

INVESTIGATIONS ON IMPLEMENTATION AND COMPLIANCE OF ENVIRONMENTAL MANAGEMENT SYSTEMS BY COMPANIES IN KENYA

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Abstract: Voluntary Environmental Management (EM) intensified worldwide with the publication of ISO 14001 environmental management systems (EMS) in 1996. However adoption of the standard in developing countries, especially in Kenya has been rather slow. This study aimed at investigating the current status of EM adoption by industries in Kenya, determine key factors that influence its implementation, and evaluate the level of compliance to local environmental regulations. Stratified sampling technique was used to administer questionnaires to 30 industrial establishments in major towns of Kenya. Results showed that industries have developed EMS practices like energy conservation, waste management, Eco-labeling and life cycle assessment. However, 20% of the industries do not have standardized EMS. The major drivers for EM implementation were pollution prevention, cost reduction, international acceptance of products and pressure from customers. Main challenges to its implementation were the initial high investment required, lack of government incentives, long time of certification and voluntary nature of EM. Some industries had, however, made plans of getting certified to ISO 14001 in the near future. It was concluded that certification to voluntary EMS like ISO 14001 was not effective in solving the current state of environment in Kenya, since it is based on “commitment to continual improvement” only instead of being a performance standard. It is therefore recommended that enforcement initiatives should be combined with voluntary education for sustainable development

Keywords: Biological Oxygen Demand, Chemical Oxygen Demand, Environmental Permit, Life Cycle Analysis, National Environmental Action Plan and Quality Management System.

1. INTRODUCTION

Environmental Management System (EMS) is a concept based on continuous improvement in all aspects of a firm's environmental performance. According to Khanna and Anton (2002), EMS represents an organizational change within firms and a self-motivated effort at internalizing environmental externalities. This is achieved by adopting management practices that integrate environment and production decisions, which identify opportunities for pollution reduction. These enable the firm to make continuous improvements in production methods and environmental performance. Standards for environmental management systems have been developing over the years (Brorson and Larsson, 1999). The British Standards Institution (BSI) introduced the first standard for environmental management in 1992 (BS 7750). The International Organization for Standardization (ISO) introduced the ISO 14000 series in September 1996 that specifies the requirements for an EMS (Clements, 1996; Brorson and Larsson, 1999). Clement (1996) notes that the standard applies to those environmental aspects over which the firm either has control or could be expected to have an influence on. Aboulnaga (1998) pointed out that the adoption and use of an EMS can be a source of competitive advantage to industries and organizations wishing to compete on the international market. Roy and Vezina (2001) have shown that environmental initiatives can be used to enhance a firm's innovative capability. Sheldon (1997) indicated that

ISO 14001 has been heartily welcomed by people in government, business and academia. It is believed globally that the standard is useful and one that argues well for the future of environmental management (Moxen and Strachan, 2000). Other proponents of ISO 14001 like Stapleton et al (2001) argued that the standard could act as a framework for significantly improving organizational performance

2. STATEMENT OF THE PROBLEM

Industrial environmental problems in Kenya

According to Kenya Bureau of Statistics about 80% of industries in Kenya are located in major towns. These industries have had a large impact on the economy of the towns and the country in general. The concentration of industries in small areas has aggravated the environmental stress caused by industrial activities. Some of the major problems include industrial liquid and solid waste, air and water pollution.

Liquid and solid waste

The quantity and quality of industrial wastes have increased over the years; however, there is almost no waste recycling, treatment or proper management practices in the country. The major producers of industrial pollutants are textiles, food manufacturing, petroleum refining and handling, and mineral exploitation and processing. Other minor sources include soap and detergents, wood, cement, rubber, plastics and steel. Some of the industrial solid wastes come from metal and metallurgical industries comprising ferrous and non-ferrous wastes. The textile and garment industries produce floor wastes, yarns, wax cotton fluffs and cut-offs (NEMA, 2007).

Air pollution (Emissions)

The major sources of these pollutants are oil refining, cement-asbestos product plants; steel works, sawmill and wood processing and automotive exhaust emissions. Pollutants from combustion processes tend to be in the form of particulate matter, smog, odours and nuisance gases, all containing different amounts of gases like sulphur oxides, nitrogen, carbon and hydrocarbons. Vehicular exhaust emissions have been a significant cause of poor urban air quality over the years in Kenya (NEMA, 2007). This, together with heavy traffic in certain urban locations, contributes to poor urban air quality.

Water pollution

According to NEMA (2007), industrial water pollution is a “moderate” to “high” priority issue in major towns of Kenya. Food processing, material processing, cooling and mining industries are the major water polluting industries. The industries are the breweries, leather and tanning, and textile industries. According to Nii Consult (1998) the quality of major surface waters is generally good for multi-purpose usage. The pH of most rivers is said to be within the range of 6.3 to 7.5. However, surface water resources that pass through urban areas, like Nairobi and Kisumu are heavily polluted. Pollution of water bodies has led to destruction of aquatic life. There is a high rate of water-borne diseases within polluted river catchments especially within the urban areas of the country. Percentage of children reported sick with diarrhoea in Nairobi was 19% in 1997 but increased to 30% in 2006. Diarrhoea remains a significant cause of death in all age groups. High incidence of water-borne infections is reported in coastal communities, which is a disincentive to tourism promotion. Water pollution has increased the cost of treating water for potable and industrial usage (MoH, 2008).

