

Part One
Introduction

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1 Introduction

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IN THIS CHAPTER, THE READER WILL

- Be introduced to the textbook and understand its structure, scope, aims and objectives
- Have an overview of the interplay between science, law and policy and understand the extent to which laws and policies are driven by science
- Understand the meaning of the term 'environmental law'
- Gain an overview of the wider purpose of environmental law
- Obtain an appreciation of the relevance of environmental law to engineers and non-lawyers
- Be able to explain the links between science, engineering, technology and environmental law
- Gain an overview of international, EU and UK environmental law and discover the basic tenets of the environmental law-making process at the international, regional and national levels
- Gain knowledge of some key terminology
- Learn about some key principles and themes which have shaped the development of environmental and energy law
- Be recommended follow-up reading so that key issues can be explored further

1.1 OVERVIEW AND AIMS OF ENVIRONMENTAL & ENERGY LAW

Environmental & Energy Law aims to provide selective coverage of environmental and energy law within the European Union (EU) and the United Kingdom of England, Wales, Scotland and Northern Ireland (UK), as well as internationally. In particular, the book attempts to convey a broad range of topics in environmental and energy law which are of interest not only to law students but also to engineers and scientists.

The book attempts to bridge the knowledge gap between legal developments designed to achieve environmental and/or energy objectives (for example, pollution control and conservation) on the one hand, and the practical, scientific and technical considerations applicable to the same environmental problems on the other. In this vein, the book guides the student of environmental and energy law on some basic practical applications of the law within the scientific, engineering and other practical settings. Therefore, the book will be useful not only to law students and professionals working in the fields of environmental and/or energy law, but also to engineering and (geo)science students and professionals, as well as others working in various other disciplines. By adopting a multi-disciplinary

approach to environmental and energy law, the book embraces all readerships and goes a step further to address the often thorny problem of improving communication between scientists and engineers and law and policy makers.

The book is written by lawyers (including the two editors), engineers with expertise in policy/regulatory issues, and other social and technical scientists working in an academic and/or professional environment(s). This allows the reader to learn environmental and energy law from a wide range of perspectives and approaches and to gain an insight into how the law is designed to tackle particular environmental problems arising in both professional and theoretical settings.

1.1.1 The scope of the book

The book covers a wide range of topical issues in environmental and energy law, from technology innovation and transfer, climate and energy regulation, to pollution control and environmental governance and enforcement. In addition to addressing more general topics within environmental and energy law, the book outlines key sectoral or environmental ‘media-specific’ (air, water, land) legal regimes, focusing on key issues that are particularly relevant to law, engineering, science and technology-oriented students.

Environmental & Energy Law is largely focused on the environmental and energy law developments within the EU and the UK. It also addresses the relevant developments in international environmental law as these largely underpin local, national and regional efforts to address broader environmental concerns. The book thus is especially relevant to students and professionals working in the field of EU environmental and energy law within the EU Member States. It will also be of interest to those working and studying outside the EU, in particular candidate countries, given that the acceding countries will have to implement the EU legal framework as part of the approximation process (the so-called *acquis communautaire*).

The book does not comment on every substantive area of environmental and energy regulation. For example, the book does not offer a distinct chapter on the regulation of wildlife and nature conservation. The editors tried to identify new and key areas of environmental and energy law that would be particularly valuable to academics, students and professionals wishing to have a good command of the regulatory environment surrounding *inter alia* technology, energy, climate change mitigation and adaptation, resources exploration and exploitation, pollution control, health and safety at work, infrastructure projects and impact assessment.

Although theoretical and jurisprudential issues are also considered in many chapters, the book attempts to focus on the pragmatic legal and policy implications of environmental law making. Where necessary, students are directed to Further Reading/Bibliography sections of the book for further guidance on the literature giving additional insights into theoretical and jurisprudential developments.

1.1.2 Readership

Although the book is an introductory work designed for undergraduate and postgraduate students, it will also be relevant to professionals working in the environmental and energy sectors who aim to have a grasp of the relevant legislation and applicable legal framework. In addition to law students and professionals, the book is of special interest to engineering and science students and professionals interested in understanding the application of environmental and energy law to their particular fields.

The book takes into consideration the fact that few non-law students, for example engineering and science students, will have had prior exposure to the study of law, and that not many law students may have specialised in environmental and energy law or have technical, engineering-related knowledge.

As mentioned above, engineers will find particularly useful the book’s coverage of, for example, technology and innovation, energy/climate regulation, pollution control and the law on health and safety at work. In this context, the book covers topics which are of interest to *engineers in general*

(e.g. Parts II and V on innovation and clean technologies, health and safety law covered in Chapter 10), and all chapters could be said to be of general interest to *environmental engineers*. The book also covers topics of interest to engineers specialising in particular disciplines. For example, the ‘end-of-life vehicle’ and ‘reduction of hazardous material’ regulations are arguably more relevant to the *materials engineer* (waste management is covered in Chapter 15). *Civil engineers* are more likely to be working in the construction sector and will find the chapters on energy, waste management legislation and water management regulations of special interest (Chapters 6, 15 and 16). *Chemical engineers* will be able to relate especially to the chapters on regulation of chemicals and laboratory safety (Chapters 20 and 21), while *electrical and electronic engineers* may well be influenced by legislation concerned with ‘renewables’ and ‘energy efficiency in buildings’ (covered in Chapters 6–8). *Geo-engineers* working in the fields of oil and gas exploration and exploitation will be concerned with mining regulations and ‘environmental impact assessment’ (EIA) legislation (covered in Part IV and Chapter 22). *Bioengineers and agricultural engineers* will find the chapters on agricultural technologies and the law (Chapter 5) and the regulation of chemicals (Chapter 20) of special interest. Moreover, as explained in the chapters on the Aarhus Convention (Chapters 23 and 24), general topics of environmental governance such as access to information and information disclosure are of interest not only to lawyers but also to engineers and technical scientists. As suggested in those chapters, there are practical relevancies for engineers and scientists as regards the exercising of the rights to access environmental information and access to justice.¹

1.1.3 Approaches to learning

In addition to being written in a manner accessible to students at both undergraduate and postgraduate levels, a number of tools are used to make the book particularly accessible and classroom-friendly. The book draws out crucial points and information, provides recommendations for further reading and follow-up, highlights important points to be remembered, offers summary information on the chapter content and provides an overview of key issues so as to bring together conclusions and insights into the issues addressed. Summary/Questions & Activities sections are provided at the end of each Part and/or chapter to help students recall important information.

1.2 THE INTERPLAY BETWEEN SCIENCE AND LAW AND POLICY MAKING

By considering the interplay between the law, science and policy, the book addresses the core of environmental law, as no good environmental (or energy) law and policies can emerge if not taking full account of and implementing (sound) scientific advice. Thus, it provides further substance to environmental law and helps to explain how/why it has emerged and developed in a particular way. This necessarily symbiotic relationship between science and policy in the environmental and energy law fields makes it all the more crucial that there is enhanced communication and dialogue between the two.

