

Comparison and review of Environmental Management Systems among the government institutions in Sri Lanka

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Abstract

The organizations in the world have been suffering from various types of environmental problems in the recent past due to their activities, products and services. Environmental Management System (EMS) is a comprehensive tool to assess and ensure the mitigation of environmental issues. EMS is a part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policies. EMS follows Stewart and Deming's quality management approach. EMS ensures positive environmental impacts, improves product quality, competitiveness and production process, reduce expenses, liabilities, insurance premiums, and waste management cost and enhance market responsiveness.

The objective of this research is to compare the performance of EMS among the government institutions in Sri Lanka. Ten Divisional Secretariat offices in Kurunegala district in the North Western Province in Sri Lanka have been selected for the purpose. Interviews of key informants were the main source of primary data under six EMS criteria, namely, commitment and environmental policy, planning, implementation, measurements and evaluation, audit and review. SPSS and MS Excel were used for data analysis.

There was a considerable variation among the institutions. The researcher found that the success level of the implementation of EMS is positively correlated with leadership qualities. Generally, the implementation of EMS in government institutions is weak and performance rank order illustrated that the major weaknesses were lack of awareness of the EMS among the employees, poor auditing, lack of EMS training, and lack of condign attitudes. EMS should be launched to improve the EMS training in order to minimize negative environmental impacts and to provide effective service to the public.

Key words: *Environmental Management System, Environmental impacts and issues,*

Introduction

At present, the environment all over the world is being rapidly polluted and degraded due to both natural and man-made activities but natural activities cannot be stopped and it is an essential process to survive the world. On the other hand, human beings are able to manage those natural environmental impacts arising from natural hazards and disasters through the scientific knowledge and management but the problem is various kinds of human activities accelerated those natural processes. That is why the people who are living in the each and every corner of the world are suffering from different sorts of environmental problems such as climate changing, global warming, water pollution, air pollution, land degradation, energy crisis ...etc. Therefore, to overcome those environmental issues, various approaches, tools and techniques have been developed at global, national, regional, institutional, and individual levels. At the same time, each and every country of the present world is eager to use quality management approach rather than the traditional command and control approach to manage and overcome burning environmental issues and it can be considered as a tool such as Environmental Management Systems (EMS), Environmental Impact Assessment (EIA), Geographic Information System (GIS)...etc. However, as a quality management approach EMS is used to overcome environmental problems related to organizations in the both developed and developing countries of the modern world.

EMS can be understood in various dimensions as a tool, part of management system, systematic approach, and set of processes however, environmental management system is a tool for managing the impacts of an organization's activities on the environment. It provides a structured approach to planning and implementing environment protection measures. As well as EMS is one part of a larger management system and it is used to establish an environmental policy and to manage the environmental aspects of an organization's activities, products and services. The International Organization for Standardization (ISO) defines environmental management systems as "that part of the overall management system which includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policy."

In other words, an EMS focuses on environmental management practices, rather than the activities themselves. The EMS provides the structure by which the specific activities can be carried out efficiently and in a manner consistent with

key organizational goals, but does not specify levels of performance (e.g., the EMS will ensure that proper procedures are in place and that operator training exists, but won't specify methods or frequency of sampling). The EMS allows an organization the flexibility to adapt the system to its needs and priorities, rather than forcing a "one size fits all" mentality. The overall aim of this International Standard is to support environmental protection and prevention of pollution in balance with socio-economical requirements.

Brief history of environmental management systems

When exploring the history of ISO 14001 model, it is easy to understand that the EMS concept has been evolved as the result of early procedure. The concept of an environmental management system evolved in the early nineties and its origin can be traced back to 1972, when the United Nations organized a Conference on the Human Environment in Stockholm and the United Nations Environment Programme (UNEP) was launched. These early initiatives led to the establishment of the World Commission on Environment and Development (WCED) and the adoption of the Montreal Protocol and Basel Convention.

