

ISO 14001 and Economics: How much is an EMS worth?

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4.1 General Requirements

- The organization must establish and continually improve an EMS, in accordance with the requirements of ISO 14001.

How can this benefit an organization economically?



Challenges

- Quantifying EMS ROI
- Measuring "environmental" expenditures
- Identification and valuation of non-tangible benefits
- Comparison of costs before and after EMS implementation

Challenges

- Difficulty in justifying registration if the certificate has no clear market value



4.1 General Requirements

- The organization shall define and document the scope of its environmental management system.

An Environmental Management System is a *business management system.*



4.2 Environmental Policy

- Top management must define the environmental policy and ensure it meets certain minimum requirements, e.g.

- Appropriate;
- Continual improvement, prevention of pollution, compliance;
- Documented
- Communicated

4.2 Environmental Policy

- Opportunity:

Why not add economic performance to the organization's environmental policy?

4.2 Environmental Policy

- Opportunity:

The better condition an organization is in financially, the better it will be able to take care of the environment.



4.3.1 Environmental Aspects

- **The organization must identify its environmental aspects and significant impacts.**
 - **Aspect - element that can interact with the environment**
 - **Impact - change to the environment, adverse or beneficial**

4.3.1 Environmental Aspects

- Opportunity:

Identify the economic costs and benefits associated with the environmental aspects.

Remember that impacts can be positive or negative.

4.3.1 Environmental Aspects

- Example:

One chemical manufacturer, while performing its aspect identification, discovered a point of waste that was costing \$10,000 per year on a single, non-hazardous material.

4.3.2 Legal and Other Requirements

- The organization must

- know its legal and other requirements
- Know how they apply to their environmental aspects
- Consider them when setting objectives

4.3.2 Legal and Other Requirements

● Opportunity

- Systematic handling of legal and other requirements captures that knowledge and makes it easier to get/stay in compliance.



4.3.2 Legal and Other Requirements

● Example

- Lockheed Martin Federal Systems experienced fewer regulatory audits and decreased redundant audits by non-regulatory agencies.

4.3.3 Objectives, Targets and Programme(s)

- **The organization must set environmental objectives and targets**
 - Environmental objective - overall goal that an organization sets itself to achieve.
 - Environmental target - detailed performance requirement that needs to be set and met in order to achieve objectives

4.3.3 Objectives, Targets and Programme(s)

Example:

- A US Ink Manufacturer: Pressured by a key customer to “go green” and not increase prices.

Achieved 100% return on investment within 3 years from energy savings. Saved \$20,000 annually in reduced water charges.

4.3.3 Objectives, Targets and Programme(s)

- Objectives and targets must be measurable, where practicable, and consistent with the environmental policy

4.3.3 Objectives, Targets and Programme(s)

Opportunity:

Objectives and targets can be linked to the organization's overall goals, including economic goals.

Are we doing this?



4.3.3 Objectives, Targets and Programme(s)

Example:

Within a year of implementing ISO 14001, Lima Engine reduced water consumption by nearly 200,000 gallons per day, and eliminated boiler ash production (the largest single component of its solid waste stream).

4.3.3 Objectives, Targets and Programme(s)

Example:

A single program initiated as part of the Oki ISO 14001 implementation led to modification of a manufacturing process, reducing use of a toxic material by about 98%, saving them nearly \$60,000 annually.

4.3.3 Objectives, Targets and Programme(s)

- The organization must establish programs to achieve objectives and targets, and designate time frames and responsibility.



Advantage

- Organization's internal environmental system is more likely to identify opportunities for savings than a government-driven compliance program.
 - Example: Organization's own objectives and targets get more attention from more people within the organization.

Source: Zero Waste Alliance



4.4.1

Resources, roles, responsibility and authority

- Management must provide resources to effectively support the EMS.

Quantification of EMS economic output will help ensure availability of resources!

4.4.1

Resources, roles, responsibility and authority

● Example:

Lucent Technologies initially set aside about \$1.5 million to bring 12 business sites under a single EMS.

ROI < two years due to increased performance and risk reduction as a result of the EMS.



4.4.1 Resources, roles, responsibility and authority

- Responsibility and authority must be defined, documented and communicated.

Facility-wide knowledge of responsibilities can help avoid expensive errors. (DOT)

This issue hits multiple elements of the standard.