In this scenario it is arguably science that determines the course of environmental policy, policy makers merely executing the scientific advice. This means that scientists are under increased scrutiny (not least by the public – as discussed in Chapters 23 and 24), since policy makers can only justify policies which are based on ‘sound’ science. As scientists play a strong role in environmental governance, in particular through their ability to influence policy, there must be a better understanding of the role of science in the formulation of policy in order to enable greater trust in the scientific findings. An example is the Intergovernmental Panel on Climate Change (IPCC) which has

¹ Although no chapter of the book is dedicated solely to nuclear energy law, there is some coverage of key issues of interest to nuclear engineers, e.g. the international civil liability regime in respect of nuclear accidents discussed in Chapter 25.

recently been accused of being biased in the interpretation of climate science in order to advance climate policy.

Science plays a major role in identifying, analysing and predicting risk and the nature and extent of the risk (serious, irreversibility, etc.) (Christoforou, 2004). However, the course of environmental law and policy cannot be defined only by science. Indeed, defining the level of environmental protection is a function of many considerations and factors, and includes the concerns of other experts (e.g. economists, lawyers), regulators, corporations, lobbyist groups and lay people with no background in science. The level of risk a society considers acceptable for a specific product, substance, process or activity at a given moment in time is what is frequently called ‘appropriate level’ of (health or environmental) protection. Hence, the confidence of the general public in the capacity of science and the regulatory system to avoid, eliminate or reduce risk is crucial (Christoforou, 2004). Therefore, a policy could be branded ‘bad’ even if based on sound scientific advice, when it disregards economic, social and other concerns.

Moreover, technologies cannot by themselves resolve an environmental problem. The integration of technologies, policies and regulation is required in order to realise their potential. Conway (2009) predicts that Chinese investment in solar panels and their subsequent mass production could reduce the price of solar panels considerably and attract investment for greater innovation. This suggests a much broader political and economic aspect to technology development and it is these aspects that decide what technology becomes prevalent and influences the decisions that law and policy makers make, ultimately making the biggest impact on mitigating climate change.

The UK has a network of scientific advisors in 17 government departments and in Europe the body that provides scientific support to the European Commission is the Joint Research Centre.² Their job is to scrutinise policy and provide independent policy advice for ministers. As of 2011, every UK government department has a Chief Scientific Adviser (CSA) apart from the Treasury. The Departmental CSAs,³ working collectively with other analytical disciplines and with departmental boards and Ministers, work to ensure that science and engineering are at the core of decisions within departments and across government. It is the responsibility of departmental CSAs to implement the Guidelines on the use of scientific and engineering advice in policy making. Moreover, the Chief Scientific Committee (CSAC) provides advice to ministers, discusses and facilitates implementation of policy on science, engineering and technology (SET), and identifies and promulgates good practice in SET-related areas.

Yet Professor John Beddington, who at the time of writing is the UK government’s chief scientist, suggests that although there is often good will when environmental regulations are drafted and adopted, they may not always be in line with scientific developments, thus requiring further independent scientific assessment of these regulations. He cites as example plans to phase out pesticides that posed little risk to human health, and European efforts to forge ahead with growing biofuel crops, which have been linked to increased food prices.⁴ Professor Beddington then argued that ‘[w]e need scientists to come in and challenge policy at lots of levels’ and that ‘European commissioners and MEPs need better, more “brutal” scientific advice’. This suggests that engineers and scientists, in the exercise of their respective professions, must understand how law and policies are implemented and applied, so that they can better influence regulatory policy developments.

1.2.1 The law- and policy-making practice and the influence of science

As seen above, science plays a vital role in the development of environmental policy and regulation. Scientists set the course of environmental policy, for example, by defining acceptable levels of

² BBC News (2009).

³ See <http://www.bis.gov.uk/go-science/science-in-government/chief-scientific-advisers> (accessed 13 June 2011).

⁴ *Ibid.*

atmospheric and water pollution, pesticides levels in agriculture, arsenic levels in oceans and mitigation targets that aim to avert dangerous climate change. The scientific assessment is then transposed (in the form of targets or pollution limits) into environmental regulations. These types of environmental regulations, drafted by experts and scientific advisors within the relevant public bodies or agencies, tend to be highly technical.

The technicality of these types of environmental regulations can lead to some problems when judges are presented with a case on environmental damage. For example, as regards the EU Water Framework Directive (2000) (discussed in Chapter 16), how is ‘good’ water status to be defined, without clear guidelines being given in that Directive? Hence, as discussed in Chapter 25, it is sometimes suggested that the government agency which has adopted the environmental standards and embodies the technical environmental expertise should itself apply any penalties against the operator’s non-compliance, not the courts. Moreover, environmental standards tend to constantly change in light of new scientific evidence, posing a serious challenge to the regulated community, which may not always be aware of the changes in environmental standards. In this vein, it is noteworthy that there are very few specialised environmental courts or tribunals. There are none in the UK or at the international level. This means that, often, non-experts hear specialised environmental cases.⁵

In addition to the more technical regulations, environmental and energy law emerges from the law making of the national parliaments, European and international organisations and institutions. This type of environmental legislation tends to define *inter alia* the scope of liability, the prohibited activities and how damage for environmental pollution is to be quantified. Thus, those rules tend to have a broader scope than technical environmental regulations adopted by government regulatory agencies, which set the actual level of acceptable pollution, greenhouse gas emissions (GHG) and so forth, according to scientific advice.

The adoption or amendment of these technical regulations, because of their urgency and technical nature, does not generally require parliamentary participation (hence no need for democratic scrutiny). On the other hand, when environmental law defines, for example, the limits of liability and prohibited activities, because of their potentially more direct impact on economic activities and civil liberties, such laws arguably require further democratic scrutiny before their adoption.

Within the EU, the EU Commission, usually after consultations with the wider public, proposes environmental legislation to the other institutions, i.e. the Council of Ministers (representing the Member States) and the European Parliament (Members are elected directly by EU citizens). This type of legislation tends to have a set of articles containing *inter alia* the main environmental policy goals, list of prohibited activities, grounds for exemption (if any) and at times the applicable penalties for violation (e.g. under the EU Emissions Trading Directive 2003/2009, discussed in Chapter 7). Yet the actual acceptable levels of pollution, list of prohibited pollutants and other technical aspects tend to be contained in Appendices to the Directives. It thus allows the Commission to amend the levels of permitted pollution, in light of new scientific evidence, without having to seek broader agreement through the EU legislative procedures (which also involves the Council of Ministers and the European Parliament).⁶ However, the Commission must act under scientific advice, which could lead to serious challenges in law- and policy-making practice given that ‘in the major [European

⁵ See further *Hungary v Slovakia* (Gabcikovo-Nagymaros dam) Case. International Court of Justice, Judgment of 25 September 1997, B.ICJ/6929210707575. See especially the dissenting opinion of Judge Christopher Weeramantry. He emphasised the need for more consideration of environmental matters in this case about the construction of a hydroelectric dam and the diversion of parts of the river Danube (the case is discussed further below in this chapter.) Moreover, a European Union forum for the environment was created in February 2004 in order for European judges to share experiences and increase awareness in environmental cases. See further <http://www.eufile.org/> (accessed 13 June 2011).