In 1992, the first Earth Summit was held in Rio-de-Janeiro, and served to generate a global commitment to the environment. In the same year, BSI Group published the world's first environmental management systems standard, BS 7750. This supplied the template for the development of the ISO 14000 series in 1996, by the International Organization for Standardization, which has representation from committees all over the world (ISO) (Clements 1996, Brorson & Larsson, 1999). As of 2010, ISO 14001 is now used by at least 223 149 organizations in 159 countries and economies. Therefore all countries not only developed but also developing countries are motivated to use this concept for their organizations due to the huge benefits received from the EMS the organization which implementing concept of Environmental Management System in correct order.

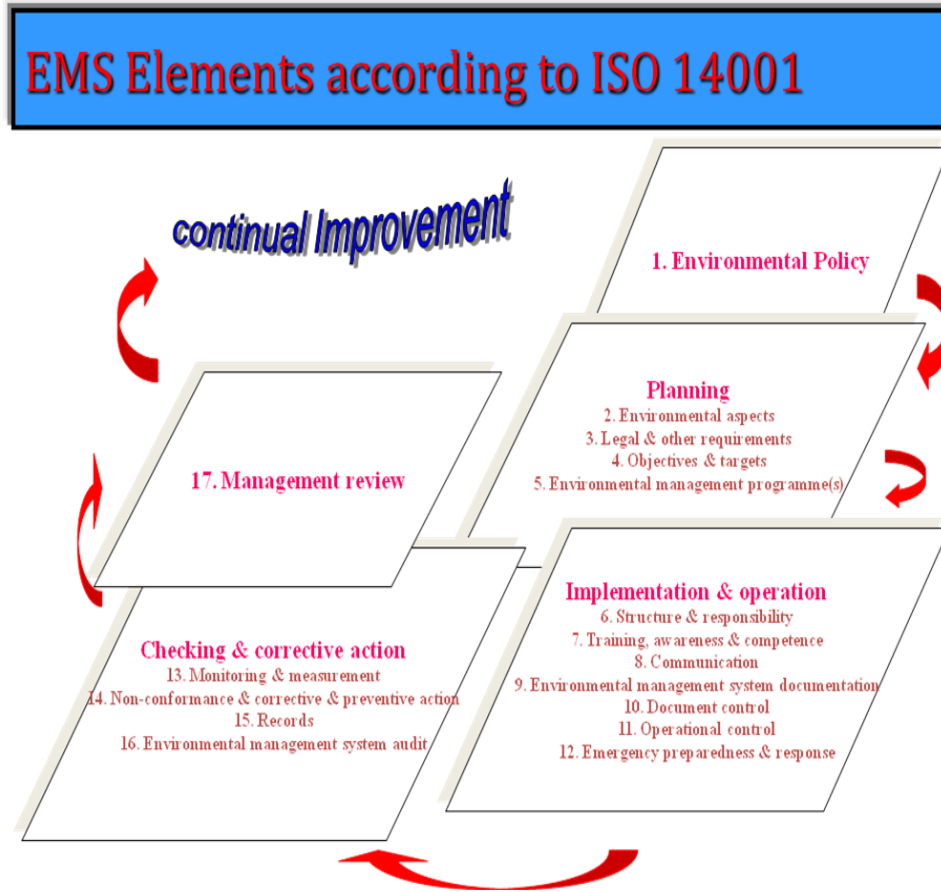


Figure 01: All elements of Environmental Management Systems

According to the above figure, there are seventeen elements of EMS and all those parts are implemented under the basic four steps Plan-Do-Check-Act cycle or PDCA cycle and continual improvement is essential process of the environmental management system and it follows a systematic approach of planning, implementing, evaluating and improving. The above diagram outlines the basic steps of the processes.

By implementing EMS in an organization there are a lot of key areas that are benefited due to EMS such as trade customers and consumers, employees, investors, trade, local community, government, sales and marketing, productivity, insurance and waste disposal and finally any organization is able to get third party certification by ensuring and implementing good EMS.

