Centre for Development, Environment and Policy

P508

Environmental Auditing and Environmental Management Systems

Prepared by William Sheate.

Reviewed and updated July 2014 by Dr Rocio A Diaz-Chavez.
MODULE INTRODUCTION

ABOUT THIS MODULE

This module is intended to provide a broad understanding of environmental auditing and environmental management systems (EMSs), including an understanding of the increasing importance of corporate social responsibility and the use of standards for environmental management by companies. The legal and procedural context is focused especially on the European Union and UK context, but international standards and benchmarks are also referred to throughout, such as those established by the International Organization for Standardization (ISO) or international labelling. Comparative analysis of other contexts is broadened to cover developing country examples and other international perspectives.

Throughout the module a set of case studies is used to illustrate various aspects of the environmental auditing and environmental management systems in different contexts. These are developed as the module proceeds through the units, but can also be reviewed, for example, for revision, as stand-alone case studies.

STRUCTURE OF THE MODULE

The module is divided into four parts, beginning with an introduction to auditing and the legal context within which organisations must operate and why they need to undertake environmental auditing. A distinction is then made between corporate auditing (of organisations) and product auditing (products and services) where the latter includes a wide range of assessment tools such as lifecycle assessment and ‘footprinting’ tools. The final part is concerned with ‘standards’ particularly those relating to international environmental management system (EMS) standards, such as ISO 14001 and the EU eco-management and audit scheme (EMAS), and developments beyond the environment to incorporate wider sustainability issues under corporate social responsibility (CSR) and environmental and social reporting by organisations. Throughout the module reference is made to a series of case studies focused on different sectors, some particularly relevant to certain units rather than others, but links are provided through specific activities within the units. You can of course review the case studies on their own, outside the specific unit links, which is particularly useful when revising and integrating the material across the units. Other examples are used throughout as well.

Priority topics are environmental auditing, corporate auditing, product auditing and understanding the role of standards for environmental assessment and environmental management systems.
**WHAT YOU WILL LEARN**

**Module Aims**

The module sees auditing as part of wider environmental and sustainability management, and recognises the increasing importance of other tools and techniques such as lifecycle assessment (LCA) and ecological and carbon footprinting to environmental management in organisations and for products and services. The module explicitly addresses corporate auditing (in the private and public sector) and product auditing, and this leads into LCA and footprinting techniques and wider issues around corporate social responsibility and reporting.

The specific aims of the module are:

- To provide an understanding of how to identify and evaluate the environmental impacts of an organisation or product/service.
- To provide an understanding of how the environmental impacts of an organisation can be managed within the context of an environmental management system.
- To provide a basis for the practical application of environmental auditing and environmental management systems.
- To provide an awareness of the range of available environmental management tools and techniques.
- To examine how corporate environmental management may respond to the challenge of sustainable development.

**Module Learning Outcomes**

After completing this module students should be able to:

- define environmental auditing and describe the main components of the environmental auditing process
- identify methods for auditing specific environmental issues associated with the activities of an organisation and product/service
- describe the main components of an environmental management system
- understand key principles underpinning a range of environmental management tools and techniques
- assess critically the use and application of environmental auditing and management tools.
STUDY MATERIALS

Textbook
There is one textbook for this module:

Key Readings
For each of the ten units Key Readings are provided. These comprise academic articles, company reports, and guidance documents produced by international agencies. Selected papers from Sheate, W.R. (Ed.) (2010) Tools, Techniques & Approaches for Sustainability: Collected Writings in Environmental Assessment Policy and Management, are also included. You are expected to study the Key Readings as they contain material which may be used in examination questions.

Case studies
The case studies covered relate to specific sectors and explore particular aspects covered in the module in more detail. Not all case studies therefore, relate to all or the same parts of the module.

Each case study has a number of resource documents (eg CS5-Res1) associated with it which are provided as PDF files alongside the case studies in the e-version of your study guide. The case studies are:-

<table>
<thead>
<tr>
<th>CS1</th>
<th>Construction sector (looking at the environmental impacts associated with for example, the cement industry and house building) and how to manage those impacts.</th>
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</thead>
<tbody>
<tr>
<td>CS2</td>
<td>Electrical and electronic sector (examining for example, major retailers such as Siemens and Nokia and regulation concerning wastes from electrical appliances – from refrigerators to laptops).</td>
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<tr>
<td>CS3</td>
<td>Hospitality sector (eg impacts and practices of the travel and tourism and hotel sectors).</td>
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<tr>
<td>CS4</td>
<td>Local authorities (eg examples of municipalities using best practice in environmental management).</td>
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<tr>
<td>CS5</td>
<td>Retail sector (examining the performance of key retailers such as IKEA and Boots).</td>
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<tr>
<td>CS6</td>
<td>Sustainable clothing (a specific aspect of manufacturing and retail where international trade, for example, in cotton, highlights both the role of consumer choice and producer responsibility).</td>
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</tbody>
</table>
Further Readings
For each of the ten units, Further Readings and References are also listed. These texts are not provided but many are available on the internet. Students are not expected to follow up each and every Further Reading, but can follow up specific points of interest. They aim to provide a range of perspectives and more depth on the unit subject matter.

Key Terms and Concepts and Acronyms
At the end of each unit you are provided with a list of Key Terms and Concepts which have been introduced in the unit. The first time these appear in the text guide they are Bold Italicised.

As you progress through the module you may need to check unfamiliar acronyms that are used. A full list of these is provided for you at the end of the introduction.

Multimedia
This video is available on your e-study guide.


Video recorded on 8 December 2010 at SOAS. William, Ric and Clare speak to Laurence about their professional experiences in the field of environmental management.
**ASSESSMENT**

This module is assessed by:

- an examined assignment (EA) worth 20%
- a written examination in October worth 80%

Since the EA is an element of the formal examination process, please note the following:

(a) The EA questions and submission date will be available on the Virtual Learning Environment.

(b) The EA is submitted by uploading it to the Virtual Learning Environment.

(c) The EA is marked by the module tutor and students will receive a percentage mark and feedback.

(d) Answers submitted must be entirely the student’s own work and not a product of collaboration. For this reason, the Virtual Learning Environment is not an appropriate forum for queries about the EA.

(e) Plagiarism is a breach of regulations. To ensure compliance with the specific University of London regulations, all students are advised to read the guidelines on referencing the work of other people. For more detailed information, see the User Resource Section of the Virtual Learning Environment.
IEMA – Institute of Environmental Management & Assessment

IEMA is the leading professional body that can support your studies and professional practice relating to this module. It is the professional membership body for promoting best practice standards in environmental management, auditing and assessment for all industry sectors. The Institute offers ongoing support to environmental professionals and aims to promote sustainability through improved environmental practice and performance. With a membership over 15,000 individual and corporate members based in 83 countries, IEMA is the leading international membership-based organisation dedicated to the promotion of sustainable development, and to the professional development of individuals involved in the environmental profession, whether they work in the public, private or non-governmental sectors.

IEMA is the Competent Body in the United Kingdom for EMAS the European Union's Eco-Management and Audit Scheme and also offers the Acorn Scheme, an officially recognised EMS standard recommended by the government. Acorn offers accredited recognition for organisations evaluating and improving their environmental performance through the phased implementation of an environmental management system (EMS).

Resources and benefits for IEMA members include the following:

- Published by IEMA 20 times per year, The Environmentalist magazine is a leading UK environmental publication. It is sent, free of charge, to all members and to an increasing subscriber base. The magazine contains a wide range of up-to-date information, best practice, policy changes and news on environmental issues.

- The IEMA 'Perspectives' series provide detailed guidance on what constitutes a good practice approach to Environmental Assessment. The first in the series, Guidelines for Landscape and Visual Impact Assessment, was published in 2002. This has been followed by Guidelines on Participation in Environmental Decision Making and Guidelines for Environmental Impact Assessment. The Practitioner best practice series covers a further range of environmental topics in detail, and is a source of practical guidance for environmental professionals.

- Attendance at regional and national events, workshops, professional indemnity insurance, website, special interest groups, international networks and career information for individuals looking to work in the environment.

- As a professional body for practitioners involved in environmental management and assessment the Institute also supports members by providing recognition of knowledge and skills through professional qualifications and through provision of IEMA Approved Training Courses. IEMA’s portfolio of training courses is always expanding to ensure that new developments in the environmental field are provided for.