⁶ For example, Commission Decision 2008/689/EC and Commission Decision 2010/115/EU amending Annex II of Directive 2000/53/EC of the European Parliament and of the Council on end-of-life vehicles.

Commission] Directorates you don't have scientific advisors and there is no overall advisor on policy [reporting to] the commission president' (BBC News, 2009).⁷

A similar law-making technique is applied at the broader international level. For example, the International Maritime Organisation has adopted Marpol 73/78 (International Convention on Prevention of Pollution from Ships) which itself contains the list of prohibited activities (e.g. intentional or reckless pollution discharges), whilst Annexes to Marpol (six in total, at the time of writing) establish *the levels* of permitted shipping pollution in the air, water, etc. Amendments to the Marpol 73/78 Annexes follow a more flexible decision-making procedure than to the Convention itself and do not require broader consensus among the parties to the Annexes.⁸ This allows a number of like-minded states to pursue further integration and harmonisation without facing the risk of the policy development being blocked by one or a few states.

1.2.2 The precautionary principle

In some limited cases policy makers are even able to bypass scientific advice by applying the precautionary principle. This principle is used to advocate that lack of scientific certainty is not an excuse for inaction against an environmental threat. It is suggested that where there are *threats of serious or irreversible damage, lack of full scientific certainty* should not be used as a reason for postponing such measures (see, for example, Article 3 UNFCCC, discussed in Chapter 7). It thus gives policy makers leeway to move forward and tighten environmental regulatory controls despite the lack of scientific consensus regarding the nature and seriousness of the 'perceived' threat to the environment or human health.

According to Freestone and Hey (1995), the precautionary principle – '(...) changes the role of scientific data' (Freestone and Hey 1995). It requires that once environmental damage is threatened, action should be taken to control or abate possible environmental interference even though there may still be scientific uncertainty as to the effects of the activity. Evidence of risk does not need to be based on the majority opinion of experts: 'the very existence of divergent views presented by qualified scientists who have investigated the particular issue at hand may indicate a state of scientific uncertainty' (Birnie *et al.*, 2009). However, precautionary measures must be based on more than a mere hypothesis or purely theoretical assessments. So there must be some 'reason to believe' or 'reasonable ground for concern'.⁹

The precautionary principle is thus a guiding principle for environmental protection which aims to encourage the preservation and sustainable development of the earth's vital resources by professing that *in light of uncertainty, prevention is better than cure*.¹⁰

⁷ Decisions on *implementing parts* of EU legislation are often taken by the European Commission officials assisted by national experts, who give their opinion on proposed measures. They meet in hundreds of specialised committees under a procedure referred to as 'comitology'. There are around 300 committees dealing with all kinds of legislation. Examples of decisions taken by this procedure include the authorisation of chemical products or the imposition of production quotas for milk and other agricultural sectors. The Lisbon Treaty, which entered into force in December 2009, replaces the old comitology with a new system of 'delegated acts', placing the European Parliament on an equal footing with the Council in making those decisions. A regulation governing the new rules was adopted in December 2010.

⁸ Annexes can be amended by Marine Environment Protection Committee of IMO, subject to acceptance by at least two-thirds of parties constituting no less than 50% gross tonnage of the world merchant fleet.

⁹ See also the EC Communication on the Precautionary Principle (2000) which states that 'recourse to the precautionary principle presupposes that potentially dangerous effects deriving from a phenomenon, product or process have been identified, and that scientific evaluation does not allow the risk to be determined with sufficient certainty'.

¹⁰ Where an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if certain cause and effect relationships are not established scientifically. A commonsense phrasing is 'an ounce of prevention is worth a pound of cure'. See Van der Zwaag (1996).

The precautionary principle has its origins in German administrative law. It was first introduced in the Federal Republic of Germany in the late 1970s as *das Vorsorgeprinzip*, the ‘precautionary’ or ‘foresight’ principle, even though the precise content of the principle was unclear.¹¹ It has since been used to influence environmental decision-making, and continues to do so, at national, EU and international levels.

The precautionary principle is enshrined in the Treaty on the Functioning of the European Union (TFEU)¹² and informs law and policy making in the EU, as well in the Member States. Measures incorporating the aims of the precautionary principle in a bid to prevent environmental degradation and harm have included:¹³

- measures to restrict and even ban the transport of waste within the Community and to restrict the export of waste;¹⁴
- obligations to notify public authorities of products, before they are marketed or before they are exported to third countries;¹⁵
- the imposition on industry to take measures in order to prevent major accidents;¹⁶
- an environmental impact assessment requirement for important infrastructure projects.¹⁷

In summary, according to Stein, J in the case of *Leatch v National Parks and Wildlife Service and Shoalhaven City Council*, the principle professes that there is a need to prevent serious or irreversible harm to the environment in situations of scientific uncertainty, even where there are policy demands that ‘cost-effective measures be used to prevent environmental degradation’.¹⁸ Moreover, in the International Court of Justice’s decision in the *Pulp Mills (2010)* case, it was reiterated that the burden of proof still lies with the claimant State, and that the precautionary approach could not be used to reverse the burden of proof in cases where serious risk cannot be established by the claimant State. Hence, this required Argentina to prove that Uruguay’s pulp mill activities were causing trans-boundary harm in her territory.¹⁹

1.2.3 Law and policy as drivers for innovation

The book aims to demonstrate, in particular in Part II, that policy and regulation can act as major forces that drive innovation.

For example, the air quality in London is currently breaching acceptable EU levels and the European Commission is threatening to fine the UK government £300 million as a result (Mulholland and Vidal, 2010) (as discussed in Chapter 18). This has galvanised the Mayor of London into taking action to reduce local emissions from vehicles and one such policy is the creation of 1300 charging points around London in order to encourage businesses to adopt electric vehicles (EVs) (GLA, 2011). In providing targets for air quality and emissions reductions, the EU is requiring that the UK government include the currently unpaid-for externality of pollution in the cost of electricity and transportation. The UK government is now taxing those established and

¹¹ Kraemer (2007).

¹² Article 191(2) TFEU.