Noise pollution

Noise levels within and outside industries and mines in general is a nuisance to nearby inhabitants. The most important culprit of noise production in Kenya is the mining companies. The sources of noise and vibrations at the mines include air blast, blasting of rocks which destroy peoples’ buildings, vehicles and other mobile equipments which are old with poor maintenance. Manufacturing industries do not have much problems with noise due to insulation, however, some small scale ones have noise problems.

Authorities have not been able to regulate these industries due to weaknesses within them. They give permits for industries to be sited around water bodies with negative environmental impacts on marine, coastal wetlands and inland drainage systems.

The study would help evaluate EM practices industries are adopting in their operations and relate it to the current state of environmental problems. Will certification to EMS ISO 14001 lead to environmental protection and sustainable development in Kenya?

3. OBJECTIVES

- i) To evaluate current status of EMS adoption by Kenyan industries.
- ii) To determine key factors that influence adoption of EM practices in Kenya.
- iii) To evaluate extent of compliance to local environmental regulations by industries in Kenya.

4. LITERATURE REVIEW

Business and the Environment

Identification of Business

Business has experienced dramatic change since the beginning of the Industrial Revolution which took place in Western Europe two hundred years ago (Blair, 2001). New businesses appeared such as chemical industry, motor industry, and retail industry; new technology was applied everywhere; and new markets were opened all over the world. All these changes of business area caused environmental impacts which were totally different two hundred years ago. Business is the range of commercial organizations and their activities that characterize the way in which trading is conducted in a capitalist economy (Blair, 2001). However, commonly the words “industry” and “business” are used interchangeably and this is the case in this study. Business with the same meaning of industry which is seen as the collection of firms who operate essentially the same series of processes that result in a related set of products (whether tangible products or services) that a third party wishes to buy (Blair, 2001). By convention, industries are divided into primary, secondary and tertiary industries. Primary industries include fishing, forestry, agriculture and the extractive industries (essentially, quarrying and mining). They involve the collection, harvesting and exploitation of resources directly produced by physical processes. Secondary industries are the manufacturing industries. They take raw materials and by a variety of processes produce tangible goods by adding value to the raw materials. Tertiary industries produce services, for either individuals or for other organizations, these include business processing outsources, hotels, hospitals, certification and auditing companies etc.

Environmental Impacts of Different Businesses

The environmental impacts of different industrial sectors vary enormously (Welford, 1998). For example, the oil industry may cause serious environmental impacts while the retail industry has less direct impacts to the environment. This is because the oil industry belongs to primary industries while retail industry belongs to tertiary industries and the characteristics of these two industrial categories are totally different. Because of their intimate relationship with the environment, the primary industries have widespread and significant environmental impacts. Firstly, they cause high pollution. For example, oil and gas flares, which happened in oil industry, contribute to global warming. Additionally, oil spills can cause great localized harm to marine ecosystems. Secondly, the primary industries generate considerable wastes. Fossil fuel and mining industries are the main culprits in waste generation. However, wastes of factory farming also should not be neglected. Thirdly, farming and forestry of primary industries have the greatest overall impact on habitats because they occupy the greatest areas of land. The type of farming or forest has a profound influence on nature of flora and fauna of a region. Finally, farming and forestry also have significant landscape impacts because they form important landscapes in much of the developed world.

Manufacturing is the core of secondary industries. Raw materials and components are brought together and manufactured into either end product or a component for some other manufacturing process. Manufacturing processes consume huge amount of energy and inevitably produce waste products and pollution. Waste is seen as part of the process, whereas pollution is seen as an inevitable consequence of the process that should not happen in the perfect industrial process but which, in practice, results in the degradation of some physical resource. This is most usually the air, watercourses or the ground. Sound and visual impact may also be included under the broad banner of pollution. In addition to the manufacturing process, the products also cause environmental impacts during their delivery, use and disposal. Tertiary

industries or service businesses receive relatively little attention on their environmental impacts. This may be because in comparison to primary or secondary industries they appear to depend far less on physical resources and they often deal with a more intangible product. However, the environmental impacts of tertiary industries are less obvious but do not mean that they do not exist. For example, compared to an oil refinery, a supermarket seems to cause less environmental impact but this is not true. Transfer of goods within the supermarket chain, and customers traveling to the store especially suburban stores all cause air pollution. Other environmental impacts which tertiary industries cause include energy consumption in heating, lighting and equipment, pollution from traveling of their employees and clients, produce waste from canteens, consumer wastes and materials large volumes of paper waste.

Strategy towards environmental impacts

Since the 1960s, there has been a growing interest in the environment, or more specifically in the damage being done to the environment (Welford, 1998). During the first two decades, it was felt that growth and development and protection of the environment could not go hand in hand. Hence most of the theories that developed during this period were anti-growth. However, the 1980s witnessed a shift in thinking. The concept of 'zero growth' was replaced by sustainable development which has been broadly accepted nowadays.