Support for Continuing Professional Development (CPD) is also an essential way to keep up-to-date with the latest issues and developments in the environmental arena. CPD usually takes the form of training courses and workshops but can sometimes mean individual study and research. Professional bodies like IEMA ask members with professionally recognised levels of experience to keep a record of their CPD to maintain their status and high standards of competence throughout the industry. CPD workshops are a great way of keeping abreast of best-practice, fast-moving legislation changes and new procedures in an educational and inclusive environment.
## Indicative Study Calendar

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<th>Title</th>
<th>Study time (hours)</th>
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<td><strong>PART I</strong></td>
<td><strong>Introduction to Environmental Auditing</strong></td>
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<td>Unit 1</td>
<td>Introduction to Environmental Auditing and Environmental Management Systems</td>
<td>10</td>
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<td>Unit 2</td>
<td>Types of Environmental Audit: the Legal Context</td>
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<td><strong>PART II</strong></td>
<td><strong>Corporate Auditing</strong></td>
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<td>Unit 3</td>
<td>Corporate Auditing: Procedures and Methods</td>
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<td>Unit 4</td>
<td>What to Audit: Environmental Impacts and Performance</td>
<td>15</td>
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<td>Unit 5</td>
<td>What to Audit: Emissions and Other Impacts</td>
<td>15</td>
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<tr>
<td>Unit 6</td>
<td>What to Audit: Resource Use and Waste Minimisation</td>
<td>15</td>
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<td><strong>PART III</strong></td>
<td><strong>Product Auditing</strong></td>
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<td>Unit 7</td>
<td>Lifecycle Assessment</td>
<td>10</td>
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<td>Unit 8</td>
<td>Sustainable Products and Services</td>
<td>10</td>
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<tr>
<td><strong>PART IV</strong></td>
<td><strong>Standards</strong></td>
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<tr>
<td>Unit 9</td>
<td>Environmental Management System Standards (EMSSs)</td>
<td>10</td>
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<tr>
<td>Unit 10</td>
<td>Other ‘Standards’ and Reporting (CSR, GRI)</td>
<td>15</td>
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<tr>
<td><strong>Examined Assignment</strong></td>
<td>Check the Virtual Learning Environment for submission deadline</td>
<td>15</td>
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<tr>
<td><strong>Examination entry</strong></td>
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<td>July</td>
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<tr>
<td><strong>Revision and examination preparation</strong></td>
<td></td>
<td>September</td>
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<tr>
<td><strong>End-of-module examination</strong></td>
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<td>October</td>
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# Acronyms and Abbreviations

**AA1000AS**  AccountAbility quality assurance standard for benchmarking CSR performance

**ACCA**  Association of Chartered and Certified Accountants

**AITO**  Association of Independent Tour Operators

**AP**  acidification potential

**BAT**  best available technique

**BP**  British Petroleum

**BRE**  Building Research Establishment

**BREEAM**  Buildings Research Establishment (BRE) environmental assessment method

**BREFs**  BAT reference documents

**BS**  British Standard

**BSH**  Bosch und Siemens Hausgeräte GmbH

**BSI**  British Standards Institute

**CA–CP**  Clean Air–Cool Planet

**CDP**  Carbon Disclosure Project

**CFC(s)**  chlorofluorocarbon(s)

**CFV**  carbon footprint verification

**CIRIA**  Construction Industry Research and Information Association

**CO₂**  carbon dioxide

**CQI**  Chartered Quality Institute

**CSI**  Cement Sustainability Initiative

**CSR**  corporate social responsibility

**db(A)**  Decibel (using the A frequency-weighting) – unit of noise measurement used particularly for measuring environmental noise.

**DEFRA**  Department of Environment, Food and Rural Affairs

**EC**  European Community

**EEA**  European Environment Agency

**EIA**  environmental impact assessment

**EIS**  environmental impact statement

**ELD**  Environmental Liability Directive

**ELV**  end of life vehicle

**EMAS**  eco-management and audit scheme

**EMS**  environmental management system

**EMSS**  environmental management system standards
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
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<td>EPR</td>
<td>extended producer responsibility</td>
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<td>ERP</td>
<td>enterprise resource planning</td>
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<tr>
<td>ES&amp;H</td>
<td>environment, safety and health</td>
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<td>ETS</td>
<td>emission trading system</td>
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<td>EU</td>
<td>European Union</td>
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<td>EWHC</td>
<td>High Court of England and Wales</td>
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<td>FLO</td>
<td>Fairtrade Labelling Organization</td>
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<td>FoE</td>
<td>Friends of the Earth</td>
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<td>FSC</td>
<td>Forest Stewardship Council</td>
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<td>GEMI</td>
<td>Global Environmental Management Initiative</td>
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<td>GHG</td>
<td>greenhouse gas</td>
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<td>GHI</td>
<td>Green Hotel Initiative</td>
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<td>GOTS</td>
<td>Global Organic Textile Standard</td>
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<td>GRI</td>
<td>global reporting initiative</td>
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<td>GWP</td>
<td>global warming potential</td>
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<td>GWT</td>
<td>global water tool</td>
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<tr>
<td>HMSO</td>
<td>Her Majesty’s Stationery Office</td>
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<td>HSH</td>
<td>Hong Kong and Shanghai Hotels</td>
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<tr>
<td>IBM</td>
<td>international business machine</td>
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<td>ICC</td>
<td>International Chamber of Commerce</td>
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<td>IEA</td>
<td>International Energy Agency</td>
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<td>IEC</td>
<td>International Electrochemical Commission</td>
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<td>IEMA</td>
<td>Institute of Environmental Management and Assessment</td>
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<tr>
<td>ILCD</td>
<td>International Reference Life Cycle Data System</td>
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<td>ILO</td>
<td>International Labour Organization</td>
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<td>INTOSAI</td>
<td>International Organization of Supreme Audit Institutions (INTOSAI) Working Group on Environmental Auditing (WGEA)</td>
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<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>IPPC</td>
<td>Integrated Pollution Prevention and Control</td>
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<td>ISO</td>
<td>International Organization for Standardization</td>
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<tr>
<td>IT</td>
<td>information technology</td>
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<tr>
<td>IUCN</td>
<td>The World Conservation Union</td>
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<tr>
<td>kHz</td>
<td>kilohertz</td>
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<tr>
<td>KPI</td>
<td>key performance indicators</td>
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</table>
LCA  lifecycle assessment
LCI  lifecycle inventory
LCIA  lifecycle impact assessment
LED  light-emitting diode
LEED  leadership in energy and environmental design
M&S  Marks and Spencer
MEA  Millennium Ecosystem Assessment
MRF  material recycling facility
MSW  municipal solid waste
NFB  National Film Board
NGO  non-governmental organisation
OECD  Organisation for Economic Cooperation and Development
OPEC  Organization of the Petroleum Exporting Countries
OPRL  on pack recycling labelling
PAS  Publicly Available Specification
PCBs  polychlorinated biphenyls
PI  professional indemnity
R&D  research and development
RT  responsible travel
SAIC  Scientific Applications International Corporation
SEC  Securities and Exchange Commission
SETAC  Society of Environmental Toxicology and Chemistry
SGS  Société Generale de Surveillance
SIWI  Stockholm International Water Institute
SMART  specific, measurable, achievable, realistic, timely
SME  small- and medium-sized enterprise
SR  social responsibility
SWMP  site waste management plan
SWOT  strengths, weaknesses, opportunities, threats
TQEM  total quality environmental management
TQM  total quality management
UAE  United Arab Emirates
UK  United Kingdom
UN  United Nations
UN/DESA  United Nations Department of Economic and Social Affairs
UNEP  United Nations Environment Programme
UNESCAP  United Nations Economic and Social Commission for Asia and the Pacific
USA  United States of America
USSR  Union of Soviet Socialist Republics
WBCSD  World Business Council on Sustainable Development
WCED  World Commission on Environment and Development
WEEE  waste electrical and electronic equipment
WGEA  Working Group on Environmental Auditing
WMR  waste management regulations
WRAP  Waste and Resources Action Programme
WRATE  waste and resources assessment tool for the environment
WRI  World Resources Institute
WSSD  World Summit on Sustainable Development
WTO  World Trade Organization
WWF  Worldwide Fund for Nature
Unit One: Introduction to Environmental Auditing and Environmental Management Systems

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3.3 Evolution of environmental audits  
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Unit Summary  
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UNIT INFORMATION

Unit Overview
This unit provides an introduction to the subject of environmental auditing and management. It starts by making you aware of the concepts on which environmental auditing is based. These include introducing the relationship between organisations and the environment within which they operate, and the problems this can cause; public awareness; sustainable development; and environmental management. The unit then goes on to define environmental auditing and introduces the key words associated with the subject. A brief history of environmental auditing is also provided. The last part of this unit looks at the main reasons why organisations undertake environmental audits. Each of the reasons is discussed in turn, and the objectives and benefits of environmental auditing are analysed. The unit also introduces the concept of environmental management systems (EMSs) and how auditing fits within them.

Unit Aims

• To introduce the subject of environmental auditing and management.
• To provide an awareness of the concepts on which environmental auditing is based.

Unit Learning Outcomes
By the end of this unit, students should be able to:

• recognise the relationship between organisations and the environment
• explain what environmental auditing is and how it originated
• describe the benefits of environmental auditing and how it fits with the wider environmental management responsibilities of an organisation
• assess critically the benefits of environmental auditing.

Unit Interdependencies
This unit links to Unit 2 which provides more detail on the types of audit and on the legislation relevant to companies.

Case studies on the Construction Sector; the Hospitality Sector; the Electrical and Electronic Sector.
KEY READING

Section 1


This is the main supporting text for the module — Chapter 3.1 in particular, provides background to this unit.

Section 2


This article provides background information on a key case in the US that prompted environmental liability legislation.

FURTHER READING


REFERENCES


CASE STUDIES

Case Study 1 Construction Sector.
Section 1.1 provides an illustration of the benefits a company might gain from environmental auditing.

Case Study 2 Electrical and Electronic Sector
Section 2.1 provides an illustration of the ways in which this sector interacts with the environment.