¹³ See Kraemer, *ibid*.

¹⁴ Regulation 259/93 [1993] O.J. L30/1.

¹⁵ Directive 92/32 [1992] O.J. L154/1.

¹⁶ Directive 82/501 [1982] O.J. L230/1.

¹⁷ Directive 85/337 [1985] O.J. L175/40.

¹⁸ *Leatch v National Parks and Wildlife Service and Shoalhaven City Council* 81 LG ERA 270.

¹⁹ Case concerning Pulp Mills on the River Uruguay (Argentina v Uruguay) (ICJ Reports, 2010). The case also established a duty on States to undertake environmental impact assessment in some transboundary situations. For a commentary see Merkouris, P. Case concerning pulp mills on the river Uruguay (Argentina v. Uruguay): of environmental impact assessments and “phantom experts”, available at <http://www.haguejusticeportal.net/eCache/DEF/11/878.html>.

cheap technologies that are polluting the heaviest and subsidising the cleaner new technologies that remain expensive.

In another UK example, the government has implemented some policies to incentivise electric vehicles, including the provision of a £5000 subsidy for those purchasing new vehicles (BBC Business News, 2009). It has also exempted them from paying road tax. Electric vehicles are a risky, expensive investment compared to the more reliable internal combustion engine (ICE) vehicle, but with these incentives an EV could prove to be cheaper over many years than an ICE vehicle, and if the electricity used to power it is clean, it could be a viable technology that mitigates climate change.

1.2.4 The interplay between law and science – the way forward

The way in which government policy interacts with new scientific discoveries may be regarded as confusing by wider society, and thus there is need for better communication between scientists and regulators. In order not to alienate society and lose their trust in both the government and scientific institutions it is necessary for environmental law and policy to be coherent. It must lead to the ultimate goal of resolving the environmental problem (although the costs to society cannot be prohibitive). It would thus encourage trust and participation from wider society in this debate, rather than sparking fear and alienation from past experiences with bad policies that have not been backed up by science. BSE²⁰ and GMOs²¹ are recent examples of areas in which law, science and policies could have been better integrated to advance environmental goals.

1.2.5 Why is environmental law also relevant to engineers and technical scientists?

Increasingly, sustainable development and environmental issues are at the forefront not only of policy and law makers' concerns but also engineers' concerns. This is more so today as global environmental issues, such as climate change, are high on international political agendas and demand not only political remedy through law and policy but practical fixes which might arise through contributions from engineering. To this end, not only are engineers required to understand and implement environmental laws through practical means (and thus ensure that they have a full understanding of their legal obligations particularly as *inter alia* employees, contractors, consultants, project managers or innovators), they may also be at the forefront of developing a new method or process which may one day assist in halting environmental degradation or in the remediation of an environmental problem that has already occurred. If such method or process can assist in environmental protection, it may well then be mandated in a future piece of legislation.

The UK Guardian newspaper education profile on Engineering comments that the study of engineering is concerned with developing, providing and maintaining infrastructure, products, processes and services for society and that engineering graduates need to be aware of the social, cultural, environmental, ethically sound, sustainable solutions and international dimension to engineering.²² It continues by stating that some of the learning objectives that engineering graduates will be able to demonstrate include being able to investigate and define a problem and identify constraints, including environmental and sustainability limitations and safety and risk assessment issues; understand the requirement for engineering activities to promote sustainable development; and have an awareness of the framework of relevant legal requirements governing

²⁰ Bovine spongiform encephalopathy – 'mad cow disease' prevalent in the UK in the 1990s.

²¹ Genetically modified organisms – promoted as crops in the 1990s.

²² <http://image.guardian.co.uk/sys-files/Education/documents/2007/04/18/Engineering.pdf> or try [http://education.guardian.co.uk/](http://education.guardian.co.uk/universityguide2008/story/0,,2033636,00.html) (accessed 9 March 2011).

engineering activities, including health, safety and environmental risk.²³ Further in support of this argument, the tag line on the Environment & Sustainability pages of the Institute of Civil Engineers website states the following: '[s]ustainable solutions are needed to achieve a better balance between social, environmental and economic progress. Climate change is one of the most profound problems facing humanity and our environment. Engineers promote sustainable methods of construction to protect, preserve and improve the quality of life both now and for the future'.²⁴

Noting this, the book not only examines current legal frameworks for preventing or remediating environmental harm but also explores potential future innovations in law and policy making and in environmental protection more generally. Such innovations may traverse the environmental law and engineering fields and could well be the basis for future legal and policy developments in the environmental arena.

The UK Centre for Materials Education²⁵ promotes the teaching of environmental law to those studying environmental materials science and engineering. Further, the Engineering Subject Centre²⁶ promotes the 'introduction and inclusion of Sustainable Development into the teaching curriculum' as a key issue. They argue that engineering as a discipline will take a leading role in the advancement of sustainable development-related matters.

Further, at the international level, under the aegis of the World Federation of Engineering Organisations (WFEO),²⁷ there have been several declarations²⁸ promulgated by engineers to advance sustainable development and environmental objectives within the profession. Declarations are non-binding 'soft' law (guiding policy) which offer blueprints for future action. For example, Paragraph 5 of the Shanghai Declaration states 'Sustainability – Engineers should take greater responsibility for shaping the sustainable future. Engineers should also create and apply technology to minimize the waste of resources, reduce pollution and protect the human health and well-being and the ecological environment'.

The WFEO also issued several agreements supporting cooperation with the environment-related aims of other global organisations such as UNESCO,²⁹ OECD³⁰ and CAETS,³¹ organisations within which engineering have significant roles to play.

At the European level, the European Construction Industry Federation (FIEC) unanimously adopted a declaration in 2005 entitled 'The FIEC Principles for Sustainability'. Arguably, the

²³ <http://image.guardian.co.uk/sys-files/Education/documents/2007/04/18/Engineering.pdf> or try <http://education.guardian.co.uk/universityguide2008/story/0,,2033636,00.html> or <http://education.guardian.co.uk/> (accessed 9 March 2011).

²⁴ <http://www.ice.org.uk/topics/environment> (accessed 9 March 2011).

²⁵ Part of the UK Higher Education Academy: <http://www.materials.ac.uk/guides/environmental.asp> (accessed 18 March 2011).

²⁶ Part of the UK Higher Education Academy: <http://www.engsc.ac.uk/sustainable-development> (accessed 18 March 2011).

²⁷ <http://www.wfeo.net/> (accessed 18 March 2011). See as an example of policy developments the WFEO concept paper 'Engineering for a Better World': http://wfeo.net/au_subrules1.aspx (accessed 18 March 2011).