Basic principles of EMS

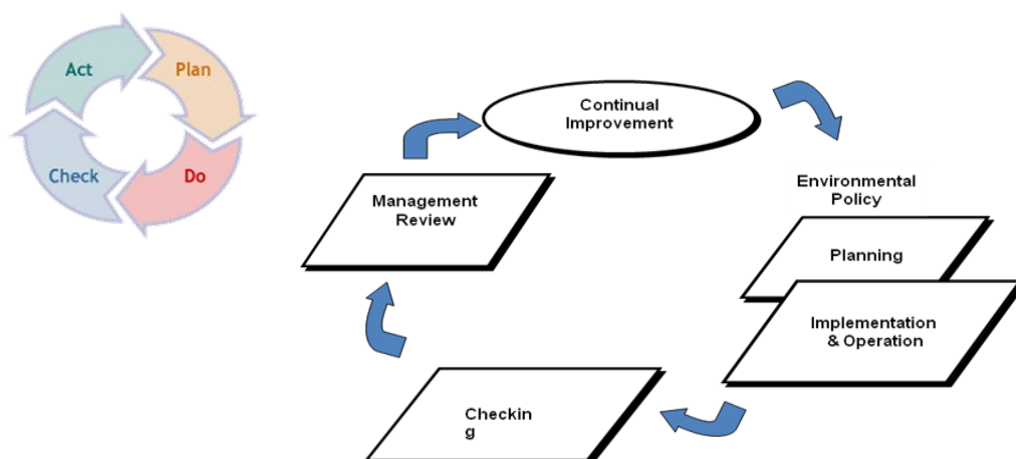


Figure 02: Basic elements of Environmental Management Systems

The Plan-Do-Check-Act cycle or PDCA cycle is also called the Deming cycle after Dr.W.Edwards Deming (1900-1993) of the United States, who promoted quality management in Japan after World War II. Deming himself called the cycle the Shewhart cycle, because the PDCA cycle to which had been created by Dr.Walter A.Shewhart (1891-1967), was Deming's Teacher.

Plan – establish objectives and processes required

Prior to implementing ISO 14001, an initial review or gap analysis of the organization's processes and products is recommended, to assist in identifying all elements of the current operation and if possible future operations, that may interact with the environment, termed environmental aspects (Martin 1998). Environmental aspects can include both direct, such as those used during manufacturing and indirect, such as raw materials (Martin 1998). This review assists the organization in establishing their environmental objectives, goals and targets, which should ideally be measurable; helps with the development of control and management procedures and processes and serves to highlight any relevant legal requirements, which can then be built into the policy and policy should work as a framework for implementing Environmental Management System in an organization.

Do – implement the processes

During this stage the organization identifies the resources required and works out those members of the organization responsible for the EMS'

implementation and control (Martin 1998). This includes establishing procedures and processes, although only one documented procedure specified is related to operational control. Other procedures are required to foster better management control over elements such as documentation control, emergency preparedness and response, and the education of employees, to ensure they can competently implement the necessary processes and record results. Communication and participation across all levels of the organization, especially top management is a vital part of the implementation phase, with the effectiveness of the EMS being dependent on active involvement from all employees and about 40% is covered in this step.

Check – measure and monitor the processes and report results

During the check stage, performance is monitored and periodically measured to ensure that the organization's environmental targets and objectives are being met (Martin 1998). In addition, internal audits are conducted at planned intervals to ascertain whether the EMS meets the user's expectations and whether the processes and procedures are being adequately maintained and monitored where organization is able to use their own format to audit process.

Act – take action to improve performance of EMS based on results

After the checking stage, a management review is conducted to ensure that the objectives of the EMS are being met, the extent to which they are being met, that communications are being appropriately managed and to evaluate changing circumstances, such as legal requirements, in order to make recommendations for further improvement of the system. These recommendations are incorporated through continual improvement, plans are renewed or new plans are made, and the EMS moves forward and this step is necessary to be success of Environmental Management System in an organization.

Continual Improvement Process

The core requirement of a continual improvement process (CIP) is different from the one known from quality management systems. CIP in ISO 14001 has three dimensions (Gastl, 2009):

- Expansion: More and more business areas get covered by the implemented EMS.
- Enrichment: More and more activities, products, processes, emissions, resources etc. get managed by the implemented EMS.

- Upgrading: An improvement of the structural and organizational framework of the EMS, as well as an accumulation of know-how in dealing with business related environmental issues.

Overall, the CIP-concept expects the organization to gradually move away from merely operational environmental measures towards a strategic approach on how to deal with environmental challenges.

An EMS is an important component of a company's strategy for marketplace success. Environmental issues and sustainable development are capturing the world's attention more than ever, and industry is often seen as a major source of environmental problems. An EMS addresses such concerns and leads to significant environmental improvements. In addition, an EMS can improve product quality, competitiveness, and production processes; reduce expenses, liabilities, insurance premiums and waste management costs; and enhance market responsiveness. An EMS also creates a more attractive company from an employment and investment perspective. However, this study is attempting to study about implementing EMS in government sector institutions in Sri Lanka.

Methods and Materials

However, the concept of EMS is a still new concept for the developing countries hence as a rapid developing country Sri Lanka, is also using this tool for the organization especially in private sector than the government institutions in Sri Lanka. Though the institutions implementing EMS in private sector have achieved considerable improvement both goals of environmental and business sections, most of government sector institutions are suffering from a lot of environmental problems and they are weak to achieve their organizational goals that is why this study is making every possible effort to review and compare environmental management systems of the government institutions to understand the present status of implementing EMS in government institutions and weaknesses to become unhealthy organizations of Sri Lanka. For this purpose, ten government Divisional Secretariat offices in Kurunegala district of the North Western province were selected and both primary and secondary data were used where key person interview and questionnaire were used for data collecting. Especially heads of the institutions and heads of the departments were subjected to interview. Annual reports, books, websites, were used to collect secondary data and MS Excel, SPSS were used for data analysis and text, tables, figures, and charts were data presentation methods.

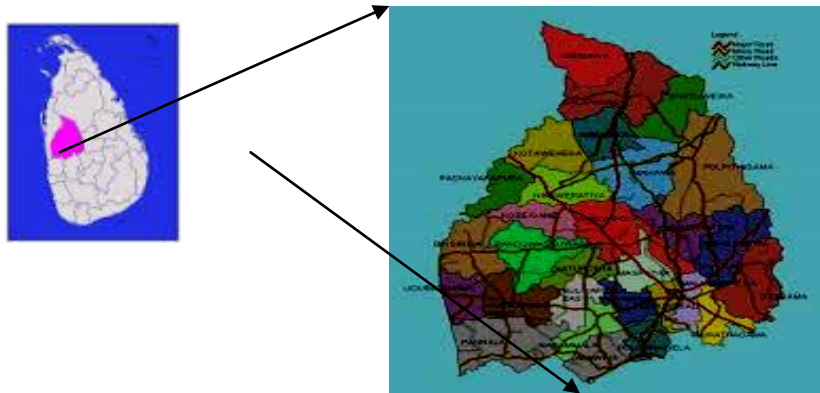


Figure 3: Divisional Secretariat areas in Kurunegala District

Source: researcher developed the map

However, six EMS criteria or components of ISO 14001 Model used as variables called Commitment environmental policy (Cep), Planning environmental policy (Pep), Implementing environmental policy (Iep), Measurement and evaluation (Mea), Audit and Review (Aar) and External environmental communication (Eec) were used to understand and analyze the level of EMS and compare the EMS among the selected government institutions as well as statistics methods of mean value, standard deviation and ranking were used for the above purpose.

Table 1: Rank of the values

Condition	Rank
High	5
Middle	4
Low	3
Very Low	2
None	1

Alawwa, Pannala, Kuliya, Kuliya (estern), Narammala, Weerambageda, Bamunakotuwa, Wariyapola, Maspotha, and Kurunegala Divisional Secretariat offices in Kurunegala District were the study area and each components of EMS was compared among the ten institution where there were considerable changes among the institutions in each component due to various factors.

Results and discussion

When discussing the results of the research, commitment and environmental policies of the government institutions are weak due to the various reasons though they have environmental policies, they did not include essential components of environmental policy called prevent pollution, continuous improvement, and comply with environmental regulations. Hence, most of the time environmental policies have failed to achieve their institutional goals. As well as when implementing environmental policies, lack of time frame to implement environmental programs, lack of good attitudes of employees, lack of practical implement of environmental programs and due to the lack of authorized environmental officers of the government institutions have led to the failure in implementing environmental policies. But about 40% of government institutions have their own good environmental programme and emergency preparedness and response such as Alawwa, Kurunegala, Maspotha, Kuliypitiya (west) Divisional Secretariat offices. The same time when considering about the variables, Measurement and evaluation, Audit and review and External environmental communication, it could be seen that there were considerable variations among the institutions and it is shown in the following table under the six main variables where it is clear that most of the government sector institutions have given considerable value for commitment and environmental policy and planning the environmental policy but they have not given considerable attention for Audit and review and external environmental communication.

- Commitment and Environmental policy (Cep)
- Planning and Environmental policy (pep)
- Implementing the Environmental policy (Iep)
- Measurement and Evaluation (Mea)
- Audits and Review (Aar)
- External Environmental Communication (Eec)

There was some relationship between each of the selected components of ISO 14001 Model so, there was much closer relationship between commitment and environmental policy and implementing environmental policy due to the influence of top management commitment on environmental policy

Table 02: Total mean values of six components of EMS in each DS office

DS office				Cep	pep	Iep
Mea	Aar	Eec				
Alawwa			4.71	2.85	3.1	
2.22	1	2.33				
Pannala			4.42	2.71	2	
2.11	1	1				
Kuliyapitiya (western)			4.28	3.21	3.4	
2.44	1.16	2.5				
Kuliyapitiya (eastern)			3.85	1.5	1.3	
1.66	1	1				
Narammala			3.57	1.64	1.3	
1.66	1	1				
Weerambugeda			4.14			
2.78	2.1	2.11	1	1		
Bamunakotuwa			4.28		2.78	
2.3	1.55	1	2.33			
Wariyapola			4.14	3.21	3	
2.33	1	3				
Maspotha			4.57		3.57	
3.2	3.44	1	3			
Kurunegala			4.28	2.78	2.5	
2.88	1	3				

Source: field survey

When exploring the above table, and considering the mean value of each selected component, it is obvious that the mean value of commitment and environmental policy is middle in each divisional secretariat office, it means that all the government institutions need to form environmental policies as well as planning environmental policies and implementing it but there is no correct guidance to establish good environmental policy and lack of knowledge about Environmental Management Systems or lack of awareness of ISO 14001 Standard. Though there are environmental policies, its planning and implementation are very bad in government institutions and there are no audits and review and good communication with external related parties to ensure their environmental policy.