Case Study 3 Hospitality Sector
Section 3.1 provides an illustration of the ways in which this sector interacts with the environment.
1.0 ORGANISATIONS AND THE ENVIRONMENT

Section Overview

To provide an understanding of the relationship between organisations and the environment and the pressures and effects each has on the other.

Section Learning Outcomes

By the end of this section, students should be able to:

- recognise the effects of an organisation on the environment and vice versa
- identify the different pressures on organisations to improve their environmental performance.

1.1 Relationship between organisations and the environment

To understand the development of the concept of environmental auditing, we first need to look in more detail at the relationship between organisations and the environment within which they operate. First of all we will examine this at the macro-scale, that is, in terms of global developments in environmental thinking, and then we will look at how this has affected individual organisations at the micro-scale, that is, local level.

How should we view the relationship between organisations and the environment? The relationship is two-way, with each having the ability to affect the other. Organisations affect the environment in many ways. There are direct effects, for example:

- accidental spillage of oil from the refinery may cause pollution of a watercourse
- local air quality may decrease due to emissions released from the oil refinery’s stack
- water and energy consumption.

There are also indirect effects, for example:

- the environmental impact of the finished product – petrol or plastics
- traffic generated by employees of the oil refinery may contribute to pollution on local roads
- waste produced after the end of the product’s life
- environmental taxes such as the Landfill Tax and the Climate Change Levy in the United Kingdom (UK) have an impact on the cost structure of companies. Even though they are not direct environmental effects, they are environment-related economic effects designed to reduce the environmental impact of an organisation.
The environment affects organisations in many ways, such as:

- climatic changes and its relationship to fossil fuel use
- laws aimed at protecting the environment (e.g., those governing air pollution) may place constraints upon an industry and require capital outlay for new equipment.

Historically, environmental problems have often been created or exacerbated by business and industry. Pollution of rivers and watercourses by sewage generated within urban conurbations has long been a problem, and growth in chlorofluorocarbon (CFC) pollution, the presence of dioxins in the food chain, and the burden of hazardous wastes are all evidence of the rapid rate at which industry has developed and the manner in which this has happened. The world’s first national public pollution control agency, the Alkali Inspectorate, was established in Britain in 1863 to control atmospheric emissions, primarily from the caustic soda industry. Most countries in the world now have substantial (and ever-increasing) amounts of environmental legislation, which aim to control the effects of organisations on the environment. At the European level, there is also the European Environment Agency (EEA), which aims to improve the quality of the environment in Europe through supporting national policies and monitoring and reporting on harmonised standards and regulations EU-wide. The United Nations Environment Programme (UNEP) and its various programmes, especially the Industry and Environment Programme in Paris, perform a similar, but global, role.

Read the Key Reading from Environmental Management in Organizations: The IEMA Handbook by Brady (2011) and then look at the Introduction sections for the following two case studies: the Electrical and Electronic Sector case study (CS2) and the Hospitality Sector case study (CS3) which summarise some of the key interactions between these types of organisations and the environment.

### 1.2 Public awareness

More recently, public pressure over environmental issues has created a new set of constraints acting upon industrial production. It is difficult for industry to deny its role in damaging the environment or to refute the need for environmental protection. Growing public concern over environmental issues means that decision makers can no longer assume that the public will continue to tolerate continuing environmental exploitation and degradation. Public concern over activities which were damaging the environment led to the establishment of several ‘environmental’ groups in the late 19th century – the first British environmental group was the ‘Commons, Open Spaces and Footpaths Preservation Society’, in 1865. Others soon followed, for example, the Sierra Club in the United States of America (USA) began in 1892, and most of the groups were concerned with protecting open spaces and buildings of historic interest for public enjoyment.

The growth in public awareness of environmental issues was therefore largely western-led. The publication in the early 1960s of Silent Spring by American author Rachel Carson is widely regarded as the watershed of public opinion. This book detailed for the first time the impact of chemicals, particularly those used in agriculture, on the environment and human health. The major events of the 1970s
were the two oil crises, where actions by the Organization of the Petroleum Exporting Countries (OPEC) caused oil prices to triple during 1973–1974, and again between 1978 and 1980. This brought a realisation of just how dependent industrial societies were on fossil fuel energy, and generated a huge growth in environmental awareness. The environmental implications of resource use were also highlighted in the influential Limits to Growth Report of the Club of Rome (Meadows et al, 1972), which coincided with the 1973 oil crisis. Environmental pressure groups began to increase in popularity, and ‘Green’ political parties began to gain votes.

The series of high-profile incidents involving industry during the 1980s once again increased the public’s awareness of environmental issues and brought the environment to the top of the political agenda worldwide. Disasters such as those at Bhopal and Chernobyl undermined public confidence in certain sectors of industry and forced the activities of industry and the subsequent damaging consequences for the environment into the spotlight. Further details on the two incidents mentioned above are presented in 1.2.1 and 1.2.2.

### 1.2.1 Bhopal high-profile industrial incidents

Bhopal was one of the world’s worst human-created disasters. In 1984, thousands of people died as a result of a leak of deadly methyl-isocyanate gas at the Union Carbide factory in Bhopal, India. Exact figures are impossible to obtain, as the bodies of many victims were cremated, and others died later, having left the area. Four years after the accident, the Indian government estimated that at least one person per day in the areas surrounding the factory died as a result of injuries or illness caused by the leak, and the death toll was reported to exceed 3150. Unofficial figures suggest that as many as 500 000 could be injured, disabled or physically or mentally disturbed as a result of the accident. Diseases of the eyes and gastrointestinal tract were commonplace. Following lengthy battles, the Indian government and Union Carbide finally agreed on a $470 million settlement of all civil and criminal proceedings arising from the disaster, although Union Carbide denied liability. The Indian government originally claimed $3 billion, far less than would have been claimed if the victims had been Americans. Its attempts to have the case heard in the American courts failed, Union Carbide claiming that the leak was caused deliberately by a disgruntled employee. The national and local governments in India are claiming a total of $67 million in expenses, which means that the 500 000 Bhopal residents who are finally expected to seek compensation are likely to receive less than $1000 each.

Source: adapted from Crump (1991) p. 32.

### 1.2.2 Chernobyl high-profile industrial incidents

Chernobyl is a nuclear power station in the former USSR, which, in 1986, suffered the world’s worst nuclear disaster. The accident, which occurred as a result of an experiment involving the switching off of safety systems in one of the four reactors, caused the deaths of 31 people. At least 129 others suffered acute radiation sickness, and many thousands are expected to die prematurely as a consequence of exposure to radiation released from the stricken plant. Costs of the disaster exceeded $350 billion. Clean-up and reparation costs included encasing the ruptured reactor in steel and concrete, the evacuation of 116 000 people from the immediate vicinity of the power station, compensation for the loss of property and crops, and the costs of long-term medical treatment for those suffering the effects of radiation sickness. Radiation released into the atmosphere from Chernobyl drifted across much of Europe, and
restrictions placed on the consumption of meat and vegetables for fear that they might be contaminated were still in place in 1990 in countries as far away as the UK. Estimates suggest that a minimum of 2000 people in the European Community are likely to develop cancers over the next 50 years as a result of this radioactive fallout. The reactor complex was finally shut down completely in December 2000, following years of diplomatic pressure from the EU towards the (now Ukrainian) government who argued it needed the electricity regardless. The structure that initially contained the radiation — the hastily erected sarcophagus — is crumbling and urgent repairs are needed, for which very little money is available.

Source: adapted from Crump (1991) p. 49.

All of the companies involved in these incidents were large corporations, and were aware of many environmental issues relating to their organisations. In all cases poor planning, lack of contingency planning, and little awareness of the impact of catastrophic failures upon the local environment resulted in disasters, which caused severe damage to the environment and human health.

Can you think of any events/incidents involving business and industry in your country, which highlight the damage done to the environment? Identify and provide a summary of an event/incident in your country. You may also want to include information on:
- how you think these events influenced public opinion and attitudes towards environmental issues
- what, if any, response was made by the government of your country

Wikipedia provides a long list of examples of environmental disasters – have a look the website (Wikipedia, n.d.) – but just a few examples include:

- 1950–1960 Mercury poisoning at Minamata, Japan
- 1952 London smog kills 4000
- 1957 Fire at Windscale nuclear reactor, UK, causes radioactive releases
- 1967 Torrey Canyon oil tanker disaster off the Scilly Isles, UK
- 1979 Near-meltdown at Three Mile Island nuclear power station, USA
- 1984 Accident kills over 2000 at Union Carbide plant, Bhopal, India
- 1984 Liquefied natural gas explosion kills 452 in Mexico City
- 1986 Chernobyl nuclear power station disaster
- 1986 Sandoz warehouse fire, Basel, pollutes Rhine
- 1989 Exxon Valdez tanker accident, Alaska
- 1990 Shell fined £1 million for oil pollution of river Mersey, UK
- 1998 Reservoir of toxic mine waste broke and spilled its contents into the Guadiamar River, Spain
- 2006 Southeast Asian haze event caused by continued uncontrolled burning from ‘slash and burn’ cultivation in Indonesia
- 2010 BP Deepwater Horizon oil rig explosion and spill, Gulf of Mexico.
As a result of some of these incidents, inquiries have led to subsequent changes in procedures, such as the introduction of new legislation, or additional provision for emergencies. As the 1980s proceeded, increasing public concern over environmental issues began to manifest itself through the changing habits of consumers. The phenomenon of green consumerism emerged as a more environmentally aware public demanded goods and products which minimised environmental damage. In line with the general increase of public awareness of environmental issues, the rise of ‘green consumerism’ also began in the West.