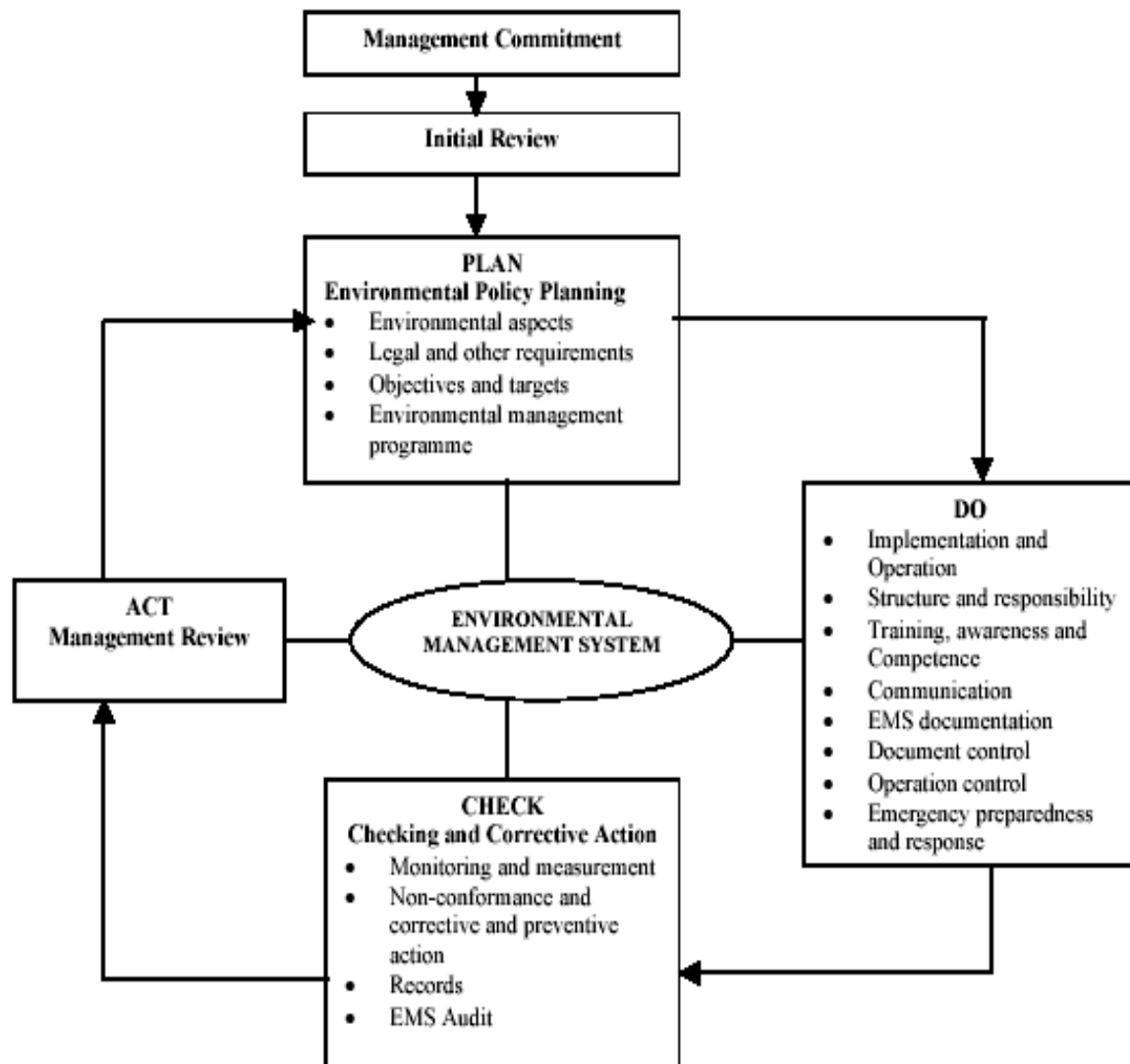
Sustainable development, in its simplest form, is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (WECD, 1987). It implies that it is possible to make development and environmental protection compatible. However, the old ways of development which cause pollution and atmospheric damage, disrupt traditional ways of living, destroy ecosystems and feed more and more power into international oligopolistic industrial structures must be changed into sustainable ways (Welford, 1998). The Brundtland Report, commissioned by the United Nations to examine long-term environmental strategies, argued that this would require quite radical changes in economic practices throughout the world. As an ultimate objective, the concept of sustainable development is immensely valuable. However, strategies are needed to translate conceptual theories of what sustainable development means into practical ways of achieving it over time within the corporate context. Firms clearly have a role to play in the development of substitutes for non-renewable resources and innovations which reduce waste and use energy more efficiently. They also have a role in processing those materials in a way which brings about environmental improvements. Additionally, firms have the opportunity for considering both the use and disposal of the product during the design period. In order to achieve these goals, companies must seek to develop management strategies which will improve their environmental performance (Welford, 1998).

Environmental Management System

A very important element in understanding environmental management is to understand what the environment is (Hewitt and Gary, 1998). It is the surroundings in which an organization operates, including air, water, land, natural resources, flora fauna, humans and their interrelation (ISO, 1996). Hewitt and Gary (1998) defined Environmental Management (EM) as management of an organization's or company's activities impact on the environment. Therefore, in this study, EM is the process of reducing the environmental impact of an organization or people's activities through the control of all aspects of their operation that can cause or lead to an impact on the environment. The ISO 14001 standard defines EMS as that part of the overall management system which includes the organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing implementing, achieving, reviewing and maintaining the environmental policy (ISO, 1996). EMS is derived from the environmental policy of an organization. A policy is a set of rules or principles that an individual or organization adopts for a chosen course of action (Hewitt and Gary, 1998). It serves as the guiding document for environmental improvement.