4.4.2 Competence, Training, and Awareness

- The organization must ensure personnel are competent to achieve conformance with the EMS and environmental policy.



4.4.2 Competence, Training, and Awareness

● Challenge:

How do we value a more environmentally educated workforce that follows a proactive, systemic approach to environmental management rather than a reactive, firefighting approach?



4.4.2 Competence, Training, and Awareness

Opportunity

An EMS not only requires training, but helps capture the knowledge of the work force.

4.4.2 Competence, Training, and Awareness

- The organization must make personnel aware of the importance of the EMS, its requirements, and the environmental impacts of their work.

4.4.2 Competence, Training, and Awareness

● Opportunity

Involving the whole organization in the system improves cooperation, reducing conflicting agendas and risks.



4.4.3 Communication

- Internal communication
- Communication from external interested parties



4.4.3 Communication

● Internal communication

Clear lines can help avoid people and departments working at cross purposes.

e.g. buying chemicals in bulk to get volume discount, but increasing permit costs.



4.4.3 Communication

● Challenge:

When does the decision to openly communicate with external stakeholders on environmental aspects become a liability, and when can it be an asset?

4.4.3 Communication

● Challenge:

Violations tend to be well documented and publicized.

How can the communications aspect of an EMS shine a positive light on an organization?



4.4.3 Communication

- Opportunity:

What does the organization's marketing staff know about the EMS?



4.4.4 Documentation

- The environmental management system documentation must include certain items, e.g.

environmental policy

objectives and targets

scope

main elements of the EMS and interaction

reference to related documents



4.4.5 Control of Documents

- Documents required by the environmental management system and by ISO 14001 must be controlled.



4.4.5 Control of Documents

- The organization must establish procedures to control documents

approval

review and update

identification

availability

legibility



4.4.6 Operational Control

- The organization must conduct operations associated with their significant environmental aspects in accordance with the environmental policy, objectives and targets.

4.4.6 Operational Control

Documented procedure(s) are needed to control situations where their absence could lead to deviation from the EMS.

Operating criteria must be specified where applicable.



4.4.6 Operational Control

The organization must have procedures for controlling the environmental aspects of goods and services used.



4.4.7 Emergency Preparedness and Response

- The organization must have procedures for responding to emergency situations and accidents in accordance with the EMS.



4.5.1 Monitoring and Measurement

- The organization must monitor and measure, on a regular basis, the key characteristics of its operations that can have a significant environmental impact.

4.5.1 Monitoring and Measurement

- Opportunity:

Key characteristics for monitoring can include economic performance of the EMS.

4.5.1 Monitoring and Measurement

● Example:

A semiconductor manufacturer spent \$38,500 on ISO 14001 implementation and registration and tracked \$80,290 in first year savings, for a net savings of \$41,790.

4.5.2 Evaluation of Compliance

- The organization must periodically evaluate its compliance with applicable legal and other requirements.



4.5.2 Evaluation of Compliance

● Example

- IBM: 1997, IBM completed the first phase of its single global registration to ISO 14001. By the end of 1998, all 28 worldwide manufacturing and hardware development sites registered.
- Compliance cost avoidance resulted in an estimated \$54 million savings.

4.5.3 Nonconformity, Corrective Action and Preventive Action

- The organization must have procedures for dealing with nonconformity(ies) and for taking corrective and preventive action.

4.5.4 Control of Records

- The organization must have procedures for maintenance of records needed to support the EMS.

4.5.5 EMS Audit

- The organization must audit itself against the requirements of the standard
- The audit must provide information to management on whether or not the system works.

4.5.5 EMS Audit

- Selection of auditors and conduct of audits shall ensure objectivity and the impartiality of the audit process.



4.5.5 EMS Audit



Example:

- A Department of Energy facility (WIPP) was able to use its ISO 14001 registration and surveillance audits in place of selected DOE inspections.



4.6 Management Review

- Top management must review the EMS periodically to ensure its continuing suitability, adequacy, and effectiveness.

4.6 Management Review

- **Input to management reviews must include, among other things,**

communications from external parties, including complaints

environmental performance

progress toward objectives and targets



4.6 Management Review

- The outputs from management reviews must include any decisions on possible changes to

environmental policy

objectives, targets and other EMS elements



4.6 Management Review

- **Challenge:**

The EMS can only be of economic benefit if it's properly implemented and maintained.



Thanks for your participation!

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