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Environmental assessments



Technique sheet

Problem-based learning resources

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Introduction

Everything we do has an effect on the environment. Engineering is a very powerful force and its effects can be significant across the whole planet for many years to come.

A good engineer will think about this impact and try to protect the present and future environment in their work.

project (e.g. financing it, designing it, building or constructing it and living with its consequences) is called a stakeholder. Engineers will provide technical information about the project in terms of costs (e.g. energy cost, resource use, waste production or pollution) that will affect the project when it is used as recommended. Legal experts may also be needed to clarify any relevant laws. Note that all companies have a duty of care to take reasonable precautions to minimise environmental damage.

What is an environmental assessment?

An environmental assessment looks at the present and likely future effects, both positive and negative, of an engineering project. Sometimes these are obvious (e.g. building a new railway or designing a new waste-recycling scheme) and sometimes they will be more subtle (e.g. replacing paper towel dispensers with hot air driers). All projects must now include an environmental assessment by law – and it's a good thing to do anyway. Since almost all projects have a cost and a benefit, environmental audits are often called cost-benefit analyses.

- Make sure you conduct an environmental assessment for any work you have to do.

Who should be involved in an environmental assessment?

A wide range of people should be involved in the assessment. Anyone who has an interest in the

- Make sure you involve people who will be affected by an engineering project even if their wishes cannot always be implemented in the final project.

What should be included in an environmental assessment?

Key issues to include in an environmental assessment include those concerned with the construction of the project, transport of materials and kit to the site, any impacts after construction or during operation (e.g. disposal of waste, changes to local air or water quality, noise, changes in traffic patterns etc.). Different people will have different perspectives and again legislation will identify particular issues. Some materials (e.g. Asbestos) may need to be handled by a suitably qualified operator and even apparently ordinary items like fridges or electrical devices are covered by regulations.

- Make sure you include all aspects of the environmental impact even if they seem unimportant or outweighed by the benefits to you.

What should we do with the results of the assessment?

It is not usually possible to please all of the people all of the time. Seek to minimise the costs and maximise the benefits for all stakeholders. This might involve modifying your plans or extending the project in some way to deal with any problems identified (e.g. efficient clearing of waste from a site or production facility can reduce the negative impact of the project even if it does not improve the efficiency of the facility itself). The assessment might also identify some risks or damage to the environment. These risks describe things that might, or might not, happen. Knowing about these risks allows engineers to reduce the chance of them happening and the damage done if they do occur.

- Make sure you act on the results of your environmental assessment and communicate your plans to the key stakeholders even if you cannot satisfy all of their concerns.

What's the difference between an environmental assessment and audit?

A review of the environmental impact of a proposed project tends to look forward. An audit looks at the present performance and compliance of a project or business with existing environmental rules (e.g. Waste Electrical and Electronic Equipment recycling (WEEE)). A full environmental audit can be a large and complex undertaking looking at issues like resource consumption and waste disposal or water and energy use across a complete business. The results of these audits can stimulate change and often become part of large company's environmental action plans (e.g. Apple plans to remove plastics from all packaging by 2025 and be running on renewable energy by 2030).

- Make sure you are aware of the relevant laws and regulations that affect your business (e.g. Waste Electrical and Electronic Equipment recycling) and seek to comply with them at all times.

But what can I do?

Many environmental assessments and audits are conducted by teams of specialists. However, even a single engineer can have an effect in terms of maintaining clean working environment, reducing waste and using recycling facilities

where available. Packaging is a particular concern, and it is often possible to reduce packaging or choose components with no packaging, minimal packaging or packaging that uses less problematic materials (e.g. swapping plastic for cardboard or paper). Your local environment is your own responsibility so ensure that you clean up after yourself, use appropriate waste collection systems and operate in a way that minimises waste.

- Make sure you think about your personal environmental impact and try to minimise it rather than always relying on official assessments or other people.



Check yourself

You should be able to answer these questions easily after reading this sheet.

1. Who are the stakeholders in an engineering project?
2. List what you should consider as part of an environmental assessment.
3. What are the WEEE rules and how do they affect engineers?



Taking it further

These activities will deepen your understanding of this topic.

1. Think about a project you have completed. What was the environmental impact of it during construction and operation? Think of ways in which you could have reduced any negative impacts (e.g. waste handling, reduced energy use) and identify behaviours and strategies you can use in your next project.
2. As an engineer you will make extensive use of kit and components supplied by other manufacturers. Review the suppliers of these items and see if you can switch to a more environmentally-friendly supplier.
3. Public washrooms can have fabric towels that need cleaning for reuse, disposable per towels or hot air dryers. Which is the most environmentally friendly? Conduct a simple environmental audit for each approach and suggest, with reasons, which is the best way to wash your hands.