

ENGINEERING COUNCIL



**GUIDANCE ON SUSTAINABILITY**  
for the Engineering Profession

This guidance describes the role of professional engineers in sustainability. It lists six principles to guide and motivate engineers when making decisions for clients, employers and society which affect sustainability.

- 1 Contribute to building a sustainable society, present and future**
- 2 Apply professional and responsible judgement and take a leadership role**
- 3 Do more than just comply with legislation and codes**
- 4 Use resources efficiently and effectively**
- 5 Seek multiple views to solve sustainability challenges**
- 6 Manage risk to minimise adverse impact to people or the environment**

This guidance is issued by the Engineering Council. It replaces and updates the code of practice *Engineers and the Environment* published in 1993. It will be reviewed periodically and comments are welcome. Professional Engineering Institutions may wish to use this to assist them in developing guidance for their members.

## The role of professional engineers in sustainability

Professional engineers have a significant role to play in sustainability. They work to enhance the welfare, health and safety of all, with the minimal use of natural resources and paying due regard to the environment and the sustainability of resources. Their work is influenced by the opportunities and challenges that sustainability brings. Engineers are the providers of options and solutions to maximise social value and minimise environmental impact.

There are pressing challenges due to the adverse effects of depletion of resources, environmental pollution, rapid population growth and damage to ecosystems. A purely environmental approach is insufficient, and increasingly engineers are required to take a wider perspective including goals such as poverty alleviation, social justice and local and global connections. Globalisation brings important opportunities for engineers to promote change through sharing experience and good practice. The leadership and influencing role of engineers in achieving sustainability should not be under-estimated. Increasingly this will be as part of multi-disciplinary teams that include non-engineers, and through work that crosses national boundaries.

## Sustainable development

The goal of sustainable development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without compromising quality of life for future generations. Sustainable development stands on two concepts: *needs*, for example the essential needs of the world's poor; and *limitations* imposed by the state of technology and social organisation on the environment's ability to meet present and future needs.

The following principles have been agreed in the UK to achieve sustainable development<sup>1</sup>:

- living within environmental limits
- ensuring a strong, healthy and just society
- promoting good governance
- achieving a sustainable economy
- using sound science responsibly

<sup>1</sup>The UK Government Sustainable Development Strategy: Securing the future – delivering the UK sustainable development strategy. March 2005.

# Principles to guide engineers

Engineers carry out their role in a broad context that encompasses social, ethical, environmental and economic challenges. These six principles will guide an engineer to achieve sustainable development through engineering. They will help engineers meet their professional obligations to seek to achieve sustainability, and ensure that this goal is integrated into all their engineering activity. The principles are fully compatible with the UK Standard for Professional Engineering Competence (UK-SPEC) and the UK Government's Sustainable Development Strategy.

## 1

### Contribute to building a sustainable society, present and future

Engineers have a responsibility to maximise the value of their activity towards building a sustainable world. This requires an understanding of what society demands and what is achievable, and a recognition that these change over time. They should:

- recognise that though their activity may be local and immediate, the potential impacts of their work may be global and long-lasting
- have an understanding of other relevant social and cultural structures outside their own normal community of practice
- understand the important potential role for engineers in the sustainable development of communities
- recognise the impacts of an engineering project on communities, global or local, and consider the views of the community
- understand the important potential role for engineers

A handy wallet card listing the six principles is available from the Engineering Council. Please contact [info@engc.org.uk](mailto:info@engc.org.uk) for copies.



# 2

## **Apply professional and responsible judgement and take a leadership role**

Engineering is a profession with a strong ethical dimension, with engineers having an important role in providing solutions for issues such as poverty, under-development and environmental degradation. In making a sound judgement, the professional engineer should:

- look at the broad picture
- ensure that their knowledge about sustainable development is up-to-date
- be prepared to influence the decision-maker for a project
- identify all the issues and options to the decision-maker for a project so that decisions are soundly based
- identify options that take account of global, economic, social and environmental outcomes
- ensure that solutions and options are offered that will contribute to sustainability
- be aware that there are inherently conflicting and un-measurable aspects of sustainability

# 3

## **Do more than just comply with legislation and codes**

In seeking sustainable solutions, complying with current legislation, codes and environmental protection regulations may not be sufficient and engineers should:

- strive to go beyond the minimum wherever possible, anticipating future legislation which may be stronger
- by their example, help others improve their performance
- drive future legislation
- alert the relevant authorities if there are deficiencies in legislation and if sustainable solutions and outcomes could be endangered by regulatory change
- use their technical expertise to influence the development of new legislation and codes

# 4

## Use resources efficiently and effectively

Engineers have a stewardship role with respect to planetary resources, and a responsibility to society to create more useful products and services with the lowest possible consumption of raw materials, water and energy. This requires them to:

- understand that there are environmental limits and finite resources
- reduce resource demand by using less in the first place
- reduce waste production by being efficient with resources that are used
- use systems and products that reduce embedded carbon, energy and water use, waste and pollution
- adopt full life cycle assessment as normal practice, including in the supply chain
- adopt strategies for re-use, recycling, decommissioning and disposal of components and materials
- minimise any adverse impacts on sustainability at the design stage
- work to repair any damage

# 5

## Seek multiple views to solve sustainability challenges

The increasing complexity of sustainability challenges means that engineers working alone cannot solve all the challenges that we face. It is important for engineers to be inclusive and:

- engage with stakeholders, listening and recognising the value of the perspectives of others, including non-specialists
- avoid working in isolation, involving other professionals at all stages of a project
- utilise cross-disciplinary knowledge and diverse skills
- promote the important leadership role of the engineer in finding solutions to sustainability challenges for the benefit of society
- seek a balanced approach



## Manage risk to minimise adverse impact to people or the environment

Engineers are routinely involved in planning and managing projects, where they should:

- harness their skills to minimise damage to people or the environment from engineering processes and products
- undertake a comprehensive risk assessment before a project begins
- ensure that the risk assessment includes the potential environmental, economic and social impacts, beyond the lifetime of the engineering project or product
- recognise the potential long-term aspect of risk
- give sustainability the benefit of any doubt, adopting a precautionary approach where scientific knowledge is not conclusive
- instigate monitoring systems so that any environmental and social impacts of engineering projects are identified at an early stage

### Background and further information

Sustainability is referred to both explicitly and implicitly in several Engineering Council documents, including the UK Standard for Professional Engineering Competence (UK-SPEC), The Accreditation of Higher Education Programmes and Guidelines for Institution Codes of Conduct, which can be found in UK-SPEC. Many Professional Engineering Institutions produce materials related to sustainability, some of which were referred to in the preparation of this guidance. For further information visit:

**[www.engc.org.uk/sustainability](http://www.engc.org.uk/sustainability)**



## Mixed Sources

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