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Evaluation of Corporate Eco-Efficiency on Organization Performance: Case of Unilever Kenya Limited

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Abstract
Eco-efficiency is meant to reduce ecological effects by de-coupling resource use and environmental consequences leading to diminishing environmental impact. Eco-efficiency philosophy came to the fore during the Rio Earth summit in 1992 as a business solution for a sustainable world. Emerging global phenomenon such as global warming, negative externalities, loss of diversity, diseases among others, have resulted into a coordinated global pressure to make countries to be more responsible to the environment. Developed and developing countries are now searching for an answer, to the continued devastating ecological effect, which allows the businesses and nations to achieve environmental protection coupled with economic growth. However industries all over the world operate as profit-maximizing entities which are expected to engage in activities that meet the financial responsibilities of the firm and the shareholders. Due to intense competition and business rivalry, little room exists for firms to contribution to society as a whole and specifically to the natural environment. The main objective of the study was to evaluate the corporate eco-efficiency on organization performance at Unilever Kenya Limited. Both quantitative and exploratory research design were employed while Regression analysis was used to establish the effects of waste management, greener energy and GHG emissions. The findings refute the claims by managers that eco-efficiency adoption is expensive and reduces competitiveness of business. The results showed a significant relationship between organization performance in Unilever Company and all the four eco-efficiency variables. The study concluded that adoption of eco-efficiency influence performance of Unilever Kenya Limited especially in improving efficiency, technology acquisition, reduced long run cost and sustainability. The study recommends that Unilever Company should integrate eco-efficiency into their business strategy and also involve the stakeholders.
Keywords: corporate eco-efficiency, organizational performance, Unilever Kenya Limited.

1.0 Background of the Study

Development of industries has set motion the various ways to improve output through value addition and make organizations more environmental friendly. The same industries have several challenges ranging from management, leadership, tyranny of managers and management and above all the ever present environmental challenges, both internal and external. Currently developed countries especially in Europe and North America, have done extremely well in improving efficiency in production, but equally they are challenges especially in the management of these eco-efficient challenges. The same is taking roots in developing countries especially in industries that have heavy manufacturing and industries dealing with high production in form of mass or continuous production. These companies have problems on where and how to manage their eco-efficient systems which today is a global problem. The concept of eco-efficiency has now begun to be recognized in wider circles than just business. Scientists, governments and international organizations see eco-efficiency as an essential answer to the global ecological challenge.

It is on this background that the researcher undertook the study of corporate eco-efficiency which is defined by Schmidheiny (1992), as the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life-cycle to a level at least in line with the Earth's estimated carrying capacity. Put differently, it is creating more value by using fewer environmental resources such as water, air, oil, coal and other limited natural endowments which results in less environmental impact (Guenster, 2005). At the corporate level, it can be thought of as the ratio of the economic value a company creates relative to the waste it generates (Derwall, 2005).

Other past researchers who have contributed to this concept include Williams (1999), who defined eco-efficiency as "endeavouring to get more for less for longer". Metti (1999), stated "eco-efficiency is simply creating more value with fewer materials and less wastage". Huppes (2007) has defined Eco - efficiency as a general goal of creating value while decreasing environmental impact. The OECD assembly (2008) has called eco-efficiency "the efficiency with which ecological resources are used to meet human needs" which if not checked can not only affect the surrounding community but may also lead to health effects such as cancer, skin diseases, stunted growth and generally failure to thrive.

Keating (2010) noted that eco-efficiency is not a tightly defined concept. Most of the definitions are

narrow and constrain the concept. Instead the perception of eco-efficiency should be highly multidimensional. As such, there is unlikely to be a single measure that characterizes the eco-efficiency performance of an industrial system. Instead, a set of measures is likely to be relevant in particular circumstances and these are likely to change in relation to differences in the most limiting set of biophysical, economic, or human resources (Park 2010). All systems including sanitation, ventilation, clean air, hygiene are important to any worker who is expected to work, produce results and achieve goals. This as noted by Armstrong (2009) can add value to the organization and industry performance which is the consequence of corporate management of eco-efficiency systems.

Performance is the achievement of goals and objectives including policies and how organizations can benefit. Armstrong and Baron (2012) define performance as 'a process which contributes to the effective management of individuals and teams in order to achieve high levels of organizational performance. Bititci (2007), define performance management as a "process by which the company manages its performance in line with its corporate and functional strategies and objectives". According to Bititci, it is the objective of that process to provide an integrated control system, where the corporate and functional strategies are deployed to all business processes, activities, tasks and personnel, and feedback is obtained through the performance measurement system to enable appropriate management decisions.

1.1 Corporate Eco-efficiency

Eco-efficiency is designed to progressively reduce ecological effects by de-coupling resource use and environmental consequences leading to diminishing environmental impact. The term eco-efficiency was first used by a Basel based researchers Schaltegger and Sturm (1989). Stephan Schmidheiny (1992), through his publication, The Changing Course, and the WBCSD(1992), took up this term and then launched it worldwide as a measure to counter increasing harmful environmental effect due to rapid development of trade and industry by world economic superpowers.

