ENTERPRISE RISK MANAGEMENT IN THE GENERATION AND DISTRIBUTION OF ELECTRICITY: THE CASE OF LESOTHO

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ABSTRACT
This article reports a survey which sought to ascertain the level of knowledge and application of an Enterprise Risk Management (ERM) policy framework within the Electricity Supply Industry (ESI) in Lesotho on the part of the management, staff and the general public. The introduction sets the tone and scope of the study by setting out the basis of the argument and outlining the pertinent points of discussion. It looks at the three important companies in the industry, namely: the Lesotho Electricity and Water Authority (LEWA), the Lesotho Electricity Corporation (LEC) and the Lesotho Highlands Development Authority (LHDA).
Key Word: Knowledge Application, Enterprise Risk Management, Framework, Electricity, Administrative

Introduction:
This article reports on Lesotho’s experience of electricity generation and distribution with particular reference to enterprise risk management (ERM). Given that electricity is such an important factor in development and that there are many risks associated with it (such as supply failures) it is important to put in place effective mechanisms for the management of risk. It is argued that there are major weaknesses notwithstanding the progress made. Certain changes of approach are suggested as possible ways forward.
Lesotho, a mountainous country in the southern part of Africa, with an area of approximately 30,355 square km and a population of 2,067,000 million, is totally surrounded by the Republic of South Africa. The majority (70%) of the population lives in the lowlands – comprising rural, urban and semi-urban areas, whilst 30% lives in the foothills and the highlands, (web.worldbank.org; www.lonelyplanet.com).
The prominent line of divide (highlands and lowlands) – the Blue Mountain Range (Thaba Putsoa) runs from Quthing in the - as the lowest point, to Oxbow in the north - as the highest point. Many of its peaks are over 3000m and it also boasts the highest lowest point of any country in the world - at over 1000m.

Lesotho (formerly Basutoland) which gained independence from Great Britain in 1966 is divided into 10 districts for administrative purposes, with the capital city being Maseru, with each district having a District Administrator (DA), who heads the administration team, and elected members of local government councils, known as councillors.

Electricity in Lesotho prior to independence was the direct responsibility of Government and was generated from a small coal-fire managed by the Department of Public Works and was just enough to supply a few consumers in Maseru - residence of the then British government authorities and the administrative centre. It was only in 1966 that this began to change when a German advisor to the government of Lesotho in the Public Works Department convinced government to form a parastatal unit which came to be known as Lesotho Electricity Company (LEC). (www.lec.co.ls).

The LEC was established under the Electricity Act No. 7 of 1969, which empowered it to generate, transmit, distribute and supply electricity. This made it the sole electricity supplier, hence its mission statement which reads “to generate, transmit, distribute and supply electricity and appurtenant works throughout Lesotho, in a manner calculated to satisfy customer needs for safe use and quality electricity services, at competitive and affordable prices” (www.lec.co.ls).

With increasing electricity demand LEC entered into an agreement with Eskom South Africa to supply Lesotho with additional electricity. This agreement still stands today. But in order to supplement and to supply electricity to the remote towns of the country which could not be
connected through South Africa’s ‘Eskom’ grid, LEC used small mini Hydropower generators to supply remote areas.

The electricity industry in Lesotho is currently dominated by three state owned entities, namely the Lesotho Electricity and Water Authority (LEWA), formed by The LEA Act No. 12 of 2002, to deal mainly with regulation, quality of supply of electricity and water, the LEC, which is the monopoly transmitter, distributor and supplier of electricity, and lastly the Lesotho Highlands Development Authority (LHDA), which is the main generator of electricity through its ‘Muela Hydropower Station. The generating station supplies LEC with 72mega Watts (MW) of electricity from 3 turbines with an output of 24MW each. (www.lea.org.ls; www.mbendi.com).

This study seeks to investigate the level of management of risk, if any, by the two electricity utilities (LEC and LHDA), and the regulator in Lesotho. The system is connected to the Eskom grid – the biggest supplier in the Southern Africa region. The study investigates what Enterprise Risk Management policy frameworks and strategies are in place.

Theories of Risk Management:
Since its establishment LEC has been empowered to generate, distribute and supply electricity thus making it the sole electricity supplier to date, but most importantly the regulator, a monopoly which it enjoyed until the construction of ‘Muela Hydropower Station, under the Lesotho Highlands Water Project (LHWP) Phase 1A and the establishment of the then Lesotho Electricity Authority (LEA) in 2002, subsequently becoming LEWA in 2012.

The industrialisation of the world in the twentieth century, especially in the late 1930s dictated an enormous increase in the usage of electricity. This trend has since continued to the twenty first century and has also influenced the growing economies, Lesotho included, where about 136,500 people now depend on the use of electricity for their livelihoods on a daily basis.

What is risk?
Risk is a condition of uncertainty, success or failure. It is defined by Vaughan and Vaughan (1996:5) as “a condition in which there is a possibility of an adverse deviation from a desired outcome that is expected or hoped for”.

Risk in the context of business is and will be caused by various factors – some of which the business may not have control over and some of which it has control over.

These various factors create situations of uncertainty for any organisation in attaining its mission; it must therefore address the problem of protecting itself against any events that can place the pursuit of this fundamental objective and all of its preliminary intermediate objectives at risk. Risk can impact on an organisation in the short, medium and long term, (ISO 31000, 2009:4).

These various factors are classified by Bloom and Boessenkool (2006:229) as either systematic or unsystematic. They go on to say the business/enterprise usually has no control over systematic risks – caused by factors such as changes in the economic and political environment, whereas unsystematic risks can be controlled because they tend to be business or industry specific.

The following are identified by the same authors (2006:230) as the systematic risks, namely, a) cyclical risk, b) purchasing power risk, c) interest and d) political risk; whilst the following are otherwise identified as the unsystematic risks, namely, a) business risk, b) financial risk, c) liquidity risk and d) location risk.

Electricity is an important resource for operation in any economy, be it developed or developing. It is used to drive most modern technological machinery and equipment hence requires that it be continuously and constantly available. So any failure to provide a constant, continuous and safe
to use power supply can have a devastating effect on the operation of a country and its economy, which would then affect the lives of millions of people whose livelihoods on a daily basis depend on electricity.

Uncertainty of demand is due to the fact that the price of electricity is several times higher than what an average consumer can afford, for example, Maloti/Rand 0.95 per unit (kWh) in Lesotho and R 0.85 per unit in South Africa. This will increase by 16% per year for the next five years, (www.eskom.co.za).

**Risk Management in the Electricity Sector – Generation and Distribution:**

The concept of risk management comprises certain aspects of behaviour or reaction to any possible outcome other than the desired one.

The International Organisation for Standardisation (ISO) articulates the following factors of risk management, which it sometimes presents as an acronym (ACAT): a) avoid, b) control, c) accept and d) transfer, (www.iso.org)

Management of risk is an integral part of good management. It is an iterative process of continual improvement that is best embedded into existing practices or business processes, (Knight, 2010:8).

As has been articulated by ISO, Knight and others, risk management is a process with interconnected steps, which because of their nature are also strongly connected. They cannot, therefore be managed in a fragmented pattern by independent functions and/or departments, but a dedicated process is necessary that requires a structure, an organisation and communication mechanisms.

The process of risk management can thus be achieved through the following eight steps, namely: 1) determination of objectives; 2) identification of risks; 3) evaluation/ assessment of risks; 4) consideration of alternatives; 5) communication; 6) planning and implementation of decisions; 7) checking and supervision, and 8) evaluation and process review, (EWF, 2008:5). It is important, however to note that for the process to be effective the steps must be fully integrated within the wider scope of the company’s organisation.

**Risk Management Frameworks, Principles and Processes:**

The ISO 31000 Standard as adopted by both Australia and New Zealand as AS/NZS ISO 31000:2009 strongly reiterates that for any risk management strategy to be implemented efficiently, effectively and coherently the organisation in question must establish a comprehensive framework.

The ISO Standard highlights a strong relationship between the principles of managing risk, the framework in which it occurs and the management process recommended. This relationship is presented as follows:
The Risk Management principles clearly outline the nature, the importance and the structure that must be followed in order for the process to be successful and the expected benefits thereof.

The Framework on the other hand describes the components of a risk management implementation framework, highlighting the necessary steps and their interconnectivity. However, the most important step is the mandate and commitment of the Board of Directors – who will then set the right tone and culture for the employees to live by.

It is therefore imperative that all the three components are well defined and instituted in order to obtain the full benefits of the policy and associated returns.

The most important aspect of risk management in the electricity sector involves ensuring the safe and accident free operation of machinery and equipment for the extraction, transportation and transformation of energy, without losing sight of protection to the environment.

**Generation, Distribution and Associated Risks:**

**Hydropower Generation and Associated Risks:**
Hydropower generation is the most widely used form of renewable energy, because of its cost which is relatively low, making it a competitive source of renewable electricity.

The LHWP is primarily a water transfer system from Katse reservoir in the mountains en route to South Africa, powering an underground hydroelectric power station that also generates electricity to supply the needs of Lesotho.

The ‘Muela Hydropower Plant, being a small part of the LHWP, does not have a risk management policy, except that it is included in the LHDA Corporate Risk Management Strategy – very briefly so (LHDA CRMS, Progress Report 2012:1; LHDA Strategic Plan 2009 – 2013:5).
Electricity Distribution and Associated Risks:
Distribution of electricity is a process of bringing electricity nearer to the consumers by the use of cables at different voltages from the sub-station. The voltage may vary from 220 to 380 volts depending on the type of customer or cluster of customers to be serviced. It is the final stage in the delivery of electricity to end users, (http://en.wikipedia.org).

Typically, the network would include medium-voltage (less than 50 kV) power lines, substations and pole-mounted transformers, low-voltage (less than 1 kV) distribution wiring and sometimes meters – as in the case of Lesotho, where there are both pre-paid coupon meters and the conventional post-paid meters.

Conductors for distribution may be carried on overhead pole lines, or in densely-populated areas where they are buried underground. Urban and suburban distribution is done with three-phase systems to serve residential, commercial, and industrial loads. Distribution in rural areas may be only single-phase if it is not economical to install three-phase power for relatively few customers, (http://en.wikipedia.org.)

Therefore a distribution network starts with a substation and transformers to lower down the voltage to manageable levels, such as, 220 or 380 volts on poles or underground to respective customers.

The goal of the electricity distribution business is to satisfy the customers’ need for electricity, to ensure the quality of electricity supply, and to yield profits to the owners. The industry is characterized as being highly capital-intensive with long asset lifetimes, typically 30–50 years. There are risks associated with the distribution of electricity (Electricity Distribution Industry); these are the most common:

- **Structural risk** – these are arising from within the industry
- **Growth risk** – risks arising from the expected future performance of the industry, and
- **External sensitivity risk** – risks arising from forces external to the industry,
- **Reputational risk** – fear of loss of customer confidence, and not meeting regulatory obligations.
- **Technical/technology risk** – arising from various aspects of equipment used to transport power to the customers such as:
  - Vandalised or aged infrastructure;
  - Rapidly changing technology;
  - Health, Safety and Environmental regulations – arising from regulatory requirements.

However a corporate strategy that encompasses a strong ERM policy framework should have looked at the possible risks holistically and designed an appropriate policy response.

**Enterprise Risk Management (ERM) Framework:**
ERM is a process of treating risks holistically (Deloach, 2000:42) and not through isolated silos as in the old paradigm, which Deloach in 2000 (cited in Lennon, 2007:17) argued was a shift to a new strategic perspective.

ERM is defined by the Risk Management Institute of South Africa (RMISA) (2003:2) as “a structured and systematic process interwoven into existing management responsibilities, to effectively deal with uncertainty and associated risk and opportunity, thereby enhancing the capital and earnings”.

The practice of managing risk in an enterprise (ERM) as articulated in the definition by RMISA above is strategic by nature and is a key element of governance and sustainability, as it takes a broader approach to the preservation of the organisational values; it is therefore befitting to underline it as a corporate management prerogative, (www.theiia.org, Walker, et al. 2002:14).
The acceptance of ERM being a more of a governance issue, is in line with the popular definition of ERM by The Committee of Sponsoring Organisations of the Treadway Commission (COSO) in 2004 (cited in Beasley, Clune and Hermanson, 2005:530 and Daud, Yazid and Hussin, 2010:57), which defines it as “a process effected by an entity’s board of directors, management and other personnel, applied in a strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives”.

The Relationship between Objectives and Components:
There is a direct relationship between the objectives, which are what the enterprise strives to achieve and the ERM components, as discussed, which represent what is needed to achieve them. It is represented in a matrix as below:
- The four objective categories – strategic, operations, reporting and compliance are represented by the vertical columns;
- The eight components are represented by horizontal rows, and
- The entity and its organisational units are depicted by the third dimension of the matrix.

![Figure 3. Relationship of Objectives and Components, 3-D. Source: COSO 2004:16.](image)

Much as ERM is believed to be a governance prerogative (King, 2002:9, Smit, et. al. 2007:109 and Daud, et. al. 2010:55) it is important that the whole organisation, at various levels of operation, is involved in the implementation of the risk strategy, by way of deploying it in an integrated manner across all units.

Tippins (2008:11) says that it is apparent that Eskom had got its strategic capacity planning correct, and had identified that demand would outstrip the supply as early as in 2007, but the interventions put in place were not enough to mitigate current shortages. An important lesson learned here is that risk must be considered in the broadest possible context and constantly measured and re-evaluated. Unfortunately that problem of supply shortage still exists (SABC 2, 31st January, 2012).

Privatisation of the Electricity Sector:

Privatisation in Lesotho has brought another element into the risk assessment of the industry. By definition, it reduces direct control by the state. This automatically creates a greater element of
risk, resulting in the need to strengthen risk management. This is supported by various definitions of privatisation; it has, for instance, been defined as “a process of transferring ownership of business (by selling) from Government/public sector to the private sector – private investors”, (Harris and Saunders, 1994:66). Taprantzis, (2012:3) summarised the principles of privatisation programmes as: i) debt management, ii) competition, iii) investment attraction, iv) creation of new job opportunities and v) creation of liberalised and functional markets.

The Lesotho Privatisation Unit:

The Government of Lesotho in 1995 adopted the Privatisation Act of 1995 and created a privatisation unit. This initiative was initially to prioritise the privatisation of the Lesotho Telecommunications Corporation (LTC). This led to the adoption of Telecommunications Policy in 1999, which was meant to put an accent on the regulatory and legal reforms of the sector in order to promote economic growth and private investment, (Privatisation Background Country Fact Sheet, GOL. 2001).

Electricity privatisation was to be preceded by a restructuring process, with the sole intention of improving performance in access, efficiency and customer service. The preferred method of restructuring was the Public Service Concession (PSC). This approach ensures that GoL retains long term control over electricity assets while achieving the benefits of private sector investment and expertise in LEC. The main features of the PSC approach are: a) permanent concession to provide electricity services within a defined Service Territory; b) a majority stake would be sold to a strategic partner through a competitive tender for a fixed period; and c) the shares would be re-tendered periodically going to the highest bidder.

The following factors were highlighted as the key components of the PSC transaction:

- 70% of LEC (Pty) shares offered to investors at a fixed price;
- 30% of LEC (Pty) shares retained by GoL for possible future divestiture to local investors and employees;
- Investors bid a 10 year rollout plan for new connections, in line with the GoL’s priority objective, GoL and investor to agree rollout plan for the subsequent 10 years;
- The initial PSC will be for 20 years, subsequent concessions will last for at least 15 years;
- Financial restructuring of LEC’s balance sheet, which will involve the conversion to equity of some of its liabilities to GoL;
- Bidders will have the option of obtaining a Partial Risk Guarantee from the World Bank/IDA, which would cover them against political and regulatory risk; and
- The implementation of the approved Transitional Tariff Plan (‘Tariff Plan’)

Regulation in the Electricity Sector:

Electricity regulation in Lesotho since 1969 was done by the only utility (LEC) until 2002 when LEA was established by The LEA Act No. 12, of 2002. It was mandated to perform the following duties:

a) Issue, monitor and enforce licenses;

b) Establish and review technical standards;
c) Establish and monitor safety standards;
d) Establish and monitor customer care standards;
e) Regulate prices where not supplied on a competitive basis;
f) Approve and enforce terms and conditions for electricity supply, and
g) Resolve disputes.

The formation of the LEA brought to an end the monopoly of LEC to regulate, distribute, generate and supply electricity. It is therefore important to analyse the impact brought about by the introduction of regulation to the industry, whether positive or negative.

According to Buchs (2003:26) market structure within an industry, competition and regulation frameworks are very important issues in the privatisation process, highlighting the importance of regulation prior to privatisation.

A typical example of problems associated with privatising the electricity sector first and then gradually refining the regulatory structure later is cited as Ivory Coast (Cote d’Ivoire) where the government looked for a strategic partner. After 5 months of negotiations, a 15 year concession was given to the new Compagnie Ivoirienne d’Energie (CIE) to manage the generation, transmission, distribution, import and export of electricity, only for the government to reform the regulatory framework in 1998, (Buchs, 2003:32).

A key mandate for any regulator is to set up a framework that will guide the utilities to provide secure and consistent electricity in order to meet the demands of modern society, which cannot function without reliable and affordable electricity, as it affects all aspects of society such as commerce and industry, infrastructure, education and healthcare. This issue of security has been consistently a recurring issue on the agendas of most regulators as mentioned by the Chairman of the Board of LEA in his Annual Report, (2010 – 2011:3).

In its attempt to redress the continued power supply and demand imbalances in the country and SADC at large, LEA has developed user friendly guidelines on efficient use of electricity for both the residential and industrial/commercial sectors. These guidelines are available on the Authority’s website for public consumption.

In fulfilling some of its mandate and supply reliable and secure electricity, LEA has collaborated with other stakeholders to facilitate the development of renewable energy fit-in tariffs (REFIT) policy for Lesotho as a means of encouraging distributed/embedded generation using renewable resources.

At international forums LEA actively participated in such bodies as the African Forum for Utility Regulators (AFUR) and is an active member of International Confederation of Energy Regulators (ICER). As a result of being a member if these bodies LEA continues to reap benefits related to Utility Regulation.

As part of its corporate governance strategy in line with latest international practices on the issue of risk management, LEA, in February 2012 issued a Request for Proposal (RFP) known as

The RFP was requesting the services of a Risk Consultant to develop a risk management policy and strategy, whose purpose was to develop processes and procedures to identify and manage risk in a cohesive, structured and effective manner. LEA had no risk management policy framework in place at that point.

**Common Purpose in Electricity Regulation within Southern Africa:**

The current Southern African Development Community (SADC) consists of the following countries, namely: Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe, which among its trade agreements has been energy sector initiatives such as Regional Electricity Regulators Association of Southern Africa (RERA), formed in 2002 in terms of the SADC Protocol on Energy (1996), the SADC Energy Cooperation Policy and Strategy (1996), the SADC Energy Sector Action Plan (1997), the SADC Energy Activity Plan (2000) and in pursuit of the broader initiative of the New Partnership for Africa’s Development (NEPAD) and the African Energy Commission (AFREC), (www.rerasadc.com.)

The whole region needs a considerable increase in generation capacity to meet the growing demand which Eskom will not be able to meet, as it is also running out of capacity. This fact seems to be attracting foreign investors to invest in the other regional countries. The potential for sales in and to regional countries - either in the form of in-country sales, power sales via the Southern African Power Pool (SAPP) or direct sales between neighbouring countries is becoming increasingly attractive.

All but Mauritius, Madagascar and Mozambique of the member states are connected to and get their electricity from Eskom. Lesotho being a member of these cooperative agreements is supposed to be benefiting from the policies derived from the various SADC energy protocols.

SAPP was established as a voluntary market entity based on a loose-pool principle to cater for both long-term and short-term contracts, providing increased scope for reduction in supply costs to participating members. It was not considered a as a regulator. It could only facilitate trading of electricity between a willing buyer and a willing seller.

RERA has the following strategic objectives in the region:

- **Capacity Building & Information Sharing** – to facilitate electricity regulatory capacity building among members at both a national and regional level, for example through information sharing and skills training;

- **Facilitation of ESI policy, legislation and regulatory frameworks**, harmonize ESI policy, legislation and regulations for cross-border trading, with particular focus on terms and conditions for access to transmission capacity and cross-border tariffs;

- **Regional Regulatory Cooperation** -- deliberate and make recommendations on issues that affect the economic efficiency of electricity interconnections and electricity trade among members which fall outside national jurisdictions.

Membership of most of these agreements is voluntary, but most important is the fact that energy planning is the responsibility of government; utility and regulators. There are overlaps between
these institutions (government, utility and regulator) and also between planning and implementation. It is also noted that most of the SADC member states have, to date, established sector regulators with executive functions. But where no regulators exist, it is the responsibility of the relevant government ministries to grant licenses and provide oversight functions.

**Research Methods:**
A structured interview guide was constructed with mostly closed-ended questions. Quantitative methods were mainly used to collect secondary data (figures) to support the primary data, meaning that a form of triangulation of both approaches was used, since the two approaches complement one another in data collection and analysis.

**Sampling Strategy:**
This section aims to highlight the strategy used to choose the sample, which best suits the type of study – qualitative or quantitative – under discussion. It is important to note that the purpose of sampling is to improve the quality of the findings by ensuring that the units under study are as representative of the whole population as possible. Because of the nature of the research, the sample was taken from two different groups of populations: first it was taken from the employees of LEC – a population of 560 employees, while the second was taken from the general public from the following areas, a) Maseru, due to the population density of people using electricity, b) Maputsoe, an industrial area 85 kilometers north of Maseru, for the simple reason that Maputsoe accommodates a 132KV Switch yard for electricity from ‘Muela hydropower station, and c) ‘Muela, Butha Buthe – 170 kilometers north of Maseru, because ‘Muela generates 72MW of power for LEC. The sample size was a proportion of 560, with an error margin of ± 5% and confidence level of 95% determined by using a simplified formula for proportions (Yamane, 1967:866).

**Research Instrument:**
In order for the researcher to collect data for this study, the researcher constructed a structured interview guide with specific questions. This was in the form of a questionnaire structured in a 5-point Likert scale format, whereby the respondent was to choose an appropriate point on the scale to match his/her understanding of the question. Face to face interviews were also used since they offered the respondents a better chance to state their viewpoints.

**Data Analysis:**
After all the data had been collected an analysis was made, based on a model used in an earlier Lesotho study (Kingdom of Lesotho - Ministry of Trade and Industry; Cooperatives and Marketing (MTICM) 2010). The analysis was done using both descriptive and inferential statistical methods, where inferences are made using sample statistics to the population parameters (Borg and Gall, 1989: 336). The use of this statistical technique resulted in comparing the modes and means of the two samples using the analysis of variance (ANOVA) which looked at the samples in order to make inferences.

**Results of the Research:**
The purpose is to present the findings gained from the collected data and analysis of such data in the form of tables and graphs, followed by a description of both results as analysed.

**Presentation of results:**
The results are presented as in the questionnaires, (Questionnaire A for LEC employees and B for the general public).
Data analysis follows directly below each bar graph.

**Questionnaire A**

**General Knowledge**
This section represents the knowledge of LEC employees about their own operations and their customers’ opinion of their company. The response from the 5-Likert format questions will be presented using vertical bars graphs.

**Question One:**
LEC customers do not know what risk is:

![bar graph showing responses](image)

**Figure 4**
Here a high percentage (37%) of employees tends to believe that LEC customers do not know what risk is, whilst 26% are unsure. But only 21% percentage tends to disagree with that view. The total percentage (16% + 37%) feels that their customers do not know much about risk. This perhaps arises from the feeling there is not much awareness training being done by the company.
Question Two
LEC advises its customers on the usage of power savings bulbs:

![Bar chart showing opinions on power savings bulbs]

The above figure represents an opinion shared by a very large percentage – 94% - in total to say indeed LEC has embarked on advising customers to use power saving bulbs, known as Compact Fluorescent Lamps (CFL) to reduce power consumption. LEC embarked on this programme after the 2009 load shedding experience and indeed there are pamphlets at most of the LEC outlets to inform the public about the importance of saving power or rather managing power usage, such as switching off geysers and other electrical equipment when not in use. The Energy saving Tips at Home has advice on cooking tips, refrigeration tips, lighting tips and many more.

