

An environmental management system is a set of procedures that will help to reduce an organisation's environmental impact, ensure they comply with regulations and legislation and demonstrate that the environmental risks and liabilities are managed responsibly. It should be part of the overall management system merging well with the production and quality management systems. An EMS follows a Plan – Do – Check – Act cycle. The process is continuous and an organisation needs to revisit it regularly to ensure that everything is up-to-date and relevant.

If carried out well an EMS:

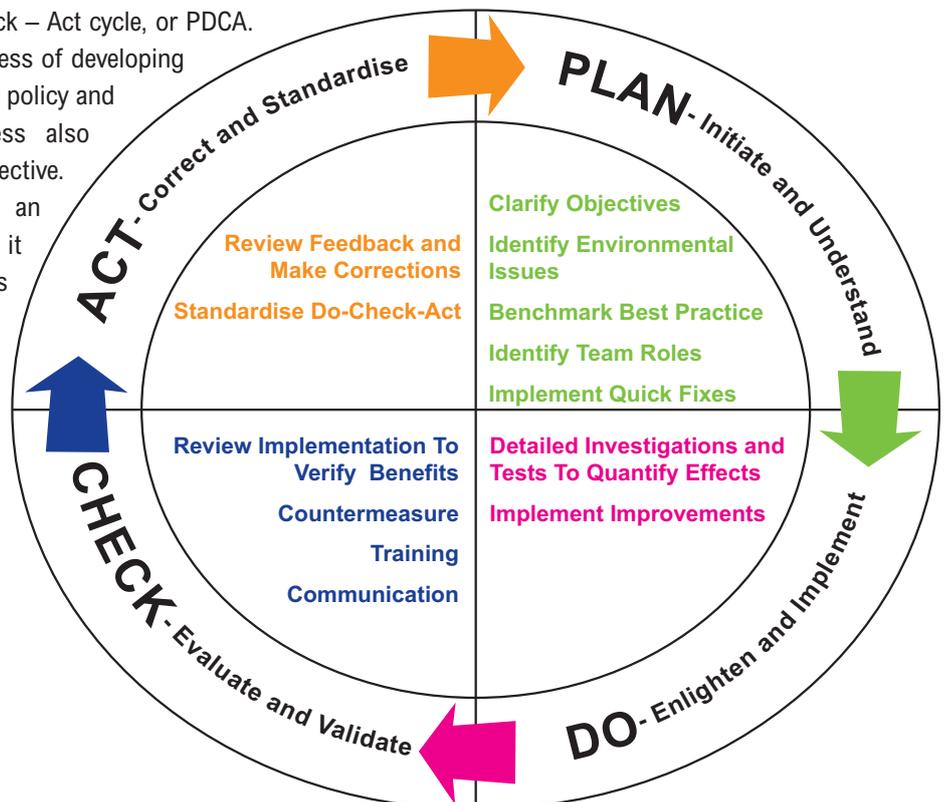
- Serves as a tool to improve environmental performance
- Provides a framework to manage an organisation's environmental affairs
- Is the aspect of the organisation's overall management structure that addresses immediate and long-term impacts of its products, services and processes on the environment
- Gives order and control for organisations to address environmental concerns through the allocation of resources, assignment of responsibility and on-going evaluation of practices, procedures and processes
- Focuses on delivering continual improvement to environmental performance

An effective EMS will:

- Define environmental responsibilities for all staff
- Identify opportunities to reduce waste, including raw materials, utility use and waste disposal costs
- Increase profits
- Reduce the risk of fines for non-compliance with environmental legislation
- Ensure all operations have procedures to minimise their environmental impacts
- Record environmental performance against set targets
- Provide a clear audit trail
- Attract shareholders and investors, e.g. banks' loan applications. England and Wales TB tendering documents require evidence of environmental considerations for reducing waste water and mitigating carbon emissions. An EMS would be a suitable response to these requirements.

Implement an Environmental Management System

An EMS follows a Plan – Do – Check – Act cycle, or PDCA. The diagram below shows the process of developing and implementing an environmental policy and management system. The process also checks to ensure the system is effective. This process is continuous and an organisation will need to revisit it regularly to ensure everything is up-to-date and relevant.



PLAN – Initiate and understand

Clarify Objectives

- Develop environmental strategy and policy
- Gain support from the top (ideally board members)
- Enlist and get commitment from all tiers of management
- Set the organisation's objectives; detail company benefits in terms of the effects to customers, shareholders, management, employees and the wider community

Identify environmental issues

- Measure resource usage and discharge. Aim to account for at least 90% of all resources used
 - Energy use (gas, oil, electricity, renewables)
 - Water and effluent breakdown
 - Smells and atmospheric emissions
- Collate all barriers to implementation and improvement, e.g. lack of personal experience, culture
- Identify the areas/processes that use the most energy, water, create the worst effluent or cause the most community complaints. Think Pareto **

Benchmark best practice

- How do you compare with others? Use information from similar companies in your group and use information from this study to make suitable comparisons
- Use historical data to see if usage varies during certain times of the year or is dependent on production

Identify team roles

- Appoint a manager to lead and coordinate the establishment of the new Environmental Management System
- Enlist individuals who will be responsible for specific areas of the plan
- Most of the senior management team should be included as all will need to be thinking of environmental improvements within their day-to-day roles. E.g. purchasing manager is not only responsible for buying electricity but also cleaning chemicals/machinery/refrigeration which may reduce the amount of water or energy needed to operate over the life cycle. This would also need the operations, engineering and technical managers involvement

Implement quick fixes

- Execute low cost /no cost actions immediately to bring some quick visual benefits
- This will gain buy in from the top to the bottom as people will see activity and improvements
- Ensure that these quick fixes are maintained and become a platform for further activities

** A Pareto or the 80/20 rule states that in many cases approximately 80% of the effects come from 20% of the causes. Two examples are listed below:

- 1 80% of your energy is used by only a few areas (refrigeration and boiler system)
- 2 80% of your water is used during the cleaning of the factory after production, the gut room and lorry wash

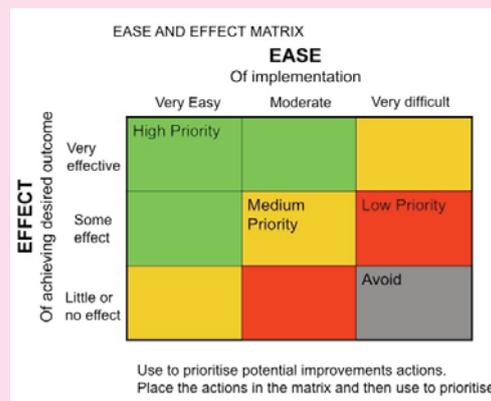
Therefore out of all the areas that use a specific resource you can account for most of the usage by monitoring a small number of areas.

DO – Enlighten and Implement

- Keep all stakeholders up to speed with progress. All levels of the organisation should be involved from the most senior managers to the line operators. The process needs to be owned by those involved

Detailed investigations and tests to quantify effects

- Breakdown the top level issues to identify the biggest opportunities
- Arrange ways to collect information either manually or install localised sub-meters to record usages in different departments, especially the high water and electricity users. These meters can be connected remotely to data loggers and via the internet to a computer. This allows matching of production and cleaning shifts to usage
- Detail action plans to prioritise improvement activity with SMART objectives (Strategic, Measurable, Achievable, Relevant and Time bound), agreeing and naming managers responsible for implementation
- Check the data is correct
- Check that the area is operating as it should and re-measure
- Start by understanding and categorising causes of environmental issues such as poor design, machine breakdowns, air and water leaks, human error, poor training, bad management etc
- Use an ease and effect matrix to help prioritise improvement activities (see example opposite)
- Develop targets and objectives in the form of key performance indicators (KPIs) as part of EMS. These should be communicated throughout the factory, as it is the whole workforce that needs to act to meet these objectives and targets



Implement Improvements

- Prioritise activity into short, medium and long-term activity
- Try different options and implement improvements and measure effects
 - Returning equipment to original specification as per manufacturer's instructions
 - Maintenance
 - Trial changes to certain levels (temperature, flow rates etc) and measure effects
- Review training manuals and instructions to employees, fit signs and encourage employees to report issues. Act on these reports to yield some quick benefits
- Some machines may be in need of repair or just incorrectly set. When not set at their optimum, more energy and water can be required. Hand washes are a prevalent example, if, for example, they are set at a high pressure and the delay switch-off is 5 to 10 seconds, hot water needlessly goes down the drain
- It may not be possible to reduce the amount of energy or water used without spending significant amounts of money. However, these opportunities should be captured and taken into account when that equipment needs replacing

CHECK – Evaluate and Validate

Review implementation to verify benefits

- Ongoing monitoring of overall utility usages and expenditure
- Try agreed new ways of working and measure the local effects. For example:
 - Introduce different cleaning regimes to improve environment; measure water usage, temperature, effluent quality and time to clean before and after over several days of cleaning
 - Set up extra maintenance to tackle problems on compressor. Monitor energy usage and air pressure on compressor to check effectiveness

Countermeasure

- If trials are not effective or proving to be too expensive, try something else. Go back to plan and try again
- Further data may be required or plans and priorities may have to change
- Add improvement plans to capital budget negotiations which look at longer term activities

Training

- Ensure the environmental policy is part of all employees' initial training and review with all existing employees
- When new procedures are established ensure the training documentation is updated

Communication

- Management review meetings should be held regularly because change will only be sustained if it is managed from the top
- Two-way communications should be encouraged, e.g. fitting signs and encouraging employees to report issues
- It is important that the issues are acted upon and the action communicated back to the reportee, e.g. if a leak is not fixed after being reported by an operator, they will decide that reporting leaks is no longer a priority and not do it again
- Displaying graphs of improvements is another good way to show improving situations and encouraging participation

ACT – Correct and Standardise

Review feedback and make corrections

- Ongoing review and auditing of progress is necessary across the organisation
- Training and communication are extremely important as part of the standardisation and continuous improvement process. This should be done regularly and not dropped or delayed because no progress has been made. It is more beneficial to evaluate the reason for the lack of progress and correct that rather than avoid addressing the issues
- It will be necessary to revisit the action plans and alter priorities as a business improves

Standardise Do – Check – Act

- Reviewing audit results and all graphical environmental information should be part of the overall company management and should be included in the regular management meetings