Numerically, eco-efficiency is the ratio of the value addition on a product to the wastes the firm generates resulting from the creation of that value. Therefore eco-efficiency is "the ability of companies to minimize pollution by improving the production and manufacturing process". It is a dynamic and pro-active environmental management programs that concentrates on environmental performance borne by changes in operational efficiency rather than by adopting standards for pollution control at the final stage in production process. Guenster (2005) noted that corporate eco-efficiency reflects the environmental governance of the firm beyond what is indicated by elementary environmental compliance and pollution control policies. Broadly, corporate eco-efficiency can be defined as the economic value a company creates over the waste it generates resulting from the creation of that value"

Eco-efficiency by definition is meant to be flexible and pragmatic. Many authors therefore contend that measuring eco-efficiency is not restricted formula stated by Schmidheiny (1992). Chen (2011) suggests that different representations of defining eco-efficiency are seen in the creation of various models. Models for instance define eco-efficiency in terms of minimizing negative outputs which is portrayed through the pricing of variables in monetary terms. In addition quantity based model, which seeks to define outputs by the quantity produced from a given level of input. Models in general have the ability to visually represent eco-efficiency and can be an important monitoring tool for companies to manage their eco-practices.

Global warming is currently the world's worst crisis owing to the ripple effects it has on the environment. The planet is already reaching ecological limits in critical areas such as ozone layer depletion, loss of biodiversity, water quality and management, and climate change. The challenge is to ensure that continued economic development and social well-being are compatible with ecological support systems. Key global conferences on environmental management such as the United Nations Climate Change Conference held in Poland, 2013, in which major polluters were requested to reduce GHG emission. The various Africa Climate Conferences on global warming have established several treaties to limit carbon emissions.

WBCSD has not established an office in Kenya though the National Climate Change Response Strategy (NCCRS) was launched in 2010 to manage environmental changes caused by human activities. This includes low carbon climate priorities, renewable energy systems, waste management and sustainable forest resource. Large GHG emitters like Cement manufactures and oil products processors have been requested to develop Environmental Management Systems (EMS) by the National Environmental Management Authority (NEMA). The EMS gives the eco-efficient measures the industries are implementing to mitigate climate change. Compliant firms obtain an ISO 14001 certification. Unilever Kenya Limited is one of the companies that has developed EMS and obtained ISO 14001 certification. It practices eco-efficient management policies in all its operations

1.1.2 Profile of Unilever Public Limited Company plc.

Unilever was founded in 1930 out of a merger between Lever Brothers (UK) and Uni-margarine (Netherlands). Unilever is today one of the world's leading Fast Moving Consumer Goods (FMCG) company with a turnover of

more than 4.3 billion dollars. With Corporate offices in London and Rotterdam, it operates in 100 countries. The company spends 2.5% of its turnover on research and development and 1.5% on Corporate Social Responsibility. Unilever directly employs 250,000 people around the world and indirectly millions more as contract manufactures, growers, suppliers, distributors and service providers. Everyday 150 million people choose Unilever brands to feed their families and clean themselves and their homes. The business is categorized in three areas; Foods, Home care and Personal Care products.

Unilever East and Southern Africa (ESA) is a Unilever Subsidiary operating in Kenya, Uganda, Tanzania, Zimbabwe, Zambia, Mozambique, and Malawi. Unilever ESA covers a market of 19 countries with a population of 150 million people and employs over 1,500 people directly. In addition it has 120 distributors spread across these countries reaching more than 100,000 retail outlets each week. Unilever Kenya Limited plant is located in the industrial area at the heart of the capital, Nairobi. Kenya has a population of forty million of which five million live in Nairobi. Unilever Kenya Limited has embraced corporate eco-efficiency in their production and distribution process. Environmental issues are incorporated in the guiding statement. The Corporate Purpose reads that to succeed the industries require "the highest standards of corporate behaviour towards everyone we work with, the communities we touch, and the environment on which we have an impact". The vision of the industry is clear "We work to create a better future every day. We will develop new ways of doing business with the aim of doubling the size of our company while reducing our environmental impact."

The industry has a resolve to driving sustainable growth through 2010 Unilever Sustainable Living Plan which sets out to decouple growth from our environmental impact while increasing our positive social impact. This commitment to sustainable living is embedded into the business agenda through the purpose and vision. Unilever leadership through the participation of corporate level management helps to integrate eco-efficiency into the organizational framework by championing sustainability and corporate responsibility, Strategic development of social and environmental, governance of conduct as a responsible corporate citizen and, creation of sustainable business team at our corporate level.

Figure1. demonstrated the progress Unilever is making in transforming Unilever into a sustainable growth company. There is a significant improvement eco-efficiency approach since the year 1995. Specifically between 2012 and 2013, energy use reduced by 3%, carbon dioxide emission fell by 5.2% and a significant reduction of disposal waste of 30.9%. In the same period, sales turnover and core operating fell by 3% and 0.4% respectively. Noticeably, in 2012 there were no government fines or legal charges as opposed to over 750,000 dollars in 2013 due to noncompliance.

