Overly harsh penalties may breed resistance or discourage formalization of small dealers, while overly lenient ones may fail to correct misconduct. Enforcement must be followed by corrective monitoring to verify compliance and reinforce the rule of law. This requires not only a strong legal

mandate but also adequate institutional capacity, including trained personnel, financial resources, and reliable systems for tracking and responding to infractions.

In line with this, studies such as those by Mathews (2014) and Kvalheim (2016) affirm that effective regulation is not just about setting rules, it's about enforcing them. Their research shows that penalties, when well implemented, can significantly improve compliance rates and promote a culture of safety and responsibility in high-risk sectors like oil and gas.

These findings are consistent with the broader literature. Mathews (2014) noted that while market liberalization in Sub-Saharan Africa expanded access and competition, it also led to significant regulatory challenges, including price distortion and compliance evasion. In the absence of strict enforcement, liberalized markets risk exploitation by opportunistic actors. This was echoed by one LPG dealer (DISTR 10), who lamented the influence of cartels in the market: *“There are cartels in the LPG sector and it has become very difficult to ascertain the cylinders in some cases in terms of originality since the cartels sometimes fill other company’s gas with faulty or half-filled gas.”* This malpractice not only misleads consumers but also compromises safety.

Supporting this, Colomer et al. (2020), in a study conducted in Brazil, observed that deregulation and the removal of price controls in the LPG sector led to mergers and consolidation, which eventually facilitated the emergence of cartels. In both cases, Kenya and Brazil, liberalized pricing without corresponding regulatory enforcement created loopholes that were exploited by dominant players. It reinforces the idea that effective regulation must be accompanied by vigilant oversight and robust market monitoring to prevent manipulation and safeguard consumer interests.

The qualitative interviews further confirmed the importance of monitoring and enforcement in upholding public trust. Respondents emphasized that consistent inspections, contract clarity, and active penalization are all interlinked components of a functioning regulatory system. One participant aptly put it: “*Monitoring according to set standards ensures compliance, promotes safety, and boosts confidence in the LPG sector (EPRA 3).*” It is this trust, between regulator, dealer, and consumer, that ultimately sustains a safe and equitable energy market.

EPRA’s monitoring and enforcement practices are generally seen as effective, especially where structured systems such as contracts, inspections, and penalties are applied. However, perceptions about tariff fairness and the challenges posed by market cartels highlight the need for continual improvement in regulatory strategy. A balance must be struck between liberal market dynamics and strict enforcement to ensure that regulation works not only for the market but also for the public it is meant to protect.

9.2 Enforcement of EPRA policies in regulating LPG

Table 9.2: Enforcement of EPRA policies in LPG Regulation

Statement	N	Mean	Std. Deviation
EPRA conducts periodic inspections to verify compliance with safety standards	241	4.0044	0.7631
EPRA provides operational guidelines and safe storage protocols	241	4.9674	0.6123
EPRA enforces penalties on non-compliant dealers	241	4.9228	0.6537

Source: Researcher, 2025

The findings of the study revealed that the Energy and Petroleum Regulatory Authority (EPRA) plays a central and highly regarded role in the regulation of the liquefied petroleum gas (LPG) sector in Uasin Gishu County. A significant majority

of the respondents agreed that EPRA routinely conducts periodic inspections aimed at verifying compliance with established safety and operational standards. This was reflected in a mean score of 4.0044, suggesting a high level of awareness and approval of these regulatory inspections. Regular field checks are instrumental in identifying illegal practices such as cross-filling, the use of unsafe cylinders, and failure to meet licensing requirements, thereby safeguarding both dealers and consumers from potential hazards.

Moreover, the results indicated overwhelming consensus on the effectiveness of EPRA in providing clear operational guidelines and safe storage protocols to LPG dealers. This was supported by the highest mean score among the enforcement indicators, standing at 4.9674, and reflecting minimal variability in responses. These guidelines serve as critical reference points for LPG businesses, ensuring that operations are conducted within the boundaries of regulatory expectations and industry best practices. The clarity of these protocols also promotes transparency, consistency, and sustainability in LPG operations, particularly among formalized entities such as petrol stations and supermarkets.

Equally notable was the perception that EPRA effectively enforces penalties against non-compliant dealers. With a mean score of 4.9228, respondents acknowledged EPRA's deterrent role in upholding the integrity of the sector. The imposition of penalties, including fines and potential suspension or revocation of licenses, is seen as a powerful regulatory tool that ensures adherence to the law and discourages malpractice. The high level of agreement among participants underscores the importance of regulatory consequences in promoting lawful and ethical business practices within the LPG sector.