Components of an EMS

EMS, according to ISO 14001 has four components. It is a cycle of, plan, do, check, and act. If the cycle is adhered to constantly, it leads to continuous improvement of the system. Figure 1 shows the EMS cycle which is an abstract description of the different components.



Source: Kuhre (1995)

Figure 1: EMS Cycle According to ISO 14001

The design and implementation of an EMS requires considerable time and effort therefore requiring the commitment of management of an organization. Management needs to communicate their support to the system and emphasize that they aim to improve their environmental performance. An inventory is then needed to assess how the organization currently deals with environmental issues. This is the initial review and it focuses on all elements of which an EMS consists of, in order to see the activities that have been undertaken and their results. Some of the topics to be treated here according to ISO 14001 include environmental impacts, use of resources like raw materials, water and energy, relevant regulations, organizational structures and culture, products and marketing, training and communications, instructions and handling of incidents. Deficiencies emerge as the system is used and gaps that need to be filled become clear.

The 'Plan' Phase

This stage is helpful in the formulation of an environmental policy. It serves the direction for future action and communication of the organization's environmental commitment and targets. According to ISO (1996) environmental policy deals with: the nature, scale, and environmental impacts of the organization's activities, products or services, a commitment to continual improvement and pollution prevention, a commitment to comply with relevant environmental legislation and regulations, and other requirements to which the organization subscribes, provides framework for setting and reviewing environmental objectives and targets, it is documented, implemented and maintained, it is communicated to all employees and it is available to the general public.

Environmental policy and planning starts with the assessment of environmental aspects and impacts of an organization's activities, products and services (Kuhre, 1995). Aspects are potential effects, which can be good or bad. They become impacts when they manifest themselves and lead to changes on landscape. Aspects can be direct or indirect resulting respectively from the firm's activities or from those of supplies. The organization's environmental programme specifies how the objectives and targets will be met by stipulating the actions, methods responsibilities, time frames and resources. These should be fully integrated in and coordinated with other areas of management and new structures identified to enable total environmental management.

The 'Do' Phase

An organizational chart is defined and laid down at this stage in order to embed the environmental management in the organization. Individual roles and responsibilities are outlined in addition to the allocation of resources like finance, personnel, skills and technology. The next step is the identification of training needs to build environmental awareness and competence. This is done from current staff or new employees recruited. Communication, both internally and externally is relevant for an EMS implementation since it helps keep people informed. Communication is best if it is top-down and bottom-up. It directs attention to the fact that environmental management involves more than a system with procedures, instructions, performance indicators, requirements and checks, laid down in manuals, plans, schemes and reports (ISO, 1996). Documentation is very important in any EMS since it points to implementation and operation. Document control entails designation of someone to be responsible for revision and change. Operations and activities must be controlled to ensure that policy addressing the most significant environmental aspects is carried out (ISO 1996).

The 'Check' Phase

This stage aims at checking how the firm performs in terms of environmental management and if necessary, to analyze the causes of problems, identify possibilities for improvement and take subsequent action to realize these changes (ISO, 1996). Operations and activities of significant environmental impacts are to be monitored, their performance measured and compared with the objectives and targets, and compliance with regulations assessed.

The 'Act' Phase

Management review here aims at making sure that the EMS continues to produce the desired effects as outlined in the policy. Apart from the information derived from audits, other internal reports on performance and incidents, external reports on regulatory and environmental changes, and suggestions for improvement received from internal and external sources play a role for the organization to act upon. The process is then repeated again. The drivers or motivations to use EMS are internal and external involving different forces.

Drivers of EMS

Globalization coupled with industrialization with increasing environmental degradation has compelled a number of firms and organizations to adopt new strategies for sustainability. Business has also come to realize the enormity of their actions on the environment thus tries to adopt new techniques to champion sustainable development agenda. A number of pressures are now being put on organizations from all corners of the globe. Drivers of EMS in industries and organizations are grouped into two but with five different factors. They include; the organizations themselves, market, social including the public and community, financial organizations and regulatory authorities (ISO 1996).

Organizations

Environmental issues have become increasingly important in organization's activities since it acts as insurance for its stakeholders both within and outside (Chan, 1998 in Zutshi and Sohal, 2002). Surveys carried out by Banerjee (1998) in Zutshi and Sohal (2002) showed that most managers are in favour of environmental management albeit at different levels. These rising awareness can be traced back to the 1972 Stockholm conference and further by the Rio conference where environmental issues were brought to the forefront of the world. Environmental issues and concerns have thus become very important issues in organization dealings today. Organizations have come to realize the advantages they stand to gain by adopting EMS therefore initiating it within themselves. Some of the drivers within organizations include management, staff, parent company, and shareholders.

Market

The market these days, especially in developed countries is leading environmental stewardship among firms as most consumers now demand environmental loyalty before they purchase products. Environmentally friendly goods are being sought and they are willing to pay more for these products. The Europeans are now threatening to ban fish and flowers from East Africa due to the long distance they have to be transported thereby burning a lot of fossil fuel by airplanes. They intend to develop their own flower and fish farms to save on environmental pollution.

Social forces/Community

A community can demand the existence of good EMS in an organization that they feel is a threat to the environment and their existence. With increasing awareness on the environment these days, society is a force to reckon with as far as the environment is concerned especially in the developing countries. The activities of environmental non-governmental organizations (ENGOS) are also becoming very vocal and serve as a driver of EMS. In Kenya, local communities may demand environmental stewardship but without appropriate ENGO or institutional backing, this will be a mirage.

Financial

Financial institutions and insurance companies these days demand the existence of an effective management system like EMS in order to acquire insurance. Existence of such a system serves as an incentive for the company to be granted loan or insurance. Some international financial institutions like the International Monetary Fund (IMF) and the World Bank (WB) are some of such organizations. People as well demand the existence of such a system before they invest in such an enterprise. Financial law suits can also compel them to adopt EMS or their operations.

Regulatory Institutions

Research has shown that environmental initiative by organizations is driven primarily by external forces, such as regulatory pressures. Porter and van der Linde (1995b) argued that government regulations may serve in practice as a stimulus to both economic growth and cleaner production, if they are used as a business asset to gain market advantages over competitors. It has been reviewed in other literature however that neither positive nor negative effects of environmental regulation on competitiveness were easily detectable (Jaffe et al. 1995). Porter and van der Linde (1995b) concluded that firms seek to maximize 'resource productivity' in response to both regulatory and market pressures. Environmental regulation has been a major factor leading to firms putting into effect EM (Kolk, 2000). According to him, some firms with less environmental risks used to focus on compliance to regulations but as EM develops, firms started to move beyond mere compliance.

The Gap between EMS Theory and Practice

While much has been written on EMS theory, there is inadequacy of documentation and analysis of specific cases of EMS implementation (Kirkland and Thompson, 1998) for adoption. This has placed developing countries at a disadvantage. The practitioners of EMS just introduced the concept with no adequate dissemination of those ideas to the general public. The lack of communication of the ideas in EMS has a number of roots. One, the concept is new; second, the lack of communication can also be attributed to competition between its practitioners especially those in the developed countries, and lastly, the lack of leadership on the issue (Kirkland and Thompson, 1998). According to Kirkland and Thompson (1998), the gap between EMS theory and practice has been exacerbated by the dominance of a structural approach to EMSs. EMS work has focused on the identification and description of components and frameworks but has not addressed how to put EMS elements together. ISO 14000 provides a list of resources needed in an EMS including general directions for blending of these resources but fails to describe techniques that may be used to blend the ingredients into a successful whole. The information is good but further information is needed to develop an effective EMS especially in Less Developed Countries (LDCs) like Kenya where the practice is not well known. Commitment by organizations is a vital component of the system but this has not been catered for in the ISO 14000 series (Kirkland and Thompson, 1998).

Some books attempted to guide readers through the process of developing EMS but these are all done in line with developed countries standards and examples with little attention being paid to that of the LDCs. Also, there is emphasis on large scale industries without corresponding structural change to accommodate small and medium scale ones which dominates the industrial scene in LDCs. There is need to involve and train local experts from LDCs to gain experience in current practice of EMS for adoption.

5. RESEARCH METHODOLOGY

This study adopted the quantitative research method. The study was based in all the major industrial towns of Kenya. These included Nairobi, Mombasa, Kisumu, Nakuru, Naivasha, Kericho, Eldoret, Kitale, Thika and Machakos. A list of registered agricultural companies in those major towns was made and corresponding numbers assigned to each of them. The numbers were placed in a container and then one picked at random without replacement. Approximately ten samples from each category were picked giving a total of thirty (30) samples. This method was chosen since it is unbiased and free from classification errors. Primary data from the sites were collected. These were obtained using the structured questionnaire. Secondary data such as internet reports, publications from National Environmental Management Authority, Environmental Impact Assessment and Environmental Audit reports, conference proceedings, government documents, published electronic and print journals and information from important people on environment in Kenya among others were used. Data in their raw form do not speak for themselves and thus the need for data processing and analysis (Robson, 2002). The process involved; Identifying (and correcting) errors in the data, coding the data, storing it in appropriate format, actual data analysis and report writing. All questionnaires were given serial numbers /IDs in order to; keep record of the questionnaires, use the serial numbers in data cleaning, to do away with incorrectly answered questionnaires and to do away with incomplete questionnaires. Data coding for the closed ended questions was done. Epi-data (database design software) was used to perform data entry. Data cleaning was undertaken after entry in order to provide quality data free of errors while ensuring logical data flow. After data entry, the data was exported to SPSS (Statistical Package for Social Sciences) for analysis. The data were presented by means of percentages, frequency distributions, bar graphs, tables and pie-charts. Charts were done using SPSS and PowerPoint.

6. RESULTS AND DISCUSSION

Determination of key factors that influence adoption of EM practices by industries in Kenya.

Drivers for the implementation of EM practices

Figure 5 presents the factors that drive industries in implementation of EM practices. It shows that pollution prevention was the major driver for the implementation of EM taking 27.5% of the respondents, followed by cost reduction, 23.2%, facilitation of compliance to local environmental regulations, 18.8%, international acceptance, 14.5%, while pressure from customers took 8.7%. Those who could not tell were 5.8% while 1.5% of the respondents were motivated by other factors.

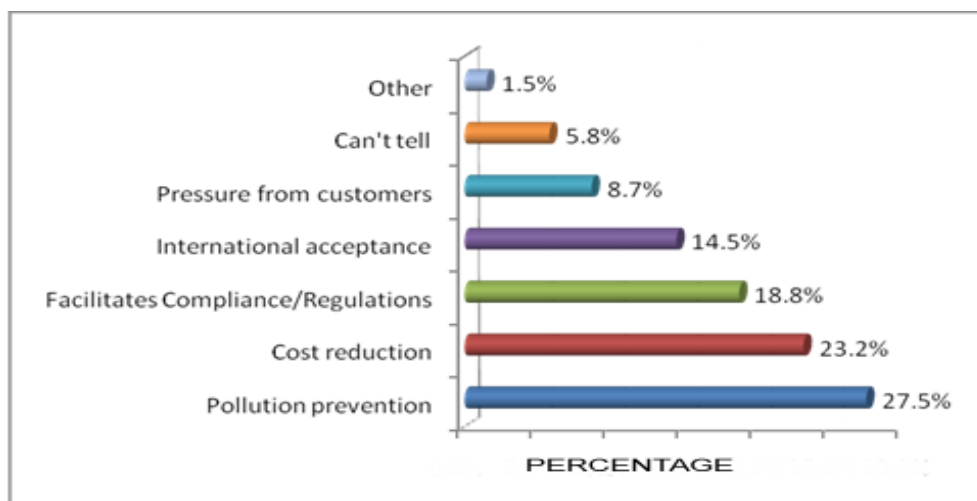


Figure 5: Drivers for the implementation of EM practices

(i) Pollution prevention

27.5% of the industries implemented EMS to prevent or minimize pollution to the environment resulting from their operations. This was attributed to the low level of awareness by management to the effects of pollution to environment which affects their employees' livelihoods, company's operations and costs in the long run.

(ii) Cost reduction

Cost reduction took 23.2%. This is usually a well-known rationale for implementing EMS all over the world (Kuhre, 1995). However it was not a major reason for the setting up of ISO 14001 by Kenyan industries.

(iii) Facilitation of compliance

Implementation of EMS facilitates compliance to local environmental regulations (Kuhre, 1995). However, only 18.8% of the industries had implemented their EMS due to this reason.

(iv) International acceptance

It was observed on figure 5 that 14.5% of the organizations that currently practice EM were derived from their parent organizations. These parent organizations were outside the country. Market opportunities especially in EU compelled some of the industries to embark on EM. These responses were from industries that export substantial amounts of their products to industries in the EU, for example the flower industries. The EU was the major exporting market to Kenyan export processing firms. Since this market was very sensitive to environmental issues (Wall et al., 2001) they had no alternative but to use the system. However, these industries were few compared to industries that produce for local consumption

(v) Pressure from customers

Pressure from customers is the lowest driver for the setting up of EM within Kenyan industries. Low environmental awareness by consumers in the country, in this case the general public leads to companies not having a real driver for setting up an EMS and therefore end up abusing the environment unabated. For example, companies close to the ocean at times empty untreated waste water into the ocean. They find it easier to do this as treatment of waste increases cost thus reducing profits. Enforcement and monitoring was very poor in the country giving leverage to the industries to indulge in these environment degrading acts.

Main challenges to Implementation of ISO 14001 EMS

Figure 6 presents results of main challenges of implementing an EMS in Kenya. The major challenge in setting up of EMS was high investment required, as given by 40.3% of the respondents. This was closely followed by lack of government incentives at 35.8%, delay in certification, 10.4% lack of awareness by management ignorance of its existence, 9% while its voluntary nature took 1.5% of the respondents.

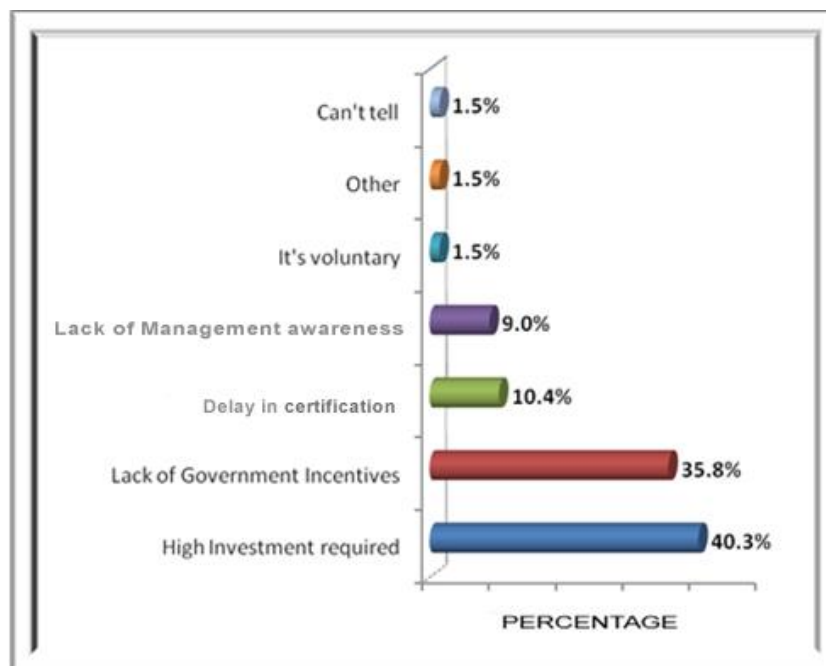


Figure 6: Main challenges to Implementation of ISO 14001 EMS

(i) High investment required

40.3% of the companies cited high initial cost of acquiring the certificate as a hindrance to setting up ISO 14001 EMS. Given the costs of registration, combined with the costs of consultancy expertise and auditing which Kenyan firms were lacking, small and domestic operations like Kenyan industries would not be able to certify their EMS without outside financial assistance. Turner et al (2000) showed that larger firms were likely to spread cost of certification to ISO 14001 and other standards, thus they were able to benefit from certification. There is a strong relationship between size of firms and certification to ISO 14001 and other international standards (Davy 1997). If Kenyan firms are small in size and are import substitution type, then they were better off not certifying to international standards. They are now under competition from trade liberalization and as such have to be competitive.

The cost of certifying EMS was high and beyond the scope of Kenyan industries manufacturing mainly for the domestic market. Capital cost is a major barrier to certification. Firms spent around \$10,000 to \$50,000 to get the certificate depending on their size (Post and Altman, 2003). In Kenya certified firms spent around Ksh.420, 000 in getting the certificate. This was beyond the means of Kenyan firms which were import substitution industries.

(ii) Lack of government incentive

Lack of government incentive followed closely with 35.8% of the responses. In a number of advanced and developing countries, government institutions have helped to put EMS functioning. They've laid important infrastructure for industry. This infrastructure led to increased improvement in environmental performance especially with energy use, water management, pollution and technology use (MAC, 1998). Developed countries that had got their industries certified to ISO 14001 developed structures and gave incentives to the industries to develop EMS. In Europe, America, and Asia, regulatory agencies, including businesses have actively pushed the development of ISO 14001 (Yiridoe et al, 2003). Some Asian countries have government funded ISO 14001 support programs in place and some are hoping that an ISO 14001 system will assist them in monitoring industry (OECD, 1998). In addition to regulatory agencies, local government administrations were also taking a number of measures to promote the use of ISO 14001 (Yano, 1998).

(iii) Delay in certification

Delay in certification followed with 10.4%. Some companies spent a long time getting help in the certification process. Many hours were spent which could have been used in other productive ventures.

(iv) Lack of management awareness

9% of respondents claimed that senior management was unaware of the existence of EMS. They were not taking environment issues seriously and this could be attributed to the voluntary nature of the system whereby management is not mandated by any legality to implement.

(v) It's voluntary nature

ISO 14001 is a voluntary initiative hence it is not obligatory on firms to be certified. The Kenyan case was not different, leading to low certification

Others include long procedures involved, lack of certifiers, cost of maintaining certificate and inadequate personnel. Some of the companies did not have personnel responsible to the environment, and depended on other staffs who were not environmentalists to undertake environmental issues. Environmental managers were in a better position to use the procedures involved in EMS.

Evaluation of extent of Compliance to Legislation

EM in Kenya was until now characterized by a command and control (CAC) approach. The use of this instrument according to Hens and Boon (1998) has the problem of limited capital for establishing relevant institutions, low managerial and administrative skills and inadequate enforcement capacities. Economic instruments as well have the capacity of helping to reduce environmental degradation; however, the level of compliance was a problem.

Figure 7 indicates that, 33% of the respondents pointed out that their level of compliance to environmental regulations was 40% and another 27% complied with environmental regulations at a level of 60% and 80% whilst 13% complied at a level of 20%.

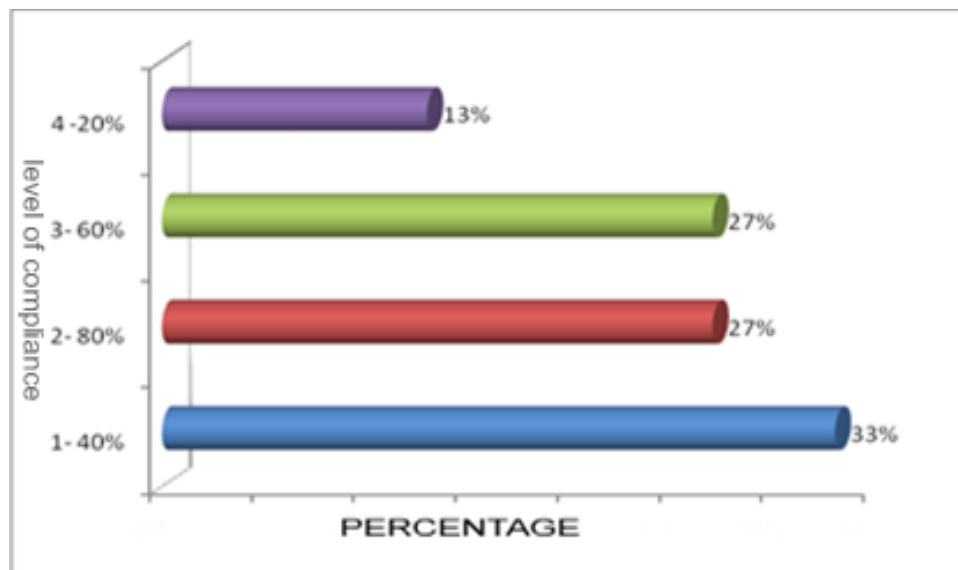


Fig. 7: Level of Compliance to Environmental Legislation

About 80% of the companies easily identified some impacts of their activities on the environment in the form of discharge to water, emissions to air, and waste products. The type of technology at disposal when compared to that of the industrialized countries in Europe and America was a major challenge to adoption of good EM. Discarded technology from industrialized countries was being used in Kenya.