Parameter	**Units**	**1995**	**2014**	**2015**	**% 2015 vs. 2014**
Energy use	GJ/tonne	2.92	1.57	1.52	-3.0
CO_2 from energy	kg/tonne	238.7	104.2	98.9	-5.2
Disposed waste	kg/tonne	24.27	3.94	2.72	-30.9
Total water	m^3/tonne	7.95	2.27	2.12	-6.9
Environmental fine			0	750,000	
Turnover			51,324	49,797	-2.9
Operating profit			7,050	7,016	-0.4

Figure1. Unilever eco-efficiency for the year 2014-2015
Source: Unilever Annual Report and Accounts (2014)

Implementing eco-efficient methods at Unilever Kenya Ltd faces various social, economic, political and technical challenges. Eco-efficiency implies differentiated goods and consequently additional costs to the goods. This may reduce price competitiveness and impact negatively on their performance. Secondly traditions and poverty in regions such as Africa has brought resistance to new products hence discouraging eco-efficiency adoption. Poor infrastructure in East and southern Africa such as electricity has also discouraged use of some eco-efficient products from Unilever. There is also poor legislations and sporadic enforcement of environmental laws that makes it difficult for Unilever to plan effectively.

1.2 Statement of the Problem

Sustainability and search for solutions that are both efficient and ecologically sound (eco-efficient) have become topics of great interest. However, inherent in the concept of eco-efficiency is the debate on linkage between environmental management and shareholder value, competitively valued goods and services and sustainable product systems. Managers may be willing to adopt the eco-efficiency but contend that the bulk of costs associated with eco-efficiency are likely to outweigh the financial benefits, which makes the doctrine inconsistent with the principles of shareholder's wealth maximization. Managers are therefore pushed to devise ways to mitigate their firm's environmental impact (Delmas 2012).

According to World Economic Forum 2010, $700 billion a year of new spending on renewable power, low-carbon transport and energy efficiency is needed to meet the United Nations goal to cap temperature rises. The UN Secretary General, Ban Ki Moon in 2013, noted that the global energy industry spends about $300 billion a year in new plants, transmission networks and other new environmental investment, and that global investments of $15 trillion to $20 trillion over the next 20 years may be required "to place the world on a markedly different and sustainable energy trajectory". This revelation is likely to make eco-efficiency uncompetitive to adopt and keep off willing industries away from these thoughts.

Financial period 2012 to 2013 shown in figure1 shows a major improvement in eco-efficiency targets by Unilever. This however is accompanied by a reduction in sales turnover of 3% and fall in core operating profit of 0.4% and environmental fines of over $750,000. This may make the concept unattractive to profit maximizing industries. Implementing eco-efficiency has been a challenge to many profit oriented organizations. This is due to lack of an effective and accurate definition in context, assessment of environmental and product-system-value, quantification, interpretation, reporting and critical review. These aspects of business management require highly skilled technical staff and consequential commitment for the industries. They essentially demand significant portions of a company's resources, whereas their potential financial benefits are mostly visible in the distant future. In today's capitalist society, industries are profit maximisers. This implies that any ventures that reduce competitiveness, organization performance and shareholders value will certainly be resisted by businesses. This may have led to reluctance on the part of the managers in adopting eco-efficient methods, hence justification of the study.

2.0 LITERATURE REVIEW

2.1. Ecological Economics

Ecological approach can trace its origin from the Physiocrats of the 1970s. They believed in the law of nature and emphasized the interrelations within the economy. This is the hypothesis of input-output tables which relates to economic sector and the consequent multiplier effect; a concept now widely used by ecological economics. Ecological economics is also as a consequence of work of Thomas Malthus who proposed that earth's resources sets physical limit to population growth and human well-being. The concern for scale and physical limit emphasizes the role of earth's carrying capacity in ecological economics. In the recent past, ecological economics has evolved out of ecological and thermodynamics critiques of economics. They believed that ecology and economics are intertwined and the separation of the two disciplines in the past is an accident in the history of scholarship rather than a reflection of any profound cleavage of subject matter. He recommended that synthesis of ecology and economics is justified because current economic paradigms have serious shortcomings when it comes to dealing with natural resources (Constanza, 2004).

2.2 Environmental Management

Environmental management refers to the management of interaction of human societies with, and their impact upon the environment. The need for environmental management can be viewed from a variety of perspectives. A more common philosophy and impetus behind environmental management is the concept of carrying capacity which refers to the maximum number of organisms a particular resource can sustain. It has some relationship with Malthusians who noted that the population is presumed to grow exponentially while the resources in question grow linearly. If unchecked over time, the exponential growth will always outrun linear growth; such that the growth of population will eventually reach the limit of the resource base. The environment also involves the relationships of the human environment, such as the social, cultural and economic environment with the bio-physical environment. An environmental management standard or system or protocol attempts to reduce environmental impact as measured by some objective criteria (Alkhafaji, 2003).