What are your perceptions of green consumerism? Write down at least six key points.

**Political recognition**

The growing awareness of environmental issues was reflected politically in the first United Nations (UN) conference on the Human Environment in Stockholm in 1972, and the subsequent creation of the United Nations Environment Programme (UNEP). For many, the Stockholm conference established the legitimacy of environmentalism as a political movement and provided the first major recognition of the significance of environmental issues. Prior to September 1988, no serving national leader of global importance had made a major address on the environment, but 1988/89 brought statements of concern from Mrs Thatcher (UK), President Bush (USA), President Gorbachev (USSR), Chancellor Kohl (Germany), President Mitterand (France), European Commission President Jacques Delors, and many other heads of state. ‘Environmental issues’ began to appear in the manifestos of all the major political parties in the West, as politicians realised that their stance on the environment was a contributing factor in their success or otherwise in winning votes.

### 1.3 Sustainable development

‘The world we have created as a result of our thinking thus far has problems which cannot be solved by thinking the way that we thought when we created them.’

*Source: attributed to Albert Einstein (Wikiquote, n.d.)*

The industrialised world has already used up many of the Earth’s natural resources, and we are now realising that it will not be possible to carry on in the same way if we want to protect the future of our planet and those who live on it. However, it seems that with increasing technological abilities, we are better able to extract known, or find new, reserves. In addition, reductions in the material intensity of products – the amount of material needed to produce a product – has gradually declined. But, in many cases, the availability of resources should not mean that we do not have a problem with using that resource. For example, even though we seem to have ‘enough’ lead, the health and environmental effects of lead use still make a strong case against its persistent or increased use. Equally with fossil fuels: if we compare the carbon emissions that come from using fossil fuels (gas, coal, and oil) – mainly in the combustion engine and power stations – and which contribute to the greenhouse effect and climate change, then we are much more likely to exceed acceptable levels of atmospheric pollution before we run out of fossil fuels. Ultimately, all economic development depends on the Earth’s natural resource base.
Concern over the rate at which the Earth’s resources are being used has led to the development of the concept of *sustainable development*, a term that you will probably be familiar with. The most widely used definition of sustainable development, and one which you should remember, is that given by the World Commission on Environment and Development (WCED) in its milestone report *Our Common Future* (otherwise known as the Brundtland Report) in 1987 (WCED, 1987). This is much quoted in defining sustainable development, but usually only the first part is quoted and not the second part, which is a critical qualifier to the first:

'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- The concept of "needs", in particular the essential needs of the world’s poor, to which overriding priority should be given; and
- The idea of limitations imposed by the state of technology and social organisation on the environment’s ability to meet present and future needs.’


The UN report prepared for the 'High Level Panel on Global Sustainability at its first meeting’ in 19 September 2010 (Drexhage & Murphy, 2010) explains that despite the definition for sustainable development being widely accepted for 20 years, the term is still wide and vague. Nevertheless, some common principles are associated with the concept:

(1) a commitment to equity and fairness
(2) a long-term view that emphasises the precautionary principle
(3) sustainable development embodies integration, and understanding and acting on the complex interconnections that exist between the environment, economy, and society.

It is clear that to enable society to develop in a sustainable manner, an approach other than that which has previously been employed is required. Sustainable development will present the greatest challenge in the wealthiest nations, which consume the most resources, release the most pollution, and have the greatest capacity to make the necessary changes. However, leaders in some developing countries are suspicious of the concept, as they fear that the industrialised countries will dictate the development path that the developing countries must take; that is, the developing countries fear they will be penalised for the previous mistakes of the developed world.

Sustainable development requires a profound change in the goals and assumptions that drive corporate activities and changes in daily practices and tools. In other words, we need to develop an entirely new attitude towards environmental responsibilities. Business and industry have a vital role to play in determining the future of the planet and in working towards achieving sustainable development. This is recognised in the WCED report.
Many essential human needs can be met only through goods and services provided by industry ... It has the power to enhance or degrade the environment; it invariably does both.’


For business, the concept of sustainable development presents a challenge – to produce higher levels of output while using lower levels of input and generating less waste. Organisations are now faced with the challenge of integrating environmental considerations into all aspects of their business, and environmental auditing is one of a number of environmental management tools, which enable them to do this.

The Earth Summit

In 1992, 176 governments sent delegates to the UN Conference on Environment and Development in Rio – known as the ‘Earth Summit’. The Rio conference reinforced the importance of increased emphasis on environmental issues in every sector of the economy. Agenda 21 (UN, 1992), the global plan of action, which was adopted at the Earth Summit, contains a chapter on the role of business and industry in securing sustainable development. Agenda 21 states that businesses should participate in a wide range of environmental management tasks, of which environmental auditing is one.

You have seen how worldwide developments in environmental consciousness have led to major changes in the way in which governments, investors, and the community at large perceive the importance of the environment. At the level of the individual organisation, these developments have meant:

- tighter legislative controls
- constraints on the use of natural resources
- increasing pressure from customers and suppliers
- greater employee and management interest in the way the organisation approaches its environmental responsibilities.

These factors have prompted organisations to seek new ways of integrating environmental considerations into all aspects of their business. In some cases this has been a requirement of regulatory bodies, while in other cases, a more proactive approach is taken and organisations voluntarily investigate ways of improving their environmental performance.

Between 26 August and 4 September 2002 the UN held a follow-up conference to the 1992 Earth Summit. This was the World Summit on Sustainable Development (WSSD) (UN, 2002) and was held in Johannesburg, South Africa. The conference was set up to ratify, reinforce, and provide for stronger implementation of the many international agreements and conventions relating to environment and development. One of the key outcomes from the Summit included a range of commitments and targets aimed at achieving more effective implementation of sustainable development objectives (UN/DESA, 2003).
The Rio+20 meeting on Sustainable Development (2012) shows the commitment of governments to sustainable development and to ensuring the promotion of an economically, socially and environmentally sustainable future for our planet and for present and future generations (UN, 2014). Among other issues governments also adopted the 10-year framework of programmes on sustainable consumption and production patterns. The Conference also took forward-looking decisions on a number of thematic areas, including energy, food security, oceans, cities (UN, 2014). The Conference reviewed the Millennium Development Goals achievements but also agreed on developing the Sustainable Development Goals by 2015.

The Sustainable Development Knowledge Platform of the UN (2014) provides access to all the updates related to sustainable development actions and programmes fostered by the United Nations.

1.4 Environmental management

So far this unit has described the growth of environmental awareness by the public, and the increasing importance awarded to the subject by politicians. Pressure on an organisation to improve its environmental performance comes from many sources, both internal and external to the organisation.

There is a wide range of parties potentially that have an interest in a company and therefore that also have an interest in the effect of a company’s practices on the environment. These are often referred to as 'stakeholders’ – people or groups of people who have an interest, a stake, in an organisation. This 'stakeholder concept’ of business contrasts with the more traditional 'shareholder concept’, which aims to maximise wealth for shareholders (investors in the company). These different models of business will inevitably result in different business objectives (and business plans for delivering those objectives) since those objectives will seek to balance the requirements of different stakeholders (under the former model) rather than just maximise benefit to shareholders (in the latter). Consequently, there will be multiple business objectives (the Times 100, 2010), for example:

- objectives about market share
- objectives about customer satisfaction
- objectives about employee satisfaction
- objectives about returns to shareholders
- objectives about cutting pollution
- objectives about reducing waste etc.

Individual businesses have always been faced with a range of competitive market conditions, which threaten their survival. In many cases, requirements for improved environmental performance are perceived to add to this threat. Good environmental management is, however, in many ways simply good management: paying attention to whether materials or energy are being wasted; considering how by-products can be re-used; and making sure that operations always run at maximum efficiency. An increasing number of businesses and corporate organisations are coming to acknowledge that good environmental sense makes good business sense. If it helps them increase their market share – since it may affect the way in which it is perceived by its customers and suppliers – then that can only be good for business.
Increasingly, businesses need to show they are serious about environmental issues and sustainable development in order to be accepted as a legitimate activity by society, ie be given the so-called ‘social licence to operate’.

**Pressures** for organisations to improve their environmental performance therefore come from a variety of sources, and have increased over the last few decades. Given the current status of environmental issues in the minds of both politicians and the public, it is likely that these pressures will continue to grow. It will be increasingly difficult for businesses to continue to neglect the inclusion of environmental issues in their operations. The increasing pressures on organisations to integrate environmental issues into their operating strategies have led to the development of new tools which enable them to do this: tools which provide information and facilitate management control of the environmental aspects of the operation. Environmental auditing is one such tool.

However, it is important to recognise that improving environmental performance is not enough in itself. The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) highlights:

> 'While, in general, governments have strengthened legislation and institutions, resulting in significantly improved environmental performance, particularly with respect to pollution control, the rising environmental pressures exerted by expanded consumption and production and resource-extraction processes threaten to overwhelm the progress achieved so far. High future environmental, economic and social infrastructure costs, a growing tendency to generate waste and the continuing decline of the region’s natural capital are the unmistakable signs of an unsustainable growth pattern.