²⁸ Arusha Declaration – The UNCED Conference 1992 Statement by the World Federation of Engineering Organisations on Environment and Development: http://www.wfeo.org/documents/download/arusha_declaration.pdf (accessed 18 March 2011). Calcutta Declaration – Implementing the Sustainable Development Agenda: http://www.wfeo.org/documents/download/calcutta_declaration.pdf (accessed 18 March 2011). WFEO Earth Charter Resolution: http://www.wfeo.org/documents/download/eco_resolution.pdf (accessed 18 March 2011).

²⁹ United Nations Educational, Scientific and Cultural Organization: <http://www.unesco.org/new/en/unesco/> (accessed 18 March 2011).

³⁰ Organisation for Economic Cooperation and Development: <http://www.oecd.org> (accessed 18 March 2011).

³¹ International Council of Academies of Engineering and Technological Sciences: <http://www.caets.org/> (accessed 18 March 2011).

construction industry is at the heart of sustainable development traversing the economic, the social and the environmental.³²

In July 2006, the Institution of Civil Engineers (ICE) signed a Protocol for Engineering a Sustainable Future for the Planet along with the American Society of Civil Engineers (ASCE) and the Canadian Society for Civil Engineering (CSCE). This articulated the organisations' continuing commitment to sustainable development and recognised that civil engineers have the knowledge and skills to play a major role in helping to meet key goals associated with sustainable development and environmental protection. In July 2007, ICE, Association of Consulting Engineers (ACE), Civil Engineering Contractors Association (CECA), Construction Industry Research and Information Association (CIRIA) and the Construction Products Association agreed on a 'Sustainable Development Strategy and Action Plan for Civil Engineering'.

The Institution of Chemical Engineers also sees sustainable development as the most significant issue facing society today.

'With infrastructure and engineering products and processes becoming increasingly complex, engineers need to integrate consideration of whole-life environmental and social impacts – positive as well as negative – with the mainstream and commercial aspects of their work', Lord Broers FREng FRS, Past President, Royal Academy of Engineering.³³

1.3 INTRODUCTION TO ENVIRONMENTAL LAW

This section of the book introduces readers to the frameworks and systems of environmental governance and environmental law making at the international, regional and national levels. We provide here a brief overview of general international environmental law, EU environmental law and UK environmental law, which will be further developed in the forthcoming chapters dealing with particular sub-topics. Although the overview below is not directly concerned with the energy sector, there is much overlap between energy activities and environmental issues. Hence, the following sections will be of interest for an understanding of developments in (sustainable) energy law and policies also.

Before discussing the international, European and national approaches to environmental regulation, we discuss below some elementary notions behind environmental law.

1.3.1 What is environmental law?

Historically, the advent of the industrial revolution in the eighteenth century, despite bringing prosperity to some parts of the globe (in particular to the European powers), led to the increasing levels of industrial pollution which have a detrimental effect on the environment and human health. Consequently, several European countries introduced legislation³⁴ in the nineteenth and twentieth centuries to regulate and prevent harmful levels of industrial pollution.³⁵

The current sphere of environmental law spans the international level ('the world'), the regional level (e.g. the European Union) and the national level (such as the UK). Indeed, industrial

³² <http://www.fiec.eu/DocShare/Common/GetFile.asp?PortalSource=155&DocID=8509&mfd=off&pdoc=1> (accessed 18 March 2011).

³³ In Introduction, *Sustainable Development Strategy and Action Plan for Civil Engineering*, July 2007, ICE, ACE, CECA, CIRIA and the Construction Products Association. <http://www.icheme.org/sustainability/> (accessed 18 March 2011).

³⁴ Including the German General Industrial Code (1845), the British Waterworks Clauses Act (1845), the French Dangerous Industrial and Commercial Activities Act (1917) and the Spanish Water Act (1878). See Vercher (1990).

³⁵ For example, in France a crime of poaching was introduced to the Law of 15 April 1829 on 'River Fishing'. It has been applied by the courts since 1859 to manufactures that discharged pollutants into water (Tiedemann, 1986).

developments in the UK and Europe since the eighteenth century Industrial Revolution contributed significantly to environmental degradation as we know it today. Responses to such degradation from the UK and the EU have led to the development of the current environmental law regimes in the region and which have been emulated elsewhere in the world. Such environmental problems have largely been addressed at the practical level by engineers, scientists and other technical experts.

What is the law?

A basic definition of what ‘law’.³⁶ would be a system of binding rules, regulations and obligations that are mandatory and have to be followed and complied with in order to achieve certain pre-agreed aims and objectives, such as protection of the environment.

What is ‘the environment’?

Although exactly what constitutes ‘the environment’ can be a debate in its own right, for our purposes environmental law will be defined as the law that is concerned with regulating the exploitation of, or impacts on, the *natural environment*. The natural environment can be defined as all living and non-living things that occur naturally in the world. This can be contrasted with, for example, regulation of the *built environment* or the ‘human-made’ environment. To put the definitional dilemma into context, and to demonstrate its relevance in environmental law, Bell and McGillivray³⁷ assert that ‘the definition of “the environment” is a central but problematic term in environmental law. It has no singular description or definition. Generally, it is defined by reference to the physical non-human environmental media including land, water, air, flora and fauna, and so on. In this context the environment is given some scientific significance’.

Many primary legal instruments³⁸ contain a definition of ‘the environment’ so that the law is clear as to what exactly is being regulated. Such legal definitions also help to provide clarity as to terminology. Frequently, such primary legislation is concerned with the *protection* of the environment and that is a principal aim of environmental law. To illustrate, the UK 1990 Environmental Protection Act states: ‘The “environment” consists of all, or any, of the following media, namely, the air, water and land; and the medium of air includes the air within buildings and the air within other natural or man-made structures above or below ground’.³⁹

The term ‘environment’ is not defined in the Treaty on the Functioning of the European Union. However, it follows from Articles 191(1) and 192(2), which are the basis for EU environmental policy, that the environment covers human beings, natural resources, land use, town and country planning, waste and water. The term ‘environment’ is also given a broad scope in EU secondary legislation, covering most aspects of environmental protection, including water and air, noise and chemicals, nature conservation, waste and some measures of a general nature.

³⁶ For the more curious reader, Hart’s *The Concept of Law* (1997) offers a challenging, philosophical critique of law as a system of rules developed by humans as social ends in themselves without any need of a moral or ethical justification for their development. This school of thought is known as legal positivism. Legal rules which emerge because we feel that there is a moral or ethical obligation belong to the school of thought known as natural law. See the definitive work of Finnis (2001). It is arguable that the system of environmental law is based on both social and ethical foundations. See generally Hutter (1999).

³⁷ Bell and McGillivray (2008, p. 7).

³⁸ The main ‘first’ or ‘original’ piece of legislation. Normally a general and all-encompassing law dealing with many issues and not one subject or issue. For example, a national Act on Environment. Secondary law would then deal with more specific issues (such as national Regulations and Orders or EU Directives, for example).