The environmental management recognizes that environmental impacts touch other groups to whom the organization has an obligation, who are likely to be directly affected by the decisions of a firm, or have an explicit contractual relationship with it, are considered stakeholders. The theory maintains that the objectives of the firm should be derived by balancing the conflicting claims of these various stakeholders. With respect to the environment, stakeholder assumes that corporations operate in ways that minimize externalities, such as pollution emitted from industrial facilities, and assume greater accountability to correct the social ills that may be.

The firm's failure to meet society's expectations results is a loss to its legitimacy and, subsequently, threatens its survival (Gongera, 2014). As companies meet societal expectations, they could expect a decrease in governmental regulation and an increase in societal support. From these theoretical underpinnings, the concept of environmental management can be seen from three perspectives; the ecological perspective, social perspective and economic perspective. The concept of eco-efficiency combines the three aspects of environmental management.

2.3 Empirical Review

Since its inception in 1992, the concept of eco-efficiency has today been embraced by hundreds of industries all over the world and proven to be a practical tool for enhancing both economic and environmental benefits. International conventions to address eco-efficiency including The Rio Earth summit (1992), Kyoto Protocol (1997), the Marrakesh Accords (2001), The United Nations climate change negotiations in Durban, South Africa (2011) and Doha Summit (2013), all convey the same message of sustainability through decoupling economic development and resource use; what is known as eco-efficiency. Following these developments, the notion of eco-efficiency is now beginning to take hold in wider circles than just business. Governmental, scientific and international organizations as well as business communities see eco-efficiency as an answer to the global ecological challenges. Stakeholders today are also demanding that businesses adopt eco-efficiency in their production processes and business practices.

Eco-efficiency is a pro-active environmental management idea that concentrates on environmental performance borne by changes in operational efficiency rather than by adopting standards for pollution control at the final stage in production process. Through business and management inventions, the concept of eco-efficiency has broadened from the simple operational aspects to more advanced forms including eco-innovation & eco-design (Fussler and James, 1996). Today, along with this school of thoughts, the evolution in eco-efficiency is seen as the change of mindset to fully eliminating waste rather than reducing, minimizing or avoiding it. This is now referred to as eco-effectiveness (Girona 2009).

Eco-efficiency has now become a goal for society at large. It is recommended by many intergovernmental organizations and adopted by various countries as their most promising policy concept for moving toward sustainable development. At business level, industries are the main agents through which eco-efficiency is achieved dubbed corporate eco-efficiency. Guenster (2005) adds that "Corporate eco-efficiency, philosophy that a firm employs to integration into its operations management, reflects the environmental governance of the firm beyond what is indicated by elementary environmental compliance and pollution control policies.

There are new terms and targets introduced at global level. The focus now is on absolute, not just relative, de-linking of economic growth to the use of natural resources. Economies are now aiming at what is called 'Factor 4' and 'Factor 10' eco-efficiency targets (Lovins 1998). Factor 4 means doubling income with divided resource use which implies more value with reduced impact for the entire economy i.e. improved productivity leading to eco-efficiency. Factor 10 means a tenfold increase in resource efficiency in the developed economies, while reducing the total use of natural resources globally to keep within the limits of earth's carrying capacity. As a global concept, UNEP's Cleaner Production Programme is implemented as a generic form and in the same manner as eco-efficiency. Indeed, the WBCSD has a close partnership with UNEP, cooperating with it in various fields and even co-publishing two reports on Cleaner Production and Eco-efficiency (WBCSD handbook 2010). Today, universities teach it; consulting companies are charged to tell how to do it; organizations like UN and the OECD hold conferences about it. This shows that the world very much needs the concept of eco-efficiency.

There are many benefits of eco-efficiency to the industries. The Environmental Protection Agency (EPA)'s eco-efficiency initiatives for local governments in the US, have documented series of important benefits for the organizations that have participated since 1997, including improved environmental performance, cost savings, and better community relations. Eco-efficiency also provides a structured framework for identifying and meeting regulatory requirements. This results in fewer fines and other regulatory complications over time. It also provides a consistent way to manage organization away from constraints imposed by future regulations, material shortages, community complaints, and other issues. The experiences of these agencies have helped to demonstrate the value of eco-efficiency and provided much valuable information that can help other public agencies in the future (Chalfan 2012).

Eco-efficiency has many challenges which mainly arise from its multidisciplinary theoretical basis, the nature and uncertainties of environmental problems, and measurement difficulties. The main weaknesses of eco-efficiency are derived from difficulty in defining the carrying capacity concept of a system, setting of quantitative targets and scale problems of economy. Besides the difficulty of determining the carrying capacity of the globe, agreeing the political level at which quantitative targets should be set for development is also a problem for eco-efficiency. Moreover, problems in defining a system mean that evaluations of the eco-efficiency

for an individual process are rarely comparable, and hence assessments carry little weight. The total amounts of pollution and waste would continue to grow even if improved eco-efficiency were to lower the environmental hazards generated per unit. Eco-efficiency can easily just remain an indicator of the direction of desired development without a connection with activities in the real world (Hoffren 2010).