Table: 03 Final ranking of DS offices according to mean value of total six variables of EMS

DS office	Total mean value	Ranks
Maspotha	3.23	1
Kuliyapitiya (western)	2.83	2
Wariyapola	2.78	3
Kurunegala	2.74	4
Alawwa	2.70	5
Bamunakotuwa	2.37	6
Pannala	2.20	7
Weerambugeda	2.188	8
Narammala	1.69	9
Kuliyapitiya (eastern)	1.71	10

Source: field survey

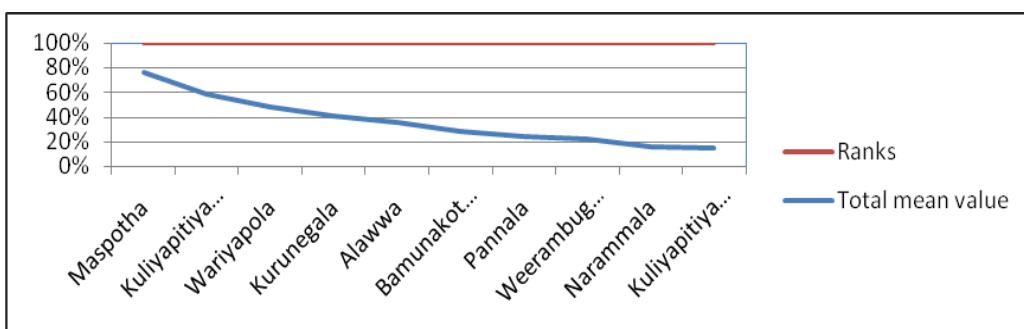


Figure: 04 Ranking DS office according to progress level of EMS

Source: Field survey

According to the analysis, there was high variation in each component of the selected variable of environmental management systems in each selected divisional secretariat office in Kurunegala district due to various reasons where the researcher could final that the success of implementation of EMS in government institutions depends on a few factors. Among them the key factor is the good leadership of an institution. It means that if the head of an institution deals with other relevant employees together to achieve their planned environmental policy, it is easy to achieve the ultimate environmental goals of an institution and it was observed that the personality of the head of an

institution seriously affects the implementation of environmental policy. The attitude of the employees also seriously affect to the implementation of successful EMS of an institution and the knowledge about EMS and necessary resources are massively affect to establish good EMS in an organization. However, when consider about these all requirements, Maspotha, Kuliyaipitiya (Western), Wariyapola and Kurunegala Divisional Secretariat offices become first, second, third and fourth places respectively.

Conclusion and recommendations

This research was carried out to reveal the present status of implementation of EMS in government institutions where to achieve that goal the researcher selected ten divisional secretariat offices in Kurunegala District and EMS was checked under six criteria, namely, Commitment and Environmental policy (Cep), Planning and Environmental policy (pep), Implementing the Environmental policy (Iep), Measurement and Evaluation (Mea), Audits and Review (Aar), External Environmental Communication (Eec). Finally, the researcher could find that the EMS implementation in government sector institutions is very poor and the successful implementation of EMS mainly depends on the leadership of heads of institutions, knowledge of the EMS, resources and positive attitude of the employees. Therefore, the researcher could observe that the variations among the ten selected institutions are due to the variation of the above mentioned factors. Therefore, there is potential to change all government institutions positively having changed the weaknesses of establishing EMS in an organization.

In order to establish good EMS in government sector institutions, and overcome present environmental problems, following recommendations can be made:

- Proper training on establishing of EMS should be given to all relevant employees of government sector institutions and full knowledge about ISO 14001 should be given considering main steps of Plan, Do, Check and Act including how to set up an environmental policy and its achievement under the guidance of ISO 14001 models.
- When planning environmental policy, necessary components should be included such as prevention of various types of pollution, comply with relevant laws and regulations, continual improvement etc and it should be published to relevant all internal and outside persons.

- A national policy should be established to implement EMS in all government institutions and responsibility and accountability should be ensured to protect the environmental policy.
- Competitiveness among the government institutions should be developed with an eye to achieve institutional environmental goals.
- Good environmental task groups should be made including various positions of the organizational structure of the institutions.
- Continuous audit and review about implementation of its EMS should be done periodically at the proper time.
- Especially, establishing a post of environmental officer for each institution should be done to coordinate all environmental programs.
- Attitude of the employees should be improved to protect and conserve the environment of the institution while considering it a part of his or her duty of the bearing post.

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