The continuing focus on improving environmental performance distracts attention from the critical need to improve the environmental sustainability of economic growth patterns. Without doubt, economic growth is a prerequisite for achieving significant reductions in poverty and addressing key sustainable development issues. However, declining environmental sustainability represents a critical political, institutional, social and economic threat for many countries in the region.’

Section 1 Self Assessment Question

Question 1
List at least FIVE reasons why businesses should improve their environmental performance.
2.0 ENVIRONMENTAL AUDITING

Section Overview
To provide an introduction to environmental auditing.

Section Learning Outcomes
By the end of this section, students should be able to:

- define an environmental audit and understand the key words associated with it
- identify the different types of environmental audit and state the reasons why an organisation would want to undertake an environmental audit.

2.1 What is environmental auditing?
Environmental auditing is essentially an environmental management tool for measuring the effects of certain activities on the environment against set criteria or standards. Depending on the types of standards and the focus of the audit, there are different types of environmental audit. Organisations of all kinds now recognise the importance of environmental matters and accept that their environmental performance will be scrutinised by a wide range of interested parties. Environmental auditing is used to:

- **investigate**
- understand
- identify.

These are used to help improve existing human activities, with the aim of reducing the adverse effects of these activities on the environment. An environmental auditor will study an organisation's environmental effects in a **systematic** and **documented** manner and will produce an environmental audit report. There are many reasons for undertaking an environmental audit, which include issues such as environmental legislation and pressure from customers.

Definitions
The term 'audit' has its origins in the financial sector. **Auditing**, in general, is a methodical examination – involving analyses, tests, and confirmations – of procedures and practices whose goal is to verify whether they comply with legal requirements, internal policies and accepted practices.

The International Chamber of Commerce (ICC) produced a definition in 1989 which is along the same lines.
A management tool comprising systematic, documented, periodic and objective evaluation of how well environmental organisation, management and equipment are performing with the aim of helping to safeguard the environment by facilitating management control of practices and assessing compliance with company policies, which would include regulatory requirements and standards applicable.


There are other definitions available, although the above definition is still seen as the industry standard. The key concepts, which occur in all the definitions, are as follows.

- **Verification**: audits evaluate compliance to regulations or other set criteria.
- **Systematic**: audits are carried out in a planned and methodical manner.
- **Periodic**: audits are conducted to an established schedule.
- **Objective**: information gained from the audit is reported free of opinions.
- **Documented**: notes are taken during the audit and the findings recorded.
- **Management tool**: audits can be integrated into the management system (such as a quality management system or environmental management system).

**Terminology**

Environmental auditing should not be confused with environmental impact assessment (EIA). Both environmental auditing and EIA are environmental management tools, and both share some terminology, for example, ‘impact’, ‘effect’, and ‘significant’, but there are some important differences between the two.

Environmental impact assessment is an anticipatory tool, that is, it takes place before an action is carried out (ex ante). EIA therefore attempts to predict the impact on the environment of a future action, and to provide this information to those who make the decision on whether the project should be authorised. EIA is also a legally mandated tool for many projects in most countries.

Environmental auditing is carried out when a development is already in place, and is used to check on existing practices, assessing the environmental effects of current activities (ex post). Environmental auditing therefore provides a ‘snap-shot’ of looking at what is happening at that point in time in an organisation.

The International Organization for Standardization (ISO) has produced a series of standards in the field of environmental auditing. These standards are basically intended to guide organisations and auditors on the general principles common to the execution of environmental audits. These are addressed elsewhere in this module.

Environmental auditing means different things to different people. Environmental auditing is often used as a generic term covering a variety of management practices used to evaluate a company’s environmental performance. Strictly, it refers to checking systems and procedures against standards or regulations, but it is often used to cover the gathering and evaluation of any data with environmental relevance – this should actually be termed an environmental review. The distinction between
an environmental audit and an environmental review has become blurred, but the table in 2.1.1 should enable you to understand the differences between the two.

2.1.1 Distinctions between an environmental review and an environmental audit

<table>
<thead>
<tr>
<th>Review</th>
<th>Audit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is the objective?</strong></td>
<td>Determine which performance standards should be met (e.g., company decides to reduce total organic compound emissions from 100 tonnes to 10 tonnes/year)</td>
</tr>
<tr>
<td><strong>Which environmental issues are covered?</strong></td>
<td>All known environmental issues with or without explicit standards to measure performance</td>
</tr>
<tr>
<td><strong>How often are they required?</strong></td>
<td>Before developing environmental management systems or before and after any significant changes in operations or practices</td>
</tr>
<tr>
<td><strong>What are the geographic boundaries?</strong></td>
<td>Wherever the business could have an environmental impact in the life of the product (i.e., raw material selection, transportation, manufacturing, product use and disposal)</td>
</tr>
</tbody>
</table>

Source: Dagg (2005)

Irrespective of the process that is actually being undertaken, some organisations prefer not to use the term ‘audit’. In some cases, therefore, an organisation may call the procedure of measuring environmental performance against set criteria an environmental review, an environmental assessment, or another term used specifically for their own purposes (by now, you should be able to distinguish between these terms, and be able to determine which is which).

In addition, the term ‘audit’, coming from the financial sector, may suggest that financial audits (whose result typically is the Annual Report) and environmental audits are very similar. Some areas where they differ are highlighted in the table in 2.1.2, below.
2.1.2 Distinctions between financial audits and environmental audits

<table>
<thead>
<tr>
<th></th>
<th>Financial audits</th>
<th>Environmental audits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Legal basis of audit</strong></td>
<td>Part of regulatory (legal) process, organisations have to perform it</td>
<td>With few exceptions, environmental audits are voluntary affairs. Even the preparatory environmental review which is mandatory under ISO 14001 is voluntary as the standard is voluntary</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>Annual affairs</td>
<td>Whenever the organisation decides to perform one</td>
</tr>
<tr>
<td><strong>Who does it?</strong></td>
<td>Performed by external staff, certified to do so</td>
<td>Performed by external and/or internal staff. Professional indemnity considerations, there are no legal requirements of auditors to be competent or trained, although professional bodies in many countries try to stop this</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>Financial audits are based on comparative standards which are publicly available – General Principles of Accounting etc</td>
<td>Varies very much between auditors and companies</td>
</tr>
<tr>
<td><strong>Access to audit</strong></td>
<td>The results are public documents in the form of annual reports</td>
<td>Very few audits are public, although some results are often published in the Environmental Reports</td>
</tr>
<tr>
<td><strong>Liability</strong></td>
<td>Auditors are partially liable for their reports. They have to provide a ‘true and fair’ view of the organisation</td>
<td>With few exceptions that are negotiated between auditor and auditee, there is no external liability implication in environmental audits</td>
</tr>
</tbody>
</table>

Source: Dagg (2005).

2.2 History of environmental auditing

Environmental auditing began in the USA in the early 1970s, when a handful of industrial companies, working independently and on their own initiatives, developed
environmental auditing programmes as internal management tools to help review and evaluate the status of the company’s operating units. It enabled managers to check compliance with:

- local environmental laws and regulations
- national environmental laws and regulations
- corporate policies.

It was also regarded as an activity useful for avoiding prosecution or civil law suits under the increasing pressures from environmental legislation. The USA Securities and Exchange Commission (SEC) also played a role in the development of auditing, as they had reason to believe that certain trading companies had a high exposure to financial loss as a result of poor environmental performance. The SEC requested that environmental details should be presented in the end-of-year report and accounts along with financial information in order truly to represent the financial stability of those companies, such as US Steel, Occidental Petroleum and Allied Chemicals.

In October 1979, the US Environmental Protection Agency (EPA) issued a draft report calling for independent, certified third-party ‘auditors’ who would visit plants, collect samples, perform analyses, and report results back to government authorities. This governmental auditing concept received considerable attention (and opposition) within industry, and never made it beyond the draft report stage.

In the rest of the world, the evolution of environmental auditing was largely due to the influence of USA subsidiary companies operating abroad. In Europe, environmental auditing began in the chemical and petrochemical industries, largely as a reflection of the intrinsic environmental hazards of these businesses, but also as a result of their involvement with American operations. Environmental auditing only became widely accepted by industry in the late 1980s as a common management tool in developed countries, and is increasingly being applied in developing countries by both foreign and local industry.

As businesses have realised the value of paying attention to environmental issues, the concept of environmental auditing itself has evolved to address wider issues than simply legal and regulatory compliance. The widening use of environmental audits reflects the broadening attitudes of organisations towards environmental issues in general, and the increasing pressures from investors, insurers, consumers, and other interested parties. Environmental auditing is therefore playing an increasingly common role in the management of organisations worldwide and, in some countries, governments have made (or are considering making) the practice a legal requirement.

### 2.3 Introduction to the types of audit

You have seen that the reasons for undertaking an environmental audit are many and varied. Some audits are carried out for an entire industry or company, while others are for a specific site. Some audits will endeavour to investigate all aspects of environmental performance, while others are narrowly defined. An environmental audit is essentially a process, and the way in which this process is utilised will depend on what the organisation wishes to achieve from the audit – this leads to the use of different ‘types’ of audit.
One of the problems when discussing the various uses of environmental auditing is that different people use different names to describe the different ‘types’. The list below (after Humphrey & Hadley, 2000) will act as a starting point for the purpose of this unit.

**Corporate audit**

- **Compliance**, eg
  - Regulatory
  - EMS
  - Internal standards
- **Liability**, eg
  - Pre-acquisition
  - Divestment
  - Insurance
- **Single Issue**, eg
  - Waste minimisation
  - Transport etc

**Product audit**

- **Lifecycle assessment** etc

There are lots of different ways of defining these different types of audits and often different terms are used for the same sort of audit. Other terms you may come across include: health and safety audit, minimisation audit (a form of issues audit above, site audit, due diligence audit (a form of liability audit), activity or operational audit (eg across company departments or units, such as waste and energy management).

A **compliance (or legislative) audit** aims to determine the degree of company compliance with current or prospective legislation or standards, including, for example, discharge consents. A **liability (or transactional) audit** is usually conducted prior to buying or selling a facility/land in order to identify potential liabilities, both financial and legal. A **minimisation audit** generally concentrates on a single issue, for example, waste or water, and seeks to identify ways to reduce the amount of waste produced, or water consumed. This may be the same as an **issue audit** which concentrates on a topic that has been identified as requiring further investigation, for example, packaging. **Policy compliance audits** are primarily internal management tools, and determine the depth of compliance with company policy (internal standards in the list above). They should also act as a means of establishing future strategy. These audits have a similarity with legislative audits, in that, in both cases, compliance is being determined: in one case it is compliance with legal requirements, in the other, compliance with company environmental policies. **Environmental management systems audits** are internal audits which are part of any management systems approach. Environmental management systems audits provide the means by which the effective operation of the system can be checked, and remedial action taken if necessary.
Don’t worry too much about these multiple terms for the same thing, other than that auditing can be undertaken for different purposes and therefore will have a different focus. We will return to this issue at a later stage in the module.

Although the majority of the audits described above would be applicable to a particular industry or site, it is also possible to carry out audits for an entire industry and for public authorities, for example, a local authority.

Whatever the objectives, carrying out an environmental audit essentially involves **three main questions** for an organisation.

- **What are our current effects on the environment?**
- **Can we reduce our negative effects on the environment?**
- **How can we make further improvements?**

This applies equally to an audit of an entire organisation, a single site, or even an audit of a particular issue, for example, energy.

### 2.4 Why would an organisation wish to undertake an environmental audit?

Some of the reasons why an organisation may wish to undertake an environmental audit are:

- pressures from environmental legislation
- environmental liabilities and insurance costs
- investment and decisions to buy facilities
- detailed investigation of specific issues
- corporate image and marketing opportunities
- concern about the environmental impact of the organisation generally
- past environmental accidents.

 Audits enable the management of an organisation to see exactly what is happening within the organisation and to check the operation (or otherwise) of systems and procedures. Some environmental auditing programmes have been motivated by the occurrence of an environmental problem or incident, that is, a **reactive** response; others have been established in response to a desire to anticipate and head off potential problems, that is, the organisation takes a **proactive** stance. The incentives for environmental auditing, and the objectives an organisation will have in undertaking such an audit, have diversified since the early days of environmental auditing. This diversification reflects the increasing awareness of environmental issues, which is present in society as a whole, and the realisation by organisations of the need to integrate these issues into all aspects of their activities.

 Environmental auditing can help to reveal the likely weaknesses of an organisation’s strategy, therefore reducing the risk of unexpected events. A properly prepared and conducted environmental audit will bring real benefits to an organisation committed to act on the results. Some broad groups of the motivations an organisation may have for carrying out an environmental audit are looked at in the following pages.
Pressures from environmental legislation

The early response of organisations to environmental issues was largely reactive, with the majority merely complying with, and not attempting to exceed, the requirements of regulations. However, as the amount of environmental legislation in countries worldwide has increased, and controls are likely to continue to be tightened in the future, companies do not only have to meet existing legislative requirements, but to look ahead and anticipate future developments. In addition, legislation is increasingly phrased so that there is the responsibility of organisations continuously to review and monitor their production processes and technology on environmental grounds. Environmental auditing can help an organisation to comply not only with current legislation, but also with proposed requirements.

In the UK the Environmental Permitting system simplifies permit applications, amendments, and variations for both industry and regulator and thereby cuts unnecessary red tape. It allows regulators to focus resources on medium and high-risk operations whilst continuing to protect the environment and human health.

Environmental Permitting was first applied to Waste Management Licensing and Pollution Prevention and Control and will now be extended to further permitting and compliance regimes. The Environmental Permitting (England and Wales) Regulations 2010 have been approved by Parliament and the National Assembly for Wales and came into force on 6 April 2010.

Environmental Permitting is one of DEFRA’s (UK Department of Environment, Food and Rural Affairs) Better Regulation initiatives which aim to improve regulatory activities, cut admin burdens, and focus on the delivery of a better service to customers.

Carrying out an environmental audit can clarify the exact status of an organisation’s operations with respect to environmental legislation and, therefore, allows proactive companies to anticipate future legislation and prepare their companies for future requirements.

What advantages may an organisation gain by anticipating environmental legislation? Write down two or three ideas before reading on.

Answer.

Organisations who plan ahead and make provision for increasingly stringent environmental legislation can avoid unexpected costs in the future. Keeping legislative developments in mind when purchasing new equipment or planning new processes or products helps to ensure that organisations are not caught out. Organisations can therefore avoid heavy fines for breaches of legislation, or being forced to purchase expensive new equipment at short notice. 2.4.1 provides an example of a company which breached environmental regulations, and were subsequently caught by enforcement agencies. If these companies were carrying out regular environmental audits in order to assess their compliance with environmental legislation, and to identify any potential problems, it may have been possible to identify the problems, and implement solutions before the regulatory agency decided to take action.
2.4.1 Cement firm’s pollution fine cut

‘A cement plant fined £400,000 for allowing dust to escape from its factory has had its penalty reduced [in the Court of Appeal].

Cemex, which owns Rugby Cement in Warwickshire, England, was fined after nearby residents found their homes and cars covered in dust in October 2005.

The Court of Appeal has ruled the sum “disproportionate” and reduced it to £50,000.

The original offence had consisted of not ensuring an external door was closed, leading to an escape of dust.

The company had been prosecuted by the Environment Agency in October 2006. Cemex claimed the original fine had been excessive.

After the ruling the Environment Agency said such a large reduction in fine was a “disappointing result”.

“We will not tolerate poor plant maintenance practices that might lead to incidents such as this, especially when close to people’s homes.

We will continue to thoroughly investigate all such incidents and, where appropriate, pursue criminal charges,” a spokesman said.’

Source: BBC News online (Wednesday 18 July 2007)

Environmental liabilities and insurance costs

Organisations naturally look for insurance to protect themselves against potential liabilities, including environmental liabilities. Organisations pay a premium to insure themselves against the potential costs of environmental damage arising from their operations, for example, the costs of remediation from pollution incidents such as oil spills. Insurers are in the business of assessing risks and, as the potential size and scope of environmental risks have been recognised by insurers, it has become increasingly difficult to obtain worthwhile insurance cover at an acceptable cost. While it is still possible to find insurance cover for pollution, which is sudden, accidental, and unforeseen, there are very few insurance companies that will provide comprehensive general pollution cover.

In Europe, Directive 2004/35/EC (The Environmental Liability Directive) seeks to achieve the prevention and remedying of environmental damage – specifically, damage to habitats and species protected by European Community (EC) law, damage to species or habitats on a site of special scientific interest for which the site has been notified, and damage to water resources and land contamination which presents a threat to human health. It reinforces the ‘polluter pays’ principle – making operators financially liable for threats of or actual damage.
What type of pollution would insurance companies be reluctant to cover? Write down your ideas before reading on.

Answer.

Organisations with a dubious environmental record will find it increasingly difficult and expensive to get insured. Insurance companies are reluctant to provide insurance cover for pollution that arises from prolonged and continuous poor management practices or negligence, which leads to environmental damage.

Gradual pollution may be extremely costly for those responsible, according to Smets (Smets, 1988). Examples of such pollution are serious water pollution, air pollution, soil contamination or the release of toxic waste into the environment. Smets estimates that between 1960 and 1985 there were at least 65 cases of pollution costing over $18 million.

If an organisation can provide the insurer with as much accurate information on the environmental risks as possible, the uncertainty is reduced. Organisations, who already undertake environmental audits as part of a system of environmental management and are therefore aware of, and in control of, the environmental effects of their operations, may find it easier to obtain insurance. It should be noted that the cost difference between an environmentally aware company and another company is in most cases not because of the reduced environmental impact of the former, but because of increased knowledge about the impact, which, as the insurance company hopes, translates into an efficient environmental management programme. However, the research evidence suggests that the biggest insurance premium cuts can be made when insurer and insured discuss an environmental programme in advance and agree on a set of actions.