2.4 Carbon Dioxide Emission

A number of environmental crises have emerged in a way that they have made their impact impossible to ignore. Chapter 4 of agenda 21 of the UN conference on environment and development 1992, states that "the major cause of the continued environmental deterioration is the unsustainable pattern of consumption and production, particularly in the industrialized countries. Carbon dioxide as a greenhouse gas (GHG) is a gas in the atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect (Karl 2013). The primary greenhouse gases in the Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Greenhouse gases greatly affect the temperature of the earth without which, earth's surface would average about 33 °C colder. Since the beginning of the Industrial Revolution, the burning of fossil fuels and extensive clearing of native forests has contributed to a 40% increase in the atmospheric concentration of carbon dioxide (Lindeburgh 2006).Under the ongoing greenhouse gas emissions, the Earth's surface temperature could exceed historical analogs affecting most ecosystems on earth and its livelihoods. Greenhouse gases also trigger ocean bio-geochemical changes with broad ramifications in marine systems (Mora 2013).

The climate change issue related to increasing concentrations of greenhouse gases is a global concern and because it is closely linked to emissions from energy sources, is relevant across businesses. GHG emissions covers the gases detailed in the Kyoto Protocol and their relative contributions are commonly accepted as detailed in the work of the Intergovernmental Panel on Climate Change. The Kyoto Protocol to the United Nations Framework Convention on Climate change (UNFCCC) is an international treaty that sets binding obligations on industrialized countries to reduce emissions of greenhouse gases. The UNFCCC is an environmental treaty with the goal of preventing dangerous anthropogenic (human-induced) interference of the climate system. The main goal of the Kyoto Protocol (2005) was to contain emissions of the main anthropogenic greenhouse gases (GHGs) in ways that reflect underlying national differences in GHG emissions, wealth, and capacity to make significant reductions (Grubb 2004). The treaty follows the main principles agreed in the original 1992 UN Framework Convention. As part of the Kyoto Protocol, many developed countries agreed to legally binding reductions in their emissions of greenhouse gases in two commitments periods. The first commitment period applies to emissions between the year 2008-2012, and the second commitment period applies to emissions between 2013 and 2020. The protocol was amended in 2012 to accommodate the second commitment period but this amendment is yet to enter into legal force (Ritter 2013).

Economic nature of GHG emissions is determined by their natural or technical characteristics. First, due to the mobility of the atmosphere, no matter how much an individual country emits, the harm those emissions do is borne by everyone on Earth. Second, the harm of GHG emissions last for hundreds of years due to their long lifetime in the atmosphere. For instance, over the course of a century, although half of the carbon dioxide emitted in any one year will be removed, about 20 per cent of it will remain in the atmosphere for millennia (Solomon 2007).

Ozone Depleting Substance (ODS) emissions has become a subject of global concern. Defined in the Montreal Protocol ODS includes the groups of gases that are contributing to the depletion of ozone layer. This issue has relevance across business, even though emissions of most dangerous gases have been strongly reduced and less harmful alternatives introduced. Even though the effect will be visible in the stratospheric ozone layer over many decades or even centuries, the indicator might lose its relevance in the near future, when policies to eliminate ODS from applications continue to be implemented successfully on a global scale.

2.5 Greener Renewable Energy

Renewable energy is defined as the energy that comes from resources which are naturally replenished on a human time scale such as sunlight, wind, rain, tides, waves and geothermal heat (Stover 2011). Renewable energy replaces conventional fuels in four distinct areas: electricity generation, hot water/space heating, motor fuels, and rural (off-grid) energy services. About 16% of global final energy consumption presently comes from renewable resources, with 10% of all energy from traditional biomass, mainly used for heating, and 3.4% from hydroelectricity. New renewable (small hydro, modern biomass, wind, solar, geothermal, and biofuels) account for another 3% and are growing rapidly. The International Energy Agency (IEA) noted that renewable energy resources exist over wide geographical areas, in contrast to other energy sources, which are concentrated in a limited number of countries. Rapid deployment of renewable energy and energy efficiency is resulting in significant energy security, climate change mitigation, and economic benefits in international public opinion surveys there is strong support for promoting renewable sources such as solar power and wind power (IEA

2012).

While many renewable energy projects are large-scale, renewable technologies are also suited to rural and remote areas and developing countries, where energy is often crucial in human development. United Nations' Secretary-General Ban Ki-moon said that renewable energy has the ability to lift the poorest nations to new levels of prosperity (Leon 2011)

In power generation, renewable energy provides 21.7% of electricity generation worldwide. Renewable power generators are spread across many countries, and wind power provides a significant share of electricity in some areas. Some countries get most of their power from renewable, including Iceland (100%), Norway (98%), Brazil (86%), Austria (62%), New Zealand (65%), and Sweden 54% (Ren 2010). For heating, solar hot water makes an important contribution to renewable heat in many countries, most notably in China, which now has 70% of the global total. Most of these systems are installed on multi-family apartment buildings and industries which meets a significant portion of the hot water needs. The use of biomass for heating continues to grow as well. In Sweden, national use of biomass energy has surpassed that of oil. Direct geothermal for heating is also growing rapidly.

There is strong support for promoting renewable sources such as solar power and wind power, requiring utilities to use more renewable energy (even if this increases the cost), and providing tax incentives to encourage the development and use of such technologies. There is substantial optimism that renewable energy investments will pay off economically in the long term (ARENA 2013). Climate change and global warming concerns, coupled with high oil prices, peak oil, and increasing government support, are driving increasing renewable energy legislation, incentives and commercialization. New government spending, regulation and policies helped the industry weather the global financial crisis better than many other sectors (Edge 2009). According to a 2011 projection by the International Energy Agency, solar power generators may produce most of the world's electricity within 50 years, dramatically reducing the emissions of greenhouse gases that harm the environment (Sill 2011).

The development of affordable, inexhaustible and clean solar energy technologies will have huge longer-term benefits. It will increase countries' energy security through reliance on an indigenous, inexhaustible and mostly import-independent resource, enhance sustainability, reduce pollution, lower the costs of mitigating climate change, and keep fossil fuel prices lower than otherwise. These advantages are global. Hence the additional costs of the incentives for early deployment should be considered learning investments; they must be wisely spent and need to be widely shared" (OECD 2011).

Incentive to use 100% renewable energy, for electricity, transport, or even total primary energy supply globally, has been motivated by global warming and other ecological as well as economic concerns. The Intergovernmental Panel on Climate Change has said that there are few fundamental technological limits to integrating a portfolio of renewable energy technologies to meet most of total global energy demand (Edenhofer 2011). Renewable energy use has grown much faster than even advocates anticipated. According to Gipe (2013), at least 30 nations around the world already have renewable energy contributing more than 20% of energy supply

2.6 Solid Waste management

3.5 billion People, or half of the world's population, are without access to waste management services, and open dumping remains the prevalent waste-disposal method in most low- and lower middle-income countries." Urbanization, industrialization, increasing population and economic development are all contributing to the rise in waste and also to its increasing complexity and hazardousness. Poor waste management can lead to some significant environmental and health hazards. Leach ate from waste can contaminate soil and water, open burning of waste can cause air pollution, and a failure to use recycled materials from waste means an acceleration of the depletion of 'raw' materials (Hyman, 2013).

Elsevier (2014) defines waste management as the "generation, prevention, characterization, monitoring, treatment, handling, reuse and residual disposition of solid wastes". There are various types of solid waste including municipal (residential, institutional, commercial), agricultural, and special (health care, household hazardous wastes, sewage sludge). The term usually relates to materials produced by human activity, and the process is generally undertaken to reduce their effect on health, the environment or aesthetics. There is a wide array of issues relating to waste management and those areas include generation of waste, waste minimization, recycling and reuse, storage, collection, transport, and transfer, treatment, landfill disposal, policy and regulations, education and training and planning and implementation. Following the onset of industrialization and the sustained urban growth of large population centers, the buildup of waste especially in the cities caused a rapid deterioration in levels of sanitation and the general quality of urban life (Davidson 2011).

Waste management requires governance that takes into account the complexities and inter-relationships both within and outside government. Waste management is a cooperative process requiring the involvement of a wide range of different interests, including government at national and local levels, the private sector, workers,

the community and its leaders and the non-governmental organizations (NGOs) and research interests. It is both a challenge and an opportunity for governance to recognize all these varying interests, and reconcile their different perspectives (Hyman 2013).

According to ESAPA (2014), energy recovery from waste is the conversion of non-recyclable waste materials into usable heat, electricity, or fuel through a variety of processes, including combustion, gasification, anaerobic digestion, and landfill gas recovery. This process is often called waste-to-energy. Energy recovery from waste is part of the non-hazardous waste management hierarchy. Using energy recovery to convert non-recyclable waste materials into electricity and heat, generates a renewable energy source and can reduce carbon emissions by offsetting the need for energy from fossil sources as well as reduce methane generation from landfills. Globally, waste-to-energy accounts for 16% of waste management.

Schneider (2012) added that an important method of waste management is the prevention of waste material being created, also known as waste reduction. This is a method of avoidance which reuses second-hand products, repairing broken items instead of buying new, designing products to be refillable or reusable, encouraging consumers to avoid using disposable products, removing any food/liquid remains from cans and packaging, and designing products that use less material to achieve the same purpose.

2.3.4 Industrial Water Management

Sakalker (2012) noted that water is a prerequisite resource for organizations across the globe. Without regular or continuous access to clean water, businesses can neither function nor sustain. Industries that rely on water for operations or manufacturing realize this risk and consider themselves as the most vulnerable. Today, an increasing number of businesses recognize the importance of water management.

Water sector today faces major challenges with declining per capita water availability in many countries and stands stressed with rising water demand mainly from the competing agriculture, domestic and industrial sectors. The Water Policy of the Asian Development Bank (2012) reported that the freshwater withdrawals are expected to rise the world over (by 2025), by around 50% in developing countries and by 18% in developed countries. Domestic and industrial water demands in Asia are growing rapidly at rates projected to range from 70 to 345 % between 1995 and 2025. During the past 50 years, per capita availability has declined by 60% in North Asia and 55% in Southeast Asia. Anshuman (2012) noted that worldwide, the volume of water used by industries is estimated to rise significantly from 752km3/year (1995) to 1170km3/year by 2025. Besides, the low & middle income countries expected to follow the growth pattern of high income industries increasing their industrial water use over agricultural use.

The state of resource availability, use and competing demand, the critical challenge lies in foresight of the issues and preparedness to respond to them for sustainable business operations. Management of water resources need a multifarious approach of not only improving the in-plant water use efficiency, but also to look beyond the paradigm of in-situ water management. This involves critical extrinsic factors such as source vulnerability, climate, allocation, access, competing use (irrigation, domestic & industrial), regional water quality & availability, regional policies and regulations, socio-economic setup, and importantly the stakeholders (Govt. agencies, local community, etc.) including the industrial value chain. With growing demand, competing use and scarcity scenarios in a region, there may not be enough water to meet societal, environmental, agricultural, or industrial needs. Besides, with the growing awareness, industries have a reputational stake if perceived as mismanaging their water resources or impacting on others directly or indirectly. There is need for holistic approach to management of water resources necessitating formulation of an integrated water management framework, as a first step, with responsive corporate water policies and programs in order to respond to the potential challenges related to water within and outside the plant boundaries (Gongera, 2015).

3.0 METHODOLOGY

3.1 Research Design

Both quantitative and exploratory research design were employed in this study. Exploratory research is used to determine the best sampling design, data collection method and selection of subjects in order to provide the most extensive information about the phenomenon being studied and this centered for the numbers and units under study at the various points (Miller 2008). Quantitative research design was important in data collection, testing and validating already constructed theories about how and why phenomena occur. It allowed generalization of research findings when the data are based on random samples of sufficient size and when data has been replicated on many different populations and subpopulations. Target population for the study was 100 of which 30% was sampled.

Stratified Radom sampling was used as it provided systematic means of data collection and analysis with the purpose of testing the theoretical perspective of the study. Stratified sampling ensures that at least one observation is picked from each of the strata, even if probability of it being selected is far less than 1. Hence the statistical properties of the population may not be preserved if there are thin strata. Stratified design helped the researcher examine Unilever employees within the strata various strategies used in the corporate, business and

functional levels. This assisted to measure the level of eco-efficiency adoption and its significance in the performance of the industries.

The data collected from the questionnaire were summarized according to the objectives of the study. Data was analyzed using quantitative approach where multiple egression analysis was used to establish the effects of waste management, greener energy and GHG emissions and modeled as;

$PEF=\beta0+\beta1WatMan+ \beta2WasMan+ \beta3RenEn+ \beta4Ems+\varepsilon$…… (3.1)

$PEF = \beta0+ \beta1Treat+ \beta2Recy+ \beta3Alt+ \varepsilon$…….…….. (3.2)

$PEF = \beta0+ \beta1Poll+ \beta2RRR+ \beta3Leg+ \varepsilon$…….…….. (3.3)

$PEF = \beta0+ \beta1BioEn+ \beta2Zoil+ \beta3SolWin+ \varepsilon$…… (3.4)

$PEF = \beta0+ \beta1C0_2+ \beta2ODS+ \beta3Treat+ \varepsilon$……...…….. (3.5)

Where
PEF= Performance in Eco-Efficiency
WatMan = Industrial Water management
Wasman = Solid Waste Management
RenEg = Renewable Energy
Ems = Carbon dioxide Emission
Treat = Water treatment
Recy = Recycling
Alt = Alternative agents
BioEn = Biomass Energy
Zoil = Zero Iol Energy
SolWin = Solar & Wind Energy
C02 = Carbon Dioxide Reduction
ODS = Ozone Depleting Substances Reduction
Treat = Emission Gas Treatment
B0 = Constant
Bi = Coeficients
E = Error Term

4.0 Findings

4.1 Regression Analysis

A multivariate regression model was adopted to establish the form of relationship between organizational performance of Unilever Kenya Limited and the four eco-efficiency policies; that is; carbon dioxide emission, industrial water management, solid waste management and renewable energy.

Table 1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.845(a)	0.714	0.697	0.257

a Predictors: (Constant), carbon dioxide emission, industrial water management, solid waste management and renewable energy

The R2 is called the coefficient of determination and tells us how the dependent varies with the independent variables. Results in Table1 showed that the value of adjusted R^2 is 0.697. This implies that, there was a variation of 69.7% between the dependent variable and the independent variables. This is to mean that the four variables: carbon dioxide emission, industrial water management, solid waste management and renewable energy explains 69.7% of organization performance in Unilever company at a confidence level of 95%.

Table 2 Analysis of Variance Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.718	4	2.930	44.231	0.000(a)
	Residual	1.386	21	0.066		
	Total	13.104	25			

a Predictors: (Constant), carbon dioxide emission, industrial water management, solid waste management and renewable energy
b Dependent Variable: Organizational performance

The study used ANOVA to establish the significance of the regression model from which an f-significance value of $p<0.001$ was established. This showed that the regression model has a less than 0.001 likelihood (probability) of giving a wrong prediction. This therefore means that the regression model has a confidence level of 99.9% hence high reliability of the results.

Table 3 Coefficients Results

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.116	.186		0.623	0.535
Carbon dioxide emission policy	0.577	.068	.559	8.478	0.000
Industrial water management	0.157	.043	0.257	3.676	0.000
Solid waste management	0.052	.024	.139	2.115	0.038
Renewable energy	0.008	.001	.505	7.097	0.000

a Dependent Variable: Organizational performance

The coefficient results showed that there is a positive relationship between all the eco-efficiency polices and organizational performance of Unilever company as shown: carbon dioxide emission policy (β= 0.577); industrial water management (β = 0.157); solid waste management (β = 0.052); renewable energy (β = 0.008). The results showed that holding all variables constant, organization performance in Unilever Company would be achieved at a unit 0.116. On the other hand, a unit increase in carbon dioxide emission policies would increase organization performance in Unilever Company by a factor of 0.577; a unit increase in solid waste management policies and renewable energy would cause an increase in organization performance in Unilever Company by a factor of 0.052 and 0.008 respectively.

The results further showed a significant relationship between organization performance in Unilever Company and all the four eco-efficiency policies as shown by the p values: carbon dioxide emission policy ($p=0.000<0.05$), industrial water management policy $p=0.000<0.05$), solid waste management ($p=0.038<0.05$) and renewable energy ($p=0.000<0.05$).

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Key Findings

Greener renewable energy and how it affects the performance of Unilever company; the study established that greener renewable energy influenced to a great extent aspects such as cost of energy, type of energy, financial resources, energy security, pollution and sustainability. However, the study also established that greener renewable energy at Unilever Kenya Limited affects sales of goods, working conditions and motivation to a moderate extent.

Solid waste management policies and effects on performance at Unilever Kenya Limited; the study established that solid waste management policies affect to a great extent aspects such as motivation of workers, cost of management, reusing of solid materials, pollution, working conditions, resource efficiency, recycling, health issues and legal issues. The respondents further stated that waste management policies improve performance in Unilever company through lower costs of operations which leads to reduction in long run cost, health and safety measures, corporate social responsibility (CSR), increased sales due to consumers goodwill and increased return on capital employed (ROCE).

Industrial water management and performance of Unilever Company; the study established that water management policy affects to a great extent aspects such as availability of adequate water, cost of water, recycling, legal issues, hygiene factors and waste water disposal. It was however found out that water management policy affects to a moderate extent aspects such as quality of products, cooling of machines, and cost of treatment. The respondents further indicated that they would recommend this policy since it enhances cost saving; reduces costs; there is less wastage; and it enhances low water usage.

The regression results also established that there is a positive and significant statistical relationship between organization performance in Unilever Company and all the four eco-efficiency policies (carbon dioxide emission policy, industrial water management policy, solid waste management and renewable energy.

5.2 Conclusion

The study concluded that reduction in emission of carbon dioxide influence the performance of Unilever Kenya Limited to a great extent. Reduction in emission of carbon dioxide enhances increased adoption of technology in the organization, reduces the legal issues and government fines that occur as a result of pollution that comes from emission of carbon dioxide. The reduced emission of carbon dioxide also improves working conditions of employees which therefore improves employees' performance. Greener renewable energy also influences the performance of Unilever Company to a great extent. Greener renewable energy reduces cost of energy, pollution, financial resources and enhances energy security and sustainability.

The study also concluded that solid waste management policies also influence performance of Unilever Kenya Limited to a great extent. Solid waste management policies motivates the workers; enhances reusing of solid materials/recycling; improves resource efficiency; reduces pollution, health issues and legal issues. On the other hand, industrial water management influences performance of Unilever Company. Water management policy at the company enhances availability of adequate water, cost of water, recycling and reduces legal issues.

Overall it can be concluded that waste management policies improve performance of a company through lower costs of operations which leads to reduction in long run cost, health and safety measures, participation in corporate social responsibility, increased sales due to consumers goodwill and increased return on capital employed.

5.3 Recommendations

The following recommendations were made:

The study established that the personnel and funding in Unilever as drivers to adoption of eco-efficiency policies was not adequate. The study recommends that Unilever management provides more financial resources and employ qualified personnel in order to enhance improved and increased adoption of eco-efficiency policies in the company. There is also need for improved communication within the company and increased evaluation and assessment in order to effectively ensure achievement of benefits of adoption of eco-efficiency policies.

The study recommends that Unilever Company should integrate eco-efficiency into their business strategy and also involve the stakeholders. For instance, through the company's CSR activities, the consumers need to be encouraged to prefer eco-efficient and more sustainable products and services.

The government, the business community and the consumers should Endeavour to improve eco-efficiency both at the micro level and at the macro-level. At the micro level, the goal should be to improve the eco-efficiency of the firms and in particular the production processes in order to reduce the environmental impacts of business practices.

The government shoul implement policy measures that motivate and enable the key sectors such as manufacturing and energy sectors to move towards eco-efficiency practices. The government should create incentives for firms to adopt proactive environmental management practices. This will not only translate into higher profits for the firms but also promotes macroeconomic performance as well as environmental sustainability.

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