Only 10% of the industries had a functioning waste treatment facility. Efficient regulatory system would push industry to divert second hand equipment which industrialized countries could not use as a result of age and development of new technologies and resources to more productive and sustainable environmental techniques.

Kenya seeks to attract industries from developed countries to provide employment, income and revenue for economic development. At the same time, these industries seek to increase profits by minimizing costs. EMS increases costs to their operations and they do not have means of adopting the right technology and therefore they pollute the environment (Krut and Gleckman, 1998). This problem makes it difficult for government agencies to penalize industries polluting the environment in the country. A tighter legislation will repel industrialists from investing in the country. Legislation is an incentive for improving environmental performance. It ensures industries use the best available technology and environmental option and therefore the best EMS necessary for development. This systems-based approach serves as a tool for increased certification, with spin-off in exports for revenue, local development and poverty reduction

7. SUMMARY AND CONCLUSIONS

The objectives of the study were to evaluate current status of EMS adoption by Kenyan industries, determine key factors that influence adoption of EM practices and evaluate extent of compliance to local environmental regulations.

Major issues emerging from this study indicated that;

1. A majority of companies in Kenya have developed some forms of EM practices like energy conservation, waste management, LCA, eco – labeling, and recycling which are all inherent within standardized EMS. Other management practices included; safety and management and ISO 9000/9002 quality management system. Waste management was the major form of EM practice. NEMA has established a desk for EMS but has not made it a priority as compared to EIA and EA. The Kenya Association of Manufacturers was promoting energy conservation. There was little incentive for industries to take their own initiative to establish structured EMS.
2. Pollution prevention was the major driver for development of EM practice by Kenyan industries. Others include cost reduction, facilitation of compliance to environmental regulation, international acceptance and pressure from customers.

3. The main challenge to EM implementation by Kenyan industries was the initial high investment required. Certified companies spent between US \$20,000 and US \$40,000 US dollars to certify. Others include; lack of government incentives, delay in certification, management ignorance of its benefits and its voluntary nature.
4. The extent of compliance to local legislation was low considering that a majority of the companies had 40% compliance and a few of them (13%) complied fully. The low level of environmental regulation and enforcement mechanisms gave industries little incentives for environmental protection. Good regulatory systems make industries invest in productive and sustainable environmental techniques.
5. EMS through ISO 14001 certification will serve as a viable option for environmental protection and sustainable development in Kenya. The goal therefore should be how environment aspects are managed, how companies set targets and achieve most of their performance objectives.

8. RECOMMENDATION

1. To enhance good environmental quality, enforcement of applicable legislation should be combined with education on voluntary EMS. Good environmental policies, collaboration and communication between stakeholders in the environmental field should be fostered as this is a challenge to the involvement and mutual trust among stakeholders. This could be done through stakeholder forums, workshops and seminars. With this, both the companies and other stakeholders become aware of the need and benefits of its implementation. Generally, level of environmental education and awareness is low in developing countries; therefore there is need for general environmental enlightenment and education.
2. Increased certification services by accredited entities would create competition and reduce the cost of certification. There is also need for qualified and certified environmental auditors as well as strengthen legislations on environmental performance and compliance
3. More partnerships should be established between developed and developing countries to facilitate knowledge transfer and to equalize the resource burden of adopting standardization. Some mechanisms for putting into effect this recommendation include multi-lateral funding and company-to-company partnerships.
4. Some industries are putting into place ISO 9001/2. Industries implementing ISO 9001/2 QMS should be made to include the ISO 14001 at once to curb the high cost of implementing both systems individually. More time will however be spent on the certification but money saved would be higher.
5. Standardized EMS results in improved environmental performance, leading to decreased environmental impacts. The reliance on EIA and EA to influence environmental management is recommended, however, this is not adequate in solving environmental problems in the country. It is essential for NEMA to ensure all industries establish waste treatment facilities to prevent or minimize pollution. EMS should be within the Kenyan environmental law. The sustainable use of resources could be encouraged through awareness creation programs as well as the enforcement of existing legislation.
6. Increase incentives to certified companies. These incentives could be in form of tax concessions and awards. This would encourage those implementing the system and motivate others. Also small firms need to be encouraged to set up the systems at their own scale.
7. Governments must ensure that their corporations set good examples for others to follow by taking the issue of environmental performance and compliance seriously in its own corporations. If this was the case, then other corporations would not have reason or excuse from compliance.

Suggestions for Further Research

EMS is a new area of strategies for EM in LDCs and more research is needed in sectors that have significant impacts on the environment and rural livelihoods like the mining sector. EM within the SMEs is also needed. It is essential to examine how auditors perceive EMS within SMEs in LDCs. It is important to seek regulatory shifts that occur as a result of the effectiveness of EMS in terms of real and continuous environmental improvement as stipulated in the ISO 14001 standard and show how these have impacted the company's relation with regulators.

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