Taken together, these findings suggest that EPRA's regulatory enforcement is not only visible but also largely effective in key areas such as inspection, standardization and legal enforcement. However, the broader implication of these results may point to a discrepancy between regulatory strength at formal, easily monitored distribution points and weaker enforcement in informal sectors, where smaller dealers may operate without sufficient oversight. Thus, while EPRA's efforts are commendable and appreciated, the challenge remains to expand these enforcement activities to cover informal and peri-urban LPG dealers who may currently fall outside the immediate regulatory lens.

Insights gathered from interviews with key stakeholders in the LPG sector, including dealers, local administrators and EPRA representatives, painted a more nuanced picture of EPRA's regulatory role. Participants emphasized that EPRA's core responsibilities include issuing licenses to LPG dealers, monitoring compliance, imposing penalties on violators, and creating platforms for consumer feedback and complaints. However, the findings also revealed that despite the presence of regulatory frameworks, enforcement remains inconsistent, especially among informal and unlicensed LPG operators.

One of the most striking revelations from the interviews was the limited capacity of EPRA to carry out regular and effective monitoring, particularly outside the urban core of Uasin Gishu County. A senior LPG distributor observed, "*Licensing and regulations are there, yes, but thinking and implementation of the said regulations is the most important aspect of regulation.*" (DISTR 9). This statement underscores the gap between having sound regulatory policies on paper and ensuring that they are executed uniformly across all levels of the supply chain.

Another recurring theme in the interviews was the presence of cartels and unscrupulous actors within the LPG sector. These entities exploit regulatory gaps by engaging in unsafe and deceptive practices. One respondent stated candidly, *“There are cartels in the LPG sector, and it has become very difficult to ascertain the cylinders in some cases in terms of originality, since the cartels sometimes fill other company’s gas with faulty or half-filled gas. There are also distributors that have opted for cheaper gas than the recommended prices, thereby leading to cases of misleading customers on the basis of the brand.”* (KRA5).

This highlights serious concerns regarding consumer safety and brand manipulation, which further complicate EPRA’s regulatory mandate.

The interviews also pointed to resource constraints within EPRA, including inadequate personnel and insufficient logistical support to conduct widespread, unannounced inspections. Several respondents mentioned that while major outlets such as supermarkets and petrol stations are regularly audited, small roadside vendors and estate-based sellers often operate without licenses or oversight. This selective enforcement diminishes public trust in the regulatory system and creates a two-tier LPG market one that is regulated and another that functions outside the law.

Furthermore, while EPRA has instituted mechanisms for consumer feedback, such as toll-free lines and online portals, awareness of these avenues remains low, particularly among consumers in informal settlements. This results in a communication gap where crucial complaints or safety concerns may go unreported and unaddressed.

In general, the qualitative data revealed that while EPRA plays a vital role in structuring and maintaining safety and accountability in the LPG sector, its effectiveness is limited by internal capacity challenges and external market dynamics.

The existence of cartels, unlicensed vendors, and logistical inefficiencies point to the urgent need for strengthening institutional capacity, expanding stakeholder collaboration, and enhancing consumer education to foster a more transparent and compliant LPG market in Uasin Gishu County.

CHAPTER TEN
SUMMARY OF THE FINDINGS, CONCLUSIONS AND
RECOMMENDATION

This section presents the summary of the findings. It also has the conclusions of the study as well as the recommendations for further studies.

10.0 Summary of findings

This field of petroleum gas is dominated by male. The results showed that majority of gas dealers and stakeholders are aged 36-40 years followed closely by those aged 31-35 years. The minority are those aged between 21 and 25 years. From the results, the majority of respondents were secondary school dropouts while the minority were those with postgraduate degrees. From the results, the findings indicated that majority of the enterprises have been operation for less than 5 years while enterprises that have been operations for more than 16 years were the least. Majority of those in the LPG sector have worked in their organization for less than 5 years.

EPRA's legal framework formulation and implementation is adequate as represented. It is the responsibility of EPRA to set safety standards, come up with licensing procedures, determine market competition and ensure effective environmental considerations as well as protection of the consumers. The findings also indicated that there is clear institutional structure to deal with LPG sector. Structuring ranges from the laws and regulations, policies set and how personnel are arranged. Structuring equally provides operational efficiency thereby making regulatory operations effective and efficient. However, respondents only agreed to a moderate degree that mechanism for monitoring of LPG dealers is well structured. Majority of the respondents agreed to a great extent that there are adequate policy instruments in LPG sector. Likewise, majority of the respondents noted that stakeholders are involved in

policy and legal framework formulation. Involving the stakeholders in policy making makes it easy for ownership of the policy by majority if not all the stakeholders.

Majority of the respondents only agreed to a moderate degree that there are regular field checks to contain breaking of the rules and regulations by dealers. Taking too long to carry out field work to ascertain the level of compliance with the rules and regulations set makes it easy for the dealers to flout the rules. When funds are not available in sufficiency or when the organization has inadequate staff, then the stakeholders may determine the patterns of visits by the EPRA officers. Impromptu visits by the officers is crucial in putting the LPG dealers on toss and ensure that rules are followed.

However, majority of the respondents were of the view that they were satisfied with the ability of EPRA to ensure that there is no alteration on the cylinders whereas many of the respondents indicated that EPRA ensures that all cylinders are in shape and safe. Interference with the cylinders normally happens at the refilling company. However, majority of the respondents were not too sure that EPRA's task on ensuring the dealers are properly licenced is adequate. On the other hand, majority of the respondents agreed to a lesser degree that EPRA ensuring that there is proper refiling is satisfactory

EPRA is ensuring that dealers are licenced. It is the mandate of EPRA to issue licenses to the dealers and to ensure that all dealers are properly licensed. The findings further revealed that review of standard procedures on testing and certification is not very effective Nonetheless, there are enough certified energy managers and licensed energy auditors. Findings showed that EPRA ensures that both the consumer, investor and stakeholder is protected. Having adequate legal framework

and policy framework makes it easy to protect all the stakeholders in the LPG sector. The findings further indicated that EPRA ensures that all disputes and complaints are handled accordingly

Workforce development ensures that there is enhanced expertise by the employees, gives room for the adaptability and that they will be more likely to understand and enforce regulations accurately. Additionally, skilled workforce is more efficient in carrying out tasks which in event can streamline processes. Further, workforce development encourages a culture of innovation and that inventing in professional development of employees can equally boost morale and job satisfaction. Financial capacity of the organization ensures effective resource allocation in the organization, ensures the organization to attract and retain top talents, ensures the organization to invest in up-to date technology and robust infrastructure, supports research and development, and enables organization to handle risks and unexpected challenges and that financial strength facilitates compliance with regulatory standards.

Capacity building in areas such as legal and regulatory compliance, ethical standards and good governance practices ensures that the organization operates within established guidelines reducing the risks of legal issues and reputational damage. Capacity building further improves processes and efficiency, strategic planning, innovation and adaptability, effective communication, stakeholder confidence as well as enhanced organizational culture.

Respondents agreed to a moderate degree that setting of tariffs and other regulations is generally fair. However, majority of the respondents agreed to a greater degree that monitoring of operations of LPG dealers is done according to set guidelines. Findings revealed that there are periodic checks on the status of the dealers and compliance level. Regulatory authorities can conduct on-site visits to assess dealers' adherence to

safety protocols, storage, guidelines and operational standards. Setting and review of contracts are done procedurally. Findings showed that EPRA regularly applies penalties on LPG dealers. Penalties aim to enforce compliance with safety standards, regulatory guidelines and legal requirements. In general, the qualitative data revealed that while EPRA plays a vital role in structuring and maintaining safety and accountability in the LPG sector, its effectiveness is limited by internal capacity challenges and external market dynamics. The existence of cartels, unlicensed vendors, and logistical inefficiencies point to the urgent need for strengthening institutional capacity, expanding stakeholder collaboration, and enhancing consumer education to foster a more transparent and compliant LPG market in Uasin Gishu County.

10.1 Conclusions

Based on the study findings, several conclusions were drawn in relation to the specific objectives of the study. Regarding the legal, policy, and institutional frameworks guiding LPG regulatory practices, the study concluded that EPRA operates under a robust legal and policy framework that facilitates effective implementation of regulatory requirements within the liquefied petroleum gas (LPG) sector. The institutional structure is well-aligned with the current operational environment of the LPG sector in Kenya, particularly in Uasin Gishu County. This structure has been instrumental in standardizing practices such as cylinder handling, where regulatory enforcement has curtailed widespread alteration or tampering. However, despite this strength, the study identified gaps in monitoring the accuracy of LPG refilling, with consumers reporting incidences of underweight cylinders, an area that still requires enhanced regulatory oversight.