Question Three
There is not risk awareness communicated to LEC customers:

![Bar chart showing opinions on risk awareness]

Figure 6
There is a more-or-less divided opinion on the response here with a slightly higher percentage disputing that LEC is not doing enough to educate its customers on risk while a slightly lower percentage agree that the company is not doing enough on risk awareness. However the awareness communication is mostly confined to safety around the home, and little is said about the external equipment, especially around the switch yards and other structures. They could do better. 20% seems not to be sure how much work is done.

**Question Four**
LEC customers do not understand the importance of reporting possible electricity hazards to the authority:

![Figure 7]

There is also a divided opinion in question 4 above where 52% also feels that the company is not doing enough to educate its customers to develop a sense of ownership to let them come forward to report any visible fault when they see one.

A lower percentage (33%) rejects the statement.

**Question Five**
LEC property sometimes exposes customers to health risk:

![Figure 8]

Despite the awareness campaign run by the company 53% feel that there is not much protection against possible accidents exposure to customers, while 34% disputes that claim. Risk management does not only cater for malfunctioning of the equipment but also addresses human safety (Rowe in 1977, cited in Ansell and Wharton, 1996:4).

There is enough evidence here to suggest that there is not much done by the company to protect the health of customers and that there is still room for improvement.
Question Six
LEC employees do not all understand what is meant by ERM:

Figure 9
The figure above also shows a strong feeling from 55% of the staff admitting that they do not know much about ERM, while 14% denies that claim. This in itself is a sign that ERM is not practised throughout the company for the simple reason that a successful ERM policy has to include and be practised by all employees – top to bottom - as articulated by COSO in 2004 (Clune and Hermanson, 2005:530), where it states that ERM is “a process effected by an entity’s board of directors, management and other personnel…… “. But the graph above clearly indicates that 55% do not understand ERM principles, a clear indication that it is not understood or being practised. The situation is worsened by the 31% who are not sure.

Question Seven
LEC employees are supplied with protective clothing:
Figure 10
The high percentages in this graph indicate an agreement by the staff that employees are provided with protective clothing. This is attributed to the fact that there are more technical employees and the nature of the work tends to be out in the field and these are exposed to adverse weather conditions so there are many people who receive protective clothing, so they can be easily seen.

Question Eight
LEC has a risk manager in its permanent structure:

Figure 11
There is 74% agreement that there is a risk manager in the permanent structure of the company. Since the office is at the Headquarters it is clearly visible for the employees in the same building, while those in the remote offices may not know that, hence 25% are unsure. The 25% unsure group may also be attributed to activities that are supposed to be done by the head office are not really done, such as risk awareness for customers. This also creates a feeling of uncertainty.

Question Nine
Privatisation has not had much impact on the quality of service provided by LEC:
The response on the effects of privatisation on the quality of service provided by LEC did provide a clear sign of no improvement to services as indicated by 29% of the respondents, but a big percentage (42%) had not seen or could not comment on observing any improvement in the services.

There is however a small percentage 19% = (16% + 3%) that believe there was an improvement of services provided by the company, though such improvements were not mentioned, as they are not part of this study.

**Question Ten**

**Has the impact of privatisation been good or bad?**

A large percentage (56%) is not certain whether there are any positive and noticeable improvements.

**Question Eleven**

LEC gets most of its electricity from Eskom South Africa:
Figure 14
This figure also is more of a split between those who agree that most of LEC’s electricity is imported from Eskom South Africa and those who disagree. It can be argued that the 49% who agree are non-technical whilst those who disagree are technical by profession. The truth of the matter is that it now gets most of its electricity from ‘Muela hydropower not Eskom. The reason for this conclusion is that the technical personnel tend to know more about the amount of electricity consumed per a given period and simple arithmetic can be done on how much is generated by ‘Muela and how much is imported.

Question Twelve
LEC and Eskom are both members of Southern African Power Pool (SAPP):

Figure 15
By the same token, the technical personnel are quite familiar with the relationship between LEC and Eskom as they tend to attend meetings on mutual agreements with Eskom. This information may not be known to non-technical personnel.
A significant amount (30%) is not sure as to LEC’s membership, which may be due to no knowledge of what SAPP is. A non-significant 1% disagrees, perhaps for lack of knowledge too.
Question Thirteen
LEC gets some of its electricity from ‘Muela Hydropower Station:

![Bar Chart]

Figure 16
Another consensus is on where LEC gets some of its electricity – ‘Muela Hydropower. This is indicated by 95% of employees agreeing to the statement. ‘Muela hydropower is well known to all employees as they often participate in departmental meetings. ‘Muela has also become a tourist attraction in the country and it is therefore listed in every magazine in the country’s tourism literature which may have also influenced this answer.
Question Fourteen

LEA is the electricity regulation body in Lesotho:

Figure 17
This figure exposes a lack of knowledge on the side of some employees who, though at a small percentage still do not know about LEA. However a bigger percentage seems to know that LEA is certainly the electricity regulator in the country. Only 1% disagrees.

Question Fifteen

LHDA only generates electricity but the distribution is done by LEC:

Figure 18
Another technical question that gets a positive response from the more technical of the employees 82%, while the few non technical respondents may not understand exactly the division of responsibilities between the two companies.
Question Sixteen
LEC and LHDA are both regulated by LEA as electricity industry entities:

![Bar chart](image1.png)

*Figure 19*
This indicates that at least 68% acknowledge knowing the mandate of LEA, the regulatory aspect of both LHDA and LEC. Similarly a noticeable 30% seems not to know about LEA and its mandate. This may be a sign of ignorance on the part of employees.

Question Seventeen
LEC has a toll free number which can be called by customers to report any type of fault:

![Bar chart](image2.png)

*Figure 20*
Another consensus is indicated by 92% who agree that LEC has a toll free number for customers to report any type of fault, both during and after hours – 24/7 but there is still some 8% who are not sure.
Question eighteen
The price of an electricity unit is too high for domestic users:

![Bar chart showing the percentage of respondents' opinions on the price of electricity.]

Figure 21
The above picture represents another split where some 47% agree that the electricity unit is a bit high for the customers, while 22% are not sure and 31% perhaps disagree completely. The 32% that disagree may not even be aware how much a unit cost due to the fact that they may get free units per month, so they do not actually pay for electricity. As for those unsure, it could be for the same reason.

Question Nineteen
LEA has to enforce adherence of the utilities to the integrated ERM policy and strategy:

![Bar chart showing the percentage of respondents' opinions on LEA's adherence role.]

Figure 22
This figure also splits the respondents into two groups, 32% agree that LEA as the regulator should enforce adherence and application of ERM policy by the utilities because it is understood that ERM policy framework is a governance issue, as argued by Knight (2010:8) in regarding management of risk is an integral part of good management, it is an iterative process of continual improvement that is best embedded into existing practices or business processes. These processes and practices are best determined by the regulator as benchmarks and codes of good practice to be applied throughout the sector by the member utilities. The 61% of unsure respondents can be attributed to lack of understanding of the concept of ERM. Compliance continues to be a challenge to regulated utilities and there have been efforts by the Authority and LEC to step up regulatory compliance as reiterated by the LEA Board of Directors in the meetings in 2011 (LEA Annual Report 2010 – 2011:13).
Question Twenty
LHDA does not have an ERM policy:

![Bar Chart](image)

**Figure 23**
Here the 7% only confirms that LHDA does not have ERM policy, while the 65% of unsure respondents can be attributed to lack of knowledge on the concept of ERM, especially when it refers to a different company, no matter how closely they interrelate. Moreover the absence or presence of some governance issues may not be well known by a big number of employees. The 23% percent that disagrees may be high level management who know that LHDA does have a risk management policy, though its emphasis is on environment and not electricity generation.

Question Twenty One
LEC customers do not understand the operations and mandate of LEA:

![Bar Chart](image)

**Figure 24**
The above figure brings out the lack of understanding of the mandate of the regulator by the customers (36% and 40%) totalling 76%. The remaining 24% tend to believe that LEC customers know and understand the mandate of the regulator.

Questionnaire B
The responses here will be presented in pie chart format. 60 respondents were interviewed.

General Knowledge
This section of general knowledge represents the opinions of residents of three localities, namely: Ha Mabote, Maputsoe and ‘Muela, where both LHDA and LEC have infrastructure. The figures are expressed with decimals as these are percentages out of 60 (in Questionnaire A the sample was 100 so no decimals arose).
Question One:
LEC customers do not understand risk:

![Figure 25](image)

From the 60 respondents interviewed 13.3% strongly agree that LEC customers do not understand about risk. Another 48.3% agree, whilst 26.7% are not sure. The remaining 6.7% and 5% disagree and strongly disagree respectively. This figure reflects that a large percentage is ignorant about risk.

Question Two:
LEC advises its customers on the usage of power saving bulbs:

![Figure 26](image)

Here a large number of customers do not agree whilst 25% are unsure – a sign that there is a need to do more to educate customers on power saving tips.

Question Three:
There is not much risk education communicated to customers:

![Figure 27](image)
The above actually supports the answers to question one above and highlights the need for LEC to do more to educate its customers on risk awareness and other related aspects of using electricity.

**Question Four:**
LEC customers do not understand the importance of reporting possible electricity hazards to LEC:

**Figure 28**
Customers do not seem to understand the importance of reporting any possible faults to the LEC authority, simply because they do not understand the risks and dangers that the faults may expose them to – another challenge to the LEC.

**Question Five:**
LEC sometimes exposes people and livestock to health hazards:

**Figure 29**
More risk awareness could benefit LEC as the customers can then report a possible fault, thus it LEC will be able to reduce the possible exposure of people and livestock to danger and avoid litigation.

**Question Six:**
LEC is the generator and distributor of electricity:
Figure 30
This high percentage that agrees and strongly agrees with this statement indicates the ignorance of the general public on their electricity utilities, the fact that LEC distributes electricity to them suggests that LEC also generates electricity.

Question Seven:
LEC property in our area has taken some of our grazing land:

Figure 31
Due to the high voltages that are transmitted over long distances and infrastructure built to support these huge electrical projects some grazing land - vast land in some villages – had to be reserved solely for LEC and LHDA, thus some grazing land is forfeited by the communities in such areas.

Those aware of this total 46.7% (15%+31.7%), whilst 28.3%, probably from urban areas are not sure. However some 25% seems not to agree, which is probably a response from urban areas where grazing land is not as significant.

Question Eight:
Electricity never goes off in my area:

Figure 32
The above figure is an indication of the quality of power that is distributed to the customers as over 90% confirm that there are power failures in their areas. This is a need to improve the level of supply and try to reduce the frequency of power failures. There are, however, no statistics available on losses due to unplanned power cuts.

**Question Ten:**

**LEC technicians respond promptly whenever a fault is reported:**

![Bar chart showing responses to the question](chart.png)

*Figure 33*

Here the graphs represent one of the major areas of customer service deficiency that LEC has to address. Some 70.7% dispute the fact that LEC technicians respond promptly when a fault is reported to them. This may require that the LEC – in assuring quality service - has to commit to some form of service level agreement (SLA) with the consumers, to avoid complaints and litigation.
Question Eleven:
LEC has a toll free number which can be called by customers to report any type of fault, 24/7:

![Figure 34]
There is a lot of uncertainty here about the toll free number, but it does exist, but like other important information LEC has not really done enough for the customers to know about it.

Question Twelve:
Lesotho Electricity Authority is the electricity regulator in Lesotho:

![Figure 35]
There is a high level of agreement as 71.6% agree. A smaller percentage (28.3%) does not know about LEA. It needs to increase its public relations work, e.g. Corporate Social Responsibility activities.
Question Thirteen:
The price of an electricity unit is high for domestic customers:

Figure 36
Here again a bigger percentage (65%) agrees that the unit price is high for the customers, which is currently sitting at 90 cents/lisente (one SA Rand = one Lesotho Loti) a unit, whilst 31.7% are unsure but it could be they do not pay for electricity in their homes, perhaps because......

Question Thirteen:
Power surges normally damage customers’ electrical and electronic equipment:

Figure 37
68.40% that agree that power surges normally damage customers’ electrical and electronic equipment, whilst 21.7% is unsure – maybe because they do not possess such equipment in their homes. The 10% that disagrees may either not have electricity at their homes or have been able to protect themselves with surge arrestors, because they have ‘learned the hard way’.

Question Fourteen
LEC usually compensates customers’ damaged equipment, if such damage is reported:

Figure 38
Another high percentage (43.30%) disputes that LEC compensates those customers who have lost their equipment due to power surges. 50% is unsure. This may be because they have not experienced this problem or tried to obtain compensation. It is also possible that they are uninformed.

**Question Fifteen:**
LEC customers do not understand the operations and mandate of the Lesotho Electricity Authority:

![Figure 39](image)

A total of 71.70% confirm that the general public does not understand the functions and mandate of LEA, and 20% remain unsure, while only 8.3% have a feeling that the general public is aware of the mandate. This is a sign of a need to involve the public more in communication and improve CSR activities.

**Question Sixteen**
Are there any other points you would wish to add which you think may be relevant to this research?
This is the only open ended question where respondents were expected to give any additional information which they may find pertinent.

The following is a summary of the common points of concern:

- LEC should improve infrastructure as it endangers the lives of the public, thus providing poor services
- Poor communication to customers on planned outages or faults occurring. The use of short message service (SMS) could prove a lot more effective.
- Electricity unit costs are high, especially for the elderly. Government should consider subsidising the elderly.
- Rural electrification is very slow – poor rollout strategy from LEC
- Poor customer service at service points – customer care staff should be given more training on how to handle customers
- Toll free numbers mostly not answered. There seem to be technical problems with numbers and switchboards.

**Conclusions:**
There are significant conclusions to draw from the study that are pertinent to the quality of the services provided by the three utilities in the ESI in Lesotho. It is evident that most of the customers do not understand the functions and mandate which some of its function is to solve any possible disputes between the customers and the utilities. Therefore LEWA has to embark on customer education. Furthermore this study highlights the fact that LEC has taken some effort on
customer education, but more can be done in order to bridge the gap that exists between what is their obligation and the obligation of the customers in order to alleviate the possible risk exposures.
So it is of paramount importance that the customers are equally knowledgeable on the use of electricity and associated risks in order for the company to achieve its strategic and competitive goals. Equally LHDA has to formulate a policy framework that will look at the generation of electricity from a more detailed perspective, as it is an entity in its own right.
As discussed earlier LEWA is in the process of formulating an ERM policy framework that in principle should apply to the two utilities. This policy should be enforced by the regulator in line with modern accepted principles of good corporate governance. This will in turn increase customer confidence.
Finally, this study has identified and highlighted a gap between the utilities and the customers, which is mainly attributed to poor or a lack of involvement of the customers in risk related matters that really concern them. The authorities have an obligation to put the matter to rest by involving all stakeholders. The utilities also have to keep abreast with the latest acceptable standards that are practiced internationally to avoid lagging behind. There can be no doubt that Lesotho’s electricity industry needs a more effective approach to ERM to ensure that risks are better managed.

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