³⁹ Part I, paragraph (1), subparagraph (2).

At the national level, further illustration is offered via the 1999 Canadian Environmental Protection Act; “environment” means the components of the Earth and includes:

- (a) air, land and water;
- (b) all layers of the atmosphere;
- (c) all organic and inorganic matter and living organisms; and
- (d) the interacting natural systems that include components referred to in paragraphs (a) to (c).⁴⁰

The 1996 Lithuanian Environmental Protection Law states: “Environment” means the whole of mutually related elements functioning in nature (the earth’s surface and underground, air, water, soil, flora, fauna, organic and inorganic material, anthropogenic components), as well as the natural and anthropogenic systems uniting them’.⁴¹

The Irish Environmental Protection Agency Act, [No. 7.] 1992, states: “environmental medium” includes the atmosphere, land, soil and waters’.⁴²

Some engineering organisations also provide their own definitions of ‘environment’. These definitions offer further guidance which helps to advance the concepts outlined in this book. Such organisations also tend to tailor the definition to fit in with the scope of the particular engineering discipline. For example, the Institution of Agricultural Engineers (IAgrE)⁴³ website has the following listed under the heading of ‘Environment’: ‘the appliance of science, engineering and technology to the sustainable maintenance of the Earth including, but not limited to water and air, including all layers of the atmosphere, organic and inorganic matter and living organisms and interacting natural systems’.

1.3.2 Environmental law’s relationship with other areas of regulation

There are other distinct categories of law and regulation which might also be considered as being related to environmental law, or as being a subset of environmental law, such as the law of the sea and property law (discussed in Chapter 9), law of transport, health and safety law (discussed in Chapter 10). However, while having relevant links to environmental law, such areas regulate activities or issues that may not be exclusively concerned with the protection of the natural environment. Hence, it is important for the reader to be aware of the potential overlap between the various legal disciplines dealing with aspects of environmental protection. In this context, section 1.3.3. below will briefly discuss the evolution of ‘sustainable development law’⁴⁴ which is arguably emerging as a distinct area of regulation (further discussed in Chapter 2). This complements the focus increasingly being taken by engineers and engineering organisations in developing sustainable development agendas in engineering. In terms of policy advances, sustainable development law links environmental law, human rights law, economic law and other areas of regulation, particularly at the international level, in order to address related issues such as poverty reduction, flooding, drought, access to clean, potable water, climate change adaptation and mitigation and other global and local concerns.

The regulation of the natural environment is concerned ultimately with the protection of the flora and fauna through the safeguarding or enhancement of the environmental mediums upon which ecosystems depend. This primarily means atmosphere, water and land. However, there are some overlaps between regulation of the built environment and regulation of the natural environment.

⁴⁰ Chapter 33, section 3.

⁴¹ Article 1.

⁴² Part I, Part 4, paragraph (3).

⁴³ The professional body for engineers, scientists, technologists and managers in agricultural and allied land-based industries, including forestry, food engineering and technology, amenity, renewable energy, horticulture and the environment. See <http://www.iagre.org/> (accessed 13 June 2011).

⁴⁴ For more on this see Cordonier Segger and Khalfan (2004) and Cordonier Segger (2004).

For example, regulation imposes limits on the extent to which the built environment can be developed so that we might safeguard the natural environment. This means controlling, for example, the extent to which we build motorways, such as through planning controls, environmental impact assessment and strategic environmental assessment, so that we might lessen the adverse environmental impacts say, on local woodland areas. On this topic, the reader will find Chapter 22 of special interest. Limits may also be imposed on the design and development of a factory so that there are controls on the amount of pollution emitted into local areas, as discussed in Chapter 17.

1.3.3 Sustainable development and the law

As will be discussed in more detail in Chapter 2, the concept of ‘sustainable development’ has customarily focused on striving for *balance* between *economic* development goals and environmental protection efforts. More recently, the idea of ‘social’ development has been added to the equation.⁴⁵ Others elaborate further: ‘the concept of sustainable development provides governments and legislators the world over with a general rule of thumb by which to attempt to abide when making policy and regulatory decisions of a social, economic or environmental nature’.⁴⁶ The classic (and most widely accepted) definition of sustainable development emanates from the 1987 Brundtland Report, ‘Our Common Future’⁴⁷ from where the concept originates:

Sustainable development is ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’.

So, the concept of sustainable development gives rise to an obligation to balance engineering-related development and economic progress with the need to protect the environment and resources for current and future generations. This concept has arguably been a driving force behind the development of environmental law from 1987 onwards. Within the context of current environmental concerns, such as climate change, the concept of sustainable development begins to make more sense: simply put, take action now through the development of new techniques and technologies in order to safeguard present and future generations from the adverse consequences of global warming.

Examples of engineering feats which are leading the way in reducing CO₂ emissions to the atmosphere include the creation of the Toyota Prius car with Hybrid Synergy/Optimal Drive,⁴⁸ the development of hydrogen fuel cells, the potential application of carbon capture and storage (CCS) technologies and the development of photovoltaics. As discussed in Chapter 3, the sustainability concerns within the various fields of engineering can be driven by environmental regulations (such as those requiring the reduction of CO₂ emissions).

It is also worth noting that Article 3(3) of the Treaty on the European Union (TEU) states that the Union ‘shall work for the *sustainable development* of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment’ (emphasis added). The change of emphasis brought by the Lisbon Treaty amendment (2009) underlines the different dimensions of sustainable development (economic, social and environmental). The same

⁴⁵ MacDonald (2006).

⁴⁶ Sands (2003, p. 9).

⁴⁷ Report of the World Commission on Environment and Development, G.A. Res. 42/187, 96th plen. mtg, U.N. Doc. A/RES/42/187 (11 December 1987) (hereinafter Brundtland Report) also in book form: *Our Common Future*, World Commission on Environment and Development, Oxford Paperbacks, 1987, ISBN 978-0-19-282080-8.

⁴⁸ With average emissions nearly 15 g/km of CO₂ lower than would be expected from a similar sized car. See http://www.toyota.co.uk/cgi-bin/toyota/bv/generic_editorial.jsp?navRoot=toyota_1024_root&edname=Environment&zone=Zone+Live+with+Toyota&id=Toyota%20Community%20Projects (accessed 9 March 2011).

article also introduces specific reference to the promotion of scientific and technological progress, which are areas which have implications for environmental protection.⁴⁹

1.3.4 An overview of international environmental law: history, key principles and themes

In the current period of environmental law making, which is arguably much more ‘globalised’⁵⁰ now than in previous decades, regional and national environmental law developments are very much informed by developments at the international level. In particular since the creation of the United Nations at the end of World War II in 1945, states (more commonly referred to in international law as state actors) have worked on solving global concerns collaboratively. International institutions and conferences offer a valuable forum for international negotiations, discussions, generation of ideas, sharing of experiences, technology and financial transfers, and perhaps more importantly, resolution of some environmental issues that affect us all globally as well as locally.