Concerning EPRA's enforcement activities, the study concluded that the Authority undertakes a broad spectrum of regulatory actions aimed at maintaining safety and compliance across the LPG supply chain. These include conducting regular inspections at LPG storage facilities, distribution centres, and retail outlets; establishing and enforcing operational protocols; licensing and approving qualified LPG dealers; and imposing penalties and fines on entities that violate regulatory standards. Additionally, EPRA provides platforms for consumer feedback and complaints and actively engages in training and sensitization initiatives to enhance awareness of safety and compliance requirements. These enforcement efforts collectively promote accountability and deter malpractice within the LPG sector.

On the effectiveness of EPRA in ensuring compliance among LPG dealers, the study concluded that EPRA adopts a multi-pronged compliance strategy that incorporates physical inspections, documentation audits, adherence to established technical and safety standards, mandatory reporting by dealers and enforcement of legal penalties. Complementing these regulatory tools are capacity-building workshops and stakeholder training forums that help enhance dealer understanding and commitment to compliance. These mechanisms not only protect consumers but also create a level playing field for all LPG market participants.

And regarding EPRA's institutional capacity and associated challenges, the study concluded that the Authority possesses a relatively strong internal capacity that supports its regulatory functions. Workforce development is well-prioritized, and the availability of financial resources enables EPRA to undertake key regulatory operations, including responses to emergencies and enforcement actions. Furthermore, the Authority's investment in capacity-building initiatives has improved its operational efficiency, strategic focus, adaptability to market dynamics, and

organizational culture. However, challenges such as limited partnership engagement and gaps in outreach to informal dealers persist and need to be addressed to broaden the impact of its institutional reach.

The study affirms that EPRA plays a critical role in regulating the LPG sector in Uasin Gishu County and by extension, Kenya. Its regulatory mandate encompasses licensing, monitoring, enforcement, capacity building, and consumer protection. Through the implementation of sound legal frameworks, active enforcement mechanisms and strategic institutional development, EPRA has contributed significantly to streamlining the LPG sector, promoting safety, deterring illegal practices and instilling compliance among industry players. Strengthening its outreach and enforcement at the grassroots level will further enhance its impact and ensure sustainable regulation of the fast-growing LPG market in Uasin Gishu County and by and large in Kenya.

10.2 Recommendations for the study

Enhance the legal, policy as well as institutional frameworks governing LPG regulation to address emerging risks and market changes. This will help close enforcement gaps and strengthen EPRA's legal foundation for regulating both formal and informal dealers as well.

Improve EPRA's enforcement activities by increasing operational visibility, regular field checks and timely responses to violations by dealers. A stronger enforcement presence will prevent illegal practices and promote compliance among LPG dealers.

Allocate more resources to EPRA so as support compliance monitoring, inspections and enforcement across the country. This is key to addressing the proliferation of unlicensed dealers and improving operational reach.

Build EPRA's institutional capacity through workforce development, stakeholder engagement, and technological tools. Strengthening internal systems will enhance regulatory efficiency, service delivery, and sector-wide trust.

10.3 Recommendations for further studies

Based on the conclusion, the researcher has proposed several recommendations for further studies. Future research could focus on the role of consumers in sector regulation, and best practices for enforcing LPG regulations.

Research on the effectiveness of the regulatory activities of EPRA on protection of the consumers of LPG. A recommendation is further proposed on the influence of collaborative regulation of the liquefied petroleum gas (LPG) sector.

Further, the researcher recommends a study on the best practices in the enforcement of regulations on LPG sector and effectivity of the sector.

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APPENDIX I: QUESTIONNAIRES FOR LPG DEALERS

SECTION A: BACKGROUND INFORMATION

Gender: Male () Female ()

Age range: Below 20 () 21-25 () 26-30 () 31-35 () 36-40 () 41-45 ()
Above 45 ()

Years worked in the company 0-5 () 6-10 () 11-15() 16-20 () Over 20

The years the business has been in operation: 0 – 5 () 6 – 10 () 11 – 15 () Above
16 ()

Highest level of education Post graduate () Undergraduate () Diploma ()

Certificate () Secondary () Primary () Others ()

SECTION B

To what extent have the following statement on the impact of EPRA in regulating liquefied petroleum gas sector in, Uasin Gishu County, Kenya? Please rate on a scale ranging from 1 to 5 where; 1 = very low degree; 2 = low degree; 3= Moderate; 4 = Large degree 5 = very high degree. s

LEGAL, POLICY AND INSTITUTIONAL FRAMEWORKS OF LIQUEFIED PETROLEUM GAS

No	Statement	1	2	3	4	5
1	EPRAs legal framework formulation and implementation is adequate					
2	There is clear institutional structure to deal with LPG sector					
3	Mechanism for monitoring of LPG dealers is well structured					
4	There is adequate policy instruments in LPG sector					
5	Stakeholders are involved in policy and legal framework					

	formulation					
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EPRAS ENFORCEMENT ACTIVITIES

No	Statement	1	2	3	4	5
1	There is regular field checks to contain breaking of the rules and regulations by dealers					
2	Am satisfied with the ability of EPRA to ensure that there is no alteration on the cylinders					
3	EPRA ensure that all cylinders are in shape and safe					
4	EPRA task on ensuring the dealers are properly licenced is adequate					
5	EPRA insurance that there is proper refiling is satisfactory					

COMPLIANCE LEVEL OF LIQUEFIED PETROLEUM GAS DEALERS

No	Statement	1	2	3	4	5
1	Ensuring that dealers are licenced					
2	Review of standard procedures on testing and certification					
3	There are enough certified energy managers and licensed energy auditors					
4	EPRA ensures that both the consumer, investor and stakeholder is protected					
5	EPRA ensures that all disputes and complaints are handled accordingly					

EPRA'S INSTITUTIONAL CAPACITY

No	Statement	1	2	3	4	5
1	Shared institutional development is helpful in regulatory operations					
2	Workforce development makes the staff very versatile and effective					
3	Financial capacity determines operational efficiency of the institution					
4	Partners have helped my organization increase institutional capacity					
5	Capacity building of our organization has made us very effective					

REGULATING LIQUEFIED PETROLEUM GAS SECTOR

No	Statement	1	2	3	4	5
1	Setting of tariffs and other regulations is generally fair					
2	Monitoring of operations of LPG dealers is done according to					

	set guidelines					
3	There is periodic checks on the status of the dealers and compliance level					
4	Setting and review of contracts are done procedurally					
5	EPRA regularly applies penalties on LPG dealers					

Any other comments.....

END

APPENDIX II: INTERVIEW SCHEDULE FOR LPG STAKEHOLDERS

1. What is your age?
1. What is your level of education?
2. How long have you worked in the company?
3. How many years has the business been in operation?
4. How effective is the legal, policy and institutional framework of liquefied petroleum gas regulatory and operational practices?
5. What are EPRA's enforcement activities in regulating liquefied petroleum gas sector?
6. How effective is EPRA in ensuring compliance level of liquefied petroleum gas dealers?
7. How effective is EPRA's capacity in regulating liquefied petroleum gas sector?
8. What is the impact of EPRA in regulating liquefied petroleum gas industries in, Uasin Gishu County, Kenya?

END

APPENDIX III: LETTER OF INTRODUCTION

Caroline Cherotich Odhiambo

Department Of History, Political Science and Public Administration Moi University,
P.O BOX 320,
ELDORET.

Dear Sir/Madam,

I am a student at Moi University, Department of History, Political Science and Public Administration, pursuing Masters in Public Administration and carrying out a research study on **ENFORCEMENT OF ENERGY AND PETROLEUM REGULATORY AUTHORITY POLICIES ON REGULATING LIQUID PETROLEUM GAS SECTOR IN UASIN GISHU, KENYA**. You have been selected as a participant in this study and your co-operation will be highly appreciated. Attached is a questionnaire, you are requested to give your honest opinion about the research study. The information will be used for the purpose of this research only and shall be accorded with all the confidentiality.

Thank you.

Yours faithfully,

Caroline Cherotich Odhiambo

APPENDIX IV: INTERVIEW CODES

EPRA official:	EPR
Distributor:	DSTR
LPG Importer:	LPGI
KRA official:	KRA

APPENDIX V: LPG DEALERS IN UASIN GISHU COUNTY

	Sub-Counties						Total
	Turbo	Moiben	Soy	Ainabkoi	Kesses	Kapseret	
Petrol stations	33	21	22	18	29	19	142
Supermarkets	49	26	36	25	37	29	202
Sidewalks	27	29	18	26	23	16	139
Stores	41	56	36	28	42	27	230
Kiosks	26	11	9	12	20	18	96
Total	176	143	121	109	151	109	809

Source (Uasin Gishu County department of licensing, 2024)