**Investment decisions to buy facilities**

Major companies are becoming aware of the massive potential risks involved in acquiring land, which has already been contaminated, or acquiring a business that has a poor environmental performance. Costs associated with ground remediation (ie rectifying any damage which may have been caused by pollution), and the capital cost of potential compensation claims for past mistakes can easily outweigh any financial advantage of an acquisition. Particularly in the USA, but also in most other countries, it is increasingly standard practice, therefore, for purchasers to commission a pre-acquisition environmental study or to want to examine the reports from an organisation’s environmental audits.

Companies interested in the purchase, sale or lease of facilities must be aware of any real/potential liabilities associated with the transaction. As the number of company acquisitions increases, one can expect interest in such audits to grow.
1. Read the Key Reading by Gensburg et al. (2009), which describes mortality rates following a key man-made disaster which prompted major liability (so-called ‘Superfund’) legislation in the United States. (These issues are picked up in relation to legislation and companies elsewhere in this module)

2. Try to find out if there are any operations run by multinational corporations in your own country. Does the company operate to the minimum environmental standards required by your own country’s legislative system, or do the standards of the parent company or home country apply?

The outcome of your research will depend on a number of factors, for example, the size of the organisation and the country within which it operates. If possible, it may be useful for you to contact a couple of companies that you know are part of a larger organisation, or obtain copies of any environmental policies or reports they may have published. This may enable you to find out about their operational standards for environmental issues.

In many cases, the operations of the organisation are constantly under scrutiny by regulators, amongst others. This is especially the case with larger companies, who are often very much in the public eye. This pressure may influence the organisation’s environmental policy.

**Detailed investigation of specific issues**

Environmental audits should naturally identify areas of weakness; in fact, they are designed and implemented specifically to achieve this objective. An initial review of an organisation or site may reveal particular issues that require further investigation, and the organisation may then decide to undertake an audit with the specific objectives of concentrating on a particular topic, such as waste, energy, water use or packaging. Changes in processes or products and developments in technology may alter the manner in which an organisation operates. An ‘issue’ audit, focusing on the particular area of concern, can help to ensure that the organisation’s operations in this area are as efficient as possible. A single-issue audit is illustrated in 2.4.2.

### 2.4.2 A single issue audit

A company became aware that it might not have been controlling its air emissions in the most efficient manner possible. The company had several air pollution sources, each controlled separately. An environmental audit targeted specifically towards investigating the air emissions at the site identified the opportunity to combine these sources and control all emissions simultaneously, thus resulting in real savings as fuel-consuming control equipment was replaced with cheaper controls at other sources.

Source: unit author

The example of the single-issue audit illustrates that focusing on a particular aspect of an organisation’s operations can bring benefits. The majority of issue audits deal with the evaluation of the impact that particular public issues can have on the organisation, such as the rise in organic food, the role of dolphin-free tuna as a
public concern for the tuna-fishing industry, the impact the agenda of genetically modified organisms may have on operations etc. At British Petroleum (BP), a company dealing in oil, gas, and energy, as well as Unilever, a company providing a range of branded products, audits have been conducted which are not site-, organisation- or product-specific. They have introduced the practice of focusing on how the whole group is dealing with specific environmental issues of key concern. One such example of this is the loss of tropical rainforest habitat. This audit involves an evaluation of policy guidelines, operating procedures, and actual practice within all parts of the business, and at least implies a concern for the global operations of the industry and its impact on the environment in differing locations.

**Corporate image and marketing opportunities**

Many organisations have realised that there is real value in presenting a responsible stance towards the environment. Increasing public awareness of environmental issues and resulting consumer pressure means that companies which present an ‘environmentally friendly’ image may be able to obtain a market advantage. A competitive advantage can be achieved not merely by keeping abreast of environmental developments, but also by initiating change within an organisation and responding with new ‘environmentally friendly’ products and production processes. In an economic climate where any favourable publicity is beneficial, a new competitive element has entered the marketplace. As part of overall environmental management, environmental audits are an important tool for any companies taking a proactive stance towards environmental issues.

**Environmental concern**

Environmental management is often about learning what the environmental implications are and finding ways in which these can be evaluated, documented, and subsequently eliminated. Many employees feel uneasy about their polluting behaviour at work, which may be in stark contrast to the environmental priorities of the same people outside work. Given that the environment has risen to such a prominent place in public concern, and has managed to stay there for several decades, many companies ask themselves whether their way of operating is in line with the strong environmental concern by the public (and the market). In addition, there is now quite widespread evidence that reducing emissions and improving resource and energy efficiency is economically a smart thing to do. Up to a point, combining environmental concerns with business is profitable and helps the ‘bottom line’. Environmental auditing forms an integral part of this.

**Learning from past accidents**

Looking at the genesis of environmental concern amongst the environmentally most enhanced companies often identifies a particular environmental incident that triggered the step-change towards greater environmental management. For many German companies this was the killing of the Black Forest due to acid rain and Chernobyl, for BP the Deepwater Horizon oil spill in the Gulf of Mexico in 2010 will inevitably result in a profound change in its attitude, even though it had been made aware by the Exxon Valdez disaster. For Shell it was Brent Spar and Nigeria, for Union Carbide it was Bhopal. The latter is, by the way, commonly seen to have one of the most advanced and rigorous environmental auditing programmes in the world. Also, at a much smaller scale, having been fined for environmental misdemeanours
or facing the prospect of liability is, in many cases, the starting point for a more preventive environmental programme. That company directors in the UK can be put into prison for breaches of some parts of environmental law is also an incentive for managers to consider environmental issues more coherently. However, such events can only act as ‘wake-up calls’ if organisations are willing to be woken up – or if the threat is so substantial that palliative measures will not work. In addition, the immediate threat is normally not triggering an environmental audit, but an environmental programme as the type of environmental misbehaviour is then quite obvious, which is often followed up by an audit to verify progress.

You can see, therefore, that there are many reasons why an organisation would undertake an environmental audit. The reasons vary according to:

- the organisation’s stance on environmental issues
- the attitude of the management and/or board of directors
- the regulatory regime within which the organisation operates
- the pressure from society.

The relative importance of each of the above will depend on the country in which the organisation operates, as well as the corporate structure. As you can appreciate, this may be a highly significant factor.
Section 2 Self Assessment Questions

Question 2
List at least FIVE different types of corporate audit.

Question 3
List at least FIVE reasons why a company might wish to undertake an environmental audit.
3.0 BENEFITS AND COSTS OF ENVIRONMENTAL AUDITING

Section Overview
To outline the benefits and costs of environmental auditing.

Section Learning Outcomes
By the end of this section, students should be able to:

- identify the benefits an organisation would gain from carrying out an environmental audit
- outline the role of an environmental audit within an organisation’s environmental management system (EMS).

3.1 What are the main benefits and costs?
There are a number of benefits to a firm undertaking an environmental audit. Some of the benefits are obvious, while others are less easy to identify. Two of the more easily recognised benefits are:

- increased management effectiveness
- cost savings.

These will be discussed in turn, and then some of the other, less obvious, benefits will be covered briefly.

Increased management effectiveness
To manage an organisation effectively, management must be aware of every aspect of the organisation’s operational procedures and processes. An environmental audit should reveal any weaknesses in the structures and, when these are rectified, the management can be confident that nothing has been overlooked and nothing unexpected is likely to occur. In the words of Dwight D Eisenhower: ‘The uninspected inevitably deteriorates.’

An environmental audit can enable management personnel to become aware of many environmental issues of which they formerly may have been less well informed. This is especially the case in organisations with multiple facilities or with large manufacturing operations, where the senior managers and directors are often located at a distance, for example, in the head office. Managers may not have visited many of the sites where there are obvious environmental risks and, even if they have, they may not have the appropriate knowledge or training to identify that risks are present. The use of environmental audits can provide management with the confidence that any actual or potential risks have been identified.

However, auditing by itself does not improve environmental performance. An environmental audit merely provides a ‘snap-shot’ of what is happening at that moment in time, and doesn’t help to ensure ongoing management effectiveness and the proper operation of systems and procedures. As a tool which aids decision-making and management control, an environmental audit is often carried out as part of an overall environmental management system.
Cost savings
An environmental audit should identify opportunities for improvements in an organisation’s management, and this will often lead to savings in spending. This is particularly common in the case of ‘issue’ audits, such as the water or waste audit.

As an example, waste minimisation is an area where there are many opportunities for an organisation to save money. Waste requires to be disposed of, and this itself costs money. For instance, companies are charged for disposing of waste into licensed landfill facilities, or it may be necessary to pay for special treatment of a chemical before disposal. Reducing the amount of waste produced can therefore lead to savings, as the organisation has to dispose of a smaller quantity. An obvious way of minimising the amount of waste generated is to minimise inputs. Adopting a more efficient process could mean that fewer raw materials are required, and that the overall cost of raw materials is therefore reduced. Reductions in the amount of water required can also lead to savings, as organisations are almost always charged for their water usage.

Recycling not only leads to a reduction in the total amount of waste produced, and the associated financial benefits of this, but can also lead to direct cost savings. For example, the by-products of one process may have potential uses in another. In addition, the recycling of water, which may involve treating/cleaning/cooling can also lead to a reduction in wastewater disposal costs. It may be useful to explore the possibility of waste-exchange schemes, that is, selling your waste to other businesses to use as a raw material, or buying in waste for your own use. The former can lead to reductions in waste disposal costs, with the latter providing the possibility of reduced raw material costs.

An issue audit will often highlight the need for an ongoing programme of improvements. A waste audit can lead to the implementation of a waste reduction programme, which may feature the major redesign of products, or simply minor changes to working practices. Organisations, which carry out an environmental audit in order to establish that they are in compliance with environmental legislation, can benefit financially in another way. An audit identifies any areas where an organisation may be in breach of regulations, and if these problems are subsequently corrected, financial loss through plant closures, clean-ups or restrictions imposed by government bodies or through bad publicity can be avoided. The opportunity to make savings is not limited to large companies.

Look at the Construction Sector case study (CS1) (only Section 1.1 at this stage) to get an initial understanding of the sort of benefits a company might gain from environmental auditing.

Even small companies who think that environmental issues are of no relevance to them cannot operate in isolation from environmental issues. Environmental management is, in many ways, simply good business management, and the environmental audit makes the management aware of several issues, which would otherwise not have come to light, and also identifies means of gaining financially. As well as reduced costs from minimising waste, reducing use of raw materials and so on, other areas where savings can be made include:
the possibility of reduced insurance premiums for good environmental performance (refer to environmental liabilities and insurance costs discussion earlier)

reduced likelihood of unexpected pollution events, therefore less chance of incurring costly fines.

The benefits of environmental auditing described so far are largely financial, and can be measured directly. A range of less tangible benefits can also be identified, including:

increased awareness of environmental policies and responsibilities among the whole workforce
increased management confidence due to a feeling of security that the compliance (and safety) status of the plant is confirmed and documented
favourable publicity
improved relationship with regulatory authorities
better understanding of consumer demands.

However, there may also be various perceived disadvantages associated with undertaking an environmental audit, for instance:

disruption of plant activity while the audit is carried out
the cost of the exercise
the possible perception by staff in the organisation that an audit is a negative process, which assesses their performance.

Most of these can be minimised or overcome by careful forward planning to ensure that the audit runs smoothly. Adopting an informal and approachable stance and pointing out the positive aspects of undertaking an audit can dispel any fears or misconceptions held by the staff. The cost of the audit can often be recovered by savings made through improvements identified in the audit and a number of auditing companies peg their fees to the savings made subsequently, or may operate on a ‘no gain, small fee’ basis.

3.2 Role of an environmental audit within an environmental management system

As you have seen, environmental audits investigate the current environmental performance of an organisation. Audits therefore provide information on the activities at that moment in time. Hunt and Johnson (1995), for example, note that, environmental auditing on its own cannot provide management with the assurance that environmental practices and performance not only have met, but will also continue to meet, legislative requirements and sound corporate policy commitments and expectations.

One role of an environmental audit is to identify areas for improvement, but an audit does not, in itself, provide the means to implement changes. In order to do this, an environmental audit should be set in the framework of an environmental management system.
An environmental management system (EMS) provides a mechanism for systematically managing the environmental effects of an organisation. EMSs provide a framework to:

- identify significant environmental effects
- document regulatory requirements
- set objectives and targets for future environmental performance
- implement procedures and measures for achieving the objectives and targets
- undertake audits to assess environmental performance and the effectiveness of measures to achieve the defined objectives and targets.

In order to ensure that employees and any other stakeholders understand the management system, environmental management systems usually rely heavily on documentation. Environmental effects, environmental regulations, objectives and targets, and the procedures are usually all documented. It is important to notice that environmental audit and environmental management systems are not synonymous terms.

### 3.3 Evolution of environmental audits

When an organisation first undertakes an environmental audit, the most likely objective is the identification of problems. As the programme of auditing develops, subsequent audits tend to increase in sophistication, and the objective is more likely to be compliance with regulations, and laterally, the effectiveness of environmental management systems. The evolution of environmental audits (shown in diagrammatic form in 3.3.1) is therefore to begin by finding problems, and to move on to confirming the absence of problems as the auditee’s environmental performance improves.

#### 3.3.1 Evolution of environmental audits

![Diagram showing the evolution of environmental audits](source: adapted from ICC (1991))
Section 3 Self Assessment Question

Question 4

True or false?

Not only does an environmental audit identify areas for improvement within an organisation, such as cost savings, but also provides the means to implement changes.
**UNIT SUMMARY**

The relationship between organisations and the environment can be seen as two-way, with organisations having the potential to affect the environment and vice versa. Public pressure over environmental issues has also created constraints on industry and there has been increasing recognition of the importance of the environment by politicians. Pressure for business and industry to improve its environmental performance comes from a variety of sources.

Environmental auditing is defined, by the International Chamber of Commerce (ICC), as a ‘management tool comprising systematic, documented, periodic and objective evaluation of how well environmental organisation, management and equipment are performing with the aim of helping to safeguard the environment’. Environmental auditing began in the USA in the 1970s as an internal control tool, which helped companies to ensure that they were meeting regulatory requirements, and has developed internationally throughout the 1980s and 1990s. The concept of environmental auditing has evolved to address issues wider than simple commitment to legal compliance, for example, identifying improvements and opportunities for cost savings, and confirming the effectiveness of environmental management systems. Depending on the objectives of the exercise, there are several different ‘types’ of environmental audit. Organisations will have a range of objectives in carrying out an environmental audit, and these will depend on the size, location, environment, legal requirements, and management approach of a company.

Environmental auditing can produce a range of benefits for an organisation, including cost savings and increased management effectiveness and both large and small organisations can benefit from undertaking an audit. Environmental auditing alone does not facilitate improvements to environmental performance. Audits simply identify areas that should be addressed by an overall environmental management system (EMS).
UNIT SELF ASSESSMENT QUESTION

Question 1

There are three main questions for an organisation that wishes to carry out an environmental audit. Complete the questions below by filling in the gaps.

(a) What are our current _______ on the environment?
(b) Can we _______ our _______ on the environment?
(c) How can we make further _______?
### Key Terms and Concepts

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Agenda 21</td>
<td>the global plan of action adopted at the Earth Summit in Rio in 1992</td>
</tr>
<tr>
<td>auditing</td>
<td>a methodical examination, involving analyses, tests and confirmations, of procedures and practices whose goal is to verify whether they comply with legal requirements, internal policies and accepted practices</td>
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<tr>
<td>compliance/legislative audit</td>
<td>an audit which determines the degree of company compliance with current or prospective legislation or standards</td>
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<tr>
<td>direct effects</td>
<td>actions from an organisation which cause direct damage/harm to the environment, for example, oil spillage may pollute a local river</td>
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<tr>
<td>documented</td>
<td>information that is noted and recorded</td>
</tr>
<tr>
<td>environmental auditing</td>
<td>a management tool comprising systematic, documented, periodic and objective evaluation of how well environmental organisation, management and equipment are performing with the aim of helping to safeguard the environment</td>
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<tr>
<td>environmental awareness</td>
<td>the amount of information a person knows about the environment, that is, how much they are aware of the environment</td>
</tr>
<tr>
<td>environmental management</td>
<td>a process of improving the environmental performance of organisation; good environmental management is in many ways good management: paying attention to whether materials or energy are being wasted; considering how by-products can be re-used; and making sure that operations always run at maximum efficiency</td>
</tr>
<tr>
<td>environmental management system</td>
<td>a mechanism for systematically managing the environmental effects of an organisation</td>
</tr>
<tr>
<td>environmental management systems audit</td>
<td>an internal audit used to check the effective operation of environment management systems</td>
</tr>
<tr>
<td>environmental review</td>
<td>the gathering and evaluation of data with environmental relevance</td>
</tr>
<tr>
<td>green consumerism</td>
<td>the consumption of environmentally friendly products</td>
</tr>
<tr>
<td>indirect effects</td>
<td>actions from an organisation that cause indirect damage/harm to the environment, for example, the use of fossil fuels and the effect this may have on climate change</td>
</tr>
<tr>
<td>investigate</td>
<td>to examine something</td>
</tr>
<tr>
<td>issue audit</td>
<td>an audit which concentrates on a topic that has been identified as requiring further investigation</td>
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</table>
liability/transactional audit

an audit conducted prior to buying or selling a facility/land in order to identify potential liabilities

macro-scale

global level

management tool

something that can be integrated into the management system of a company/organisation, for example, an audit

micro-scale

local level

minimization audit

an audit which concentrates on a single issue, for example, waste, and seeks to identify ways to reduce the amount of ‘waste’ produced

natural resources

the resources (stock that can be drawn on) which occur naturally in the World, for example fossil fuels such as coal, gas and oil, biodiversity etc

objective

a mission, purpose or standard that can be reasonably achieved within an expected timeframe and with the available resources

periodic

an established schedule – at regular intervals

policy compliance audit

an audit which is primarily an internal management tool to determine the depth of compliance with company policy

pressures

forces or activities, both internal and external to an organisation, which may have an effect on its operation and the way it operates

stakeholder

people or groups of people who have an interest, or stake, in an organisation

sustainable development

a concept developed as a result of concern over the Earth’s natural resources and is defined as

‘... development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

The concept of “needs”, in particular, the essential needs of the world’s poor, to which overriding priority should be given; and

The idea of limitations imposed by the state of technology and social organisation on the environment’s ability to meet present and future needs.’ (WCED, 1987: p. 43)

systematic

planned and methodical manner

verification

the evaluation of compliance to regulations and other set criteria