In international law, states are ‘sovereign’ and this means that they are the primary subjects of international law and are free to determine for themselves the extent to which they participate in international negotiations and make international law through the adoption of treaties, protocols, declarations, conventions and other multilateral agreements collaboratively.⁵¹ At international negotiations, which often arise after evidence emerges that there is a need to address a pressing issue (such as global warming),⁵² states can discuss and, hopefully, agree on international action that is needed. If the matter is particularly serious and requires concerted international action, a legally binding multilateral⁵³ environmental agreement (MEA) may be drawn up. Such MEA may be a binding treaty, convention or a protocol (hard law agreement). Moreover, a less formal declaration (soft-law⁵⁴ agreement) for future action may be adopted. Following the signature and eventual ratification of the Treaty (or another accession mechanism permitted under national law), States are bound to follow the MEA and then have responsibility for developing and implementing their own environmental laws and policies at the national level in order to comply with its international obligations. If a sovereign state is a party to a MEA (or is part of a regional organisation such as the European Union which has legal personality to sign international agreements on behalf of the Member States), it may have to implement any environmental laws and policies which emanate from those levels.

⁴⁹ See in depth *The Treaty of Lisbon – Implications for the Environment*, available at <http://www.europarc.org/news/in-depth-the-treaty> (accessed 13 June 2011).

⁵⁰ Ellis and Wood (2006) assert: ‘Environmental protection is an international or global issue due to the biophysical reality that supersedes the political division of the globe into sovereign states and areas beyond state jurisdiction. Ecosystems are interrelated in profound and complex ways. Due to the interrelationships, environmental impacts can have widespread repercussions across vast distances and over long periods of time. As a result, no state acting alone can hope either to protect the environment within its own territory or to account for the global impacts of activities carried out on its territory. [...] [G]lobalisation [...] [is a] much-used and much contested term [which] refers at its core to forces of integration among economies around the world [...]’

⁵¹ It is possible for rules of international environmental law to emerge outside of the formal negotiations and treaty-making processes through: customary law – a term which refers to repeated state practice and a form of law making that has as much status as formal treaty making (it is then implicit- rather than explicit-law making – Bell & McGillivray 2008); through general procedural principles; through judges decisions; and through the work of international jurists. For simplicity, we shall in this book, which is directed primarily at the non-lawyer, focus mainly on treaties in international law.

⁵² Such evidence may come from policy, scientific and engineering studies, a global disaster, or similar, and may be tabled by a state, an NGO etc.

⁵³ Involving more than two countries. An agreement between two countries is referred to as ‘bilateral’ and a law passed by one country only would be ‘unilateral’.

⁵⁴ Other examples of soft law include guidance, policy documents, standards, recommendations and principles – though it is arguable that some principles, such as the precautionary principle, may have emerged to status of customary law (i.e. have become law through continued recognition and use).

Not only do rules in (hard) treaty law affect the levels of environmental protection, but soft-law or policy developments also influence the steps taken by countries. Countries may act either collectively (i.e. bilaterally – between two states; or multilaterally – between several states) or by themselves (unilaterally – by one state) to improve and protect the natural environment.

At the international level there have been a few landmark periods which have shaped environmental law at the regional and national levels. The UN Stockholm Conference on the Human Environment (5–16 June 1972) was the first major global conference to address all aspects of the environment in an attempt to find global consensus via an international legal and political framework to deal with global environmental problems. The conference was attended by representatives of 114 states, as well as a large number of international institutions and non-governmental observers.

Three non-binding instruments were adopted in the conference;⁵⁵ the most important one from a legal perspective is the Declaration containing 26 Principles (the ‘Stockholm’ Declaration) which intended to provide ‘a common outlook and . . . common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment’. The declaration is non-binding and contains a set of 26 principles to advance the protection of the environment which a large number of States agreed to follow. Among the Stockholm Principles, Principle 21 is the most important one and is recognised to be the cornerstone of international environmental law. It asserts that States have ‘the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction’. It is known as the ‘no-harm rule’ and establishes the responsibility of states not to cause transboundary harm to other states or in areas beyond national jurisdiction, such as the high seas or outer space. The no-harm rule was originally developed by an international tribunal in the *Trail Smelter Arbitration* (1941)⁵⁶ between Canada and the United States, which concerned the fumes from a smelter in Canada that cause damage to agricultural fields and crops in the State of Washington, United States.

The Stockholm Declaration is a soft-law instrument which, like other resolutions, declarations and decisions from international organisations, does not aim to create legally binding obligations. Despite the fact that they do not in themselves create legal obligations, soft-law instruments could lead to the formation of customary international law. Customary international law results from a general and consistent practice of states accompanied by a sense of legal obligation (*opinio juris*). Customary international law is recognised in Article 38 1(b) of the International Court of Justice Statute as one of the sources of international law.

Although Principle 21 is enshrined in a soft-law (i.e. non-binding) declaration, the principle is largely regarded to have emerged to the status of customary international law. In addition, under customary international law, as expressed within the ILC (International Law Commission)’s draft articles on the prevention of transboundary harm, States have the duty not just to prevent significant transboundary harm, but to *minimise the risk* of it occurring if its complete prevention is not possible.⁵⁷

In addition to Principle 21, the other most significant achievement of the Stockholm conference was the creation of the United Nations Environment Programme (UNEP). UNEP plays a major role in developing the UN’s environmental programme, for example the establishment and implementation

⁵⁵ In addition to the Stockholm Declaration, a resolution on institutional and financial arrangements was adopted, proposing action to be taken by the General Assembly to establish four institutional arrangements, including an intergovernmental Governing Council for Environmental Programmes to provide policy guidance for the direction and coordination of environmental programmes; as well as an action plan containing 109 recommendations.

⁵⁶ Available at http://untreaty.un.org/cod/riaa/cases/vol_III/1905-1982.pdf (accessed 13 June 2011).

⁵⁷ International Law Commission, Article 3 commentary 378.

of the Regional Seas Programmes, the adoption of some 30 regional treaties, as well as important global treaties addressing, for example, ozone-depleting substances, trade in hazardous waste and biodiversity (see Sands, 2003; Birnie *et al.*, 2009).

The second major global environmental conference was the UN Conference on the Environment and Development (UNCED) held in Rio de Janeiro, Brazil, on 3–14 June 1992. It was attended by 176 states and more than 50 governmental organisations and several thousand corporations and non-governmental organisations. The objective of the UNCED ('the Rio conference') was to 'elaborate strategies and measures to halt and reverse the effects of environmental degradation in the context of strengthened national and international efforts to promote sustainable and environmentally sound development in all countries'.

The Rio conference 'provided an opportunity for the international community to translate initiatives such as the Brundtland Report and the Strategy for Sustainable Living into coherent strategy of international environmental policy and law for the twenty-first century'. Hence the conference was concerned with the balance between environmental protection and economic development.

Two legally binding treaties were opened for signature – the United Nations Framework Convention on Climate Change (UNFCCC) (discussed in Chapter 7) and the Convention on Biological Diversity (CBD) – and three non-binding instruments were adopted during the Rio conference. Although non-binding, from a legal perspective the Rio Declaration on Environment and Development and Agenda 21 are particularly relevant.

The Rio Declaration represents a series of compromises between developed and developing countries in an attempt to strike a balance between environmental protection and economic development. The Declaration contains 27 Principles, providing the basis upon which states and people are to cooperate to develop international law in the field of sustainable development.

Principle 2 of the Rio Declaration – very much like Principle 21 of the Stockholm Declaration – recognises states' '(...) sovereign right to exploit their own natural resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that the activities within their jurisdiction or control do not cause damage to the environment of other states or areas beyond the limits of national jurisdiction'. In addition to re-stating the no-harm rule (Principle 2), a number of new principles emerged in the Rio Declaration, including the precautionary (Principle 15), polluter-pays (Principle 16), common but differentiated responsibilities (Principle 7) and sustainable development (Principles 6, 8, 9) principles (see further Chapter 7).

The 'principles' are at the core of international environmental law and have evolved in particular since their insertion in the Rio Declaration. 'Principles' differ from 'rules' in that while the latter aim to create legal rights and obligations, the former do not in themselves create obligations or rights but set the tone and general guidance on how rules and policies are to evolve. However, some 'principles' under international declarations may become legally binding following consistent state practice (leading to the formation of a customary rule) or following their transposition in national or regional laws.⁵⁸

In turn, Agenda 21 is an action plan and blueprint for global partnership for sustainable development, aiming at integrating environmental and developmental concerns and to set out the details for implementation of the Rio Principles. Agenda 21 sets a global commitment to national environmental strategies, plans, policies, processes to be supported and supplemented by international cooperation. It established programme areas (of variable quality) that cover virtually all aspects of human activities.

⁵⁸ For example, in a recent decision the Seabed Disputes Chamber of International Tribunal on the Law of the Sea (ITLOS) opined that the precautionary approach reached the status of customary law. See *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area* (February 2011) (Request for Advisory Opinion submitted to the Seabed Disputes Chamber) (in particular paragraph 135).

Although the Rio Declaration and Agenda 21 are not, given their soft-law instrument status, as such binding, some principles may reflect rules of customary international law, emerging rules or guidance to future legal action.

To mark the 10th anniversary of UNCED in Rio, the World Summit on Sustainable Development (WSSD) took place in Johannesburg in September 2002. No legally binding convention was adopted, the focus instead lying on eradication of poverty and implementation of the Millennium Development Goals (2000). Two soft-law instruments were adopted in WSSD, though: the Johannesburg Declaration on Sustainable Development, which however contains no specific action beyond a general commitment to sustainable development, and the WSSD Plan of Implementation, which merely restates (and arguably helped to consolidate) the Principles which had already been agreed under the Rio and Stockholm Declarations, and have been criticised for being ‘long on general commitments and aspirations but short of specific actions to be taken’ (Birnie *et al.*, 2009).

Finally, the UN Conference on Sustainable Development (‘Earth Summit’) will take place in Rio on 20–22 June 2012. The two key themes of the conference are ‘the green economy in the context of poverty eradication and sustainable development’ and ‘the institutional framework for sustainable development’. The main objectives of the conference are to secure political commitment to sustainable development; assess progress towards internationally agreed commitments; and address new and emerging challenges.⁵⁹ At the First Preparatory Committee meeting for Rio + 20 (20th May 2010), known as Prepcom1, a level of consensus emerged amongst delegations that all countries and stakeholders need to enhance efforts and concrete actions to achieve sustainable development. Moreover, a number of emerging challenges have been identified as ‘urgent’ by governments and stakeholders alike, including the financial crisis; food crisis; migration; energy crisis; water scarcity; biodiversity and ecosystem loss; desertification; natural disasters and the ability to prepare for and recover from them; achievement of the Millennium Development Goals; globalisation; health security; increased resilience at the national and global level; and climate security.

One case that illustrates an interstate dispute arising from transboundary environmental damage is the International Court of Justice (ICJ) case⁶⁰ *Gabcikovo-Nagymaros (Hungary v Slovakia)*⁶¹ from 1997, which involved the building of a hydroelectric dam (barrage system) on the river Danube. There were several issues at hand in this case which concerned general international law matters, rather than strictly environmental matters (such as whether there was a breach in the Treaty agreed between the two countries), and it is arguable that a chance was missed by the ICJ to advance the scope of environmental law making.⁶² Nevertheless, it is still a significant case for our purposes and can enlighten on how environmental law may impact on a project’s management. In 1977, Hungary and Czechoslovakia agreed a Treaty in Budapest in order to construct a major hydroelectric dam on the river Danube as a ‘joint investment’. According to the preamble of the 1977 Treaty, the aim of the project was primarily an economic one. The dam would produce hydroelectricity, improve navigation on the relevant section of the Danube and open it up for trade, and protect the areas along the banks against flooding, protect the environment and develop irrigation systems in the area. The contracting parties contributed equally financially and in terms of the construction and agreed to share the operation of the works. After 1977, the economic, political and environmental positions within both countries changed significantly. Hungary began to doubt the economic viability and the environmental impact of the project, and in October 1989, in response to domestic pressure, Hungary abandoned its works at Nagymaros. The Court was asked to answer three questions:

⁵⁹ For more information, see <http://www.earthsummit2012.org/> (accessed 13 June 2011).

⁶⁰ See <http://www.icj-cij.org/docket/index.php?p1=3&p2=3&code=hs&case=92&k=8d> (accessed 18 March 2011). (If you search the ICJ site, search for case law from 1993 when this case was originally filed.)

⁶¹ A digestible article discussing the case is found at http://www.dundee.ac.uk/cepmlp/car/html/car3_article8.htm (accessed 18 March 2011). The summary of the judgement: <http://www.icj-cij.org/docket/files/92/7377.pdf> (accessed 18 March 2011).

⁶² See the summary of the judgement: <http://www.icj-cij.org/docket/files/92/7377.pdf> (accessed 18 March 2011) – in particular see the separate opinion of Vice-President Weeramantry, p. 8.

1. whether Hungary was entitled to suspend and subsequently abandon its part of the Project;
2. whether the then Czech and Slovak Federal Republic was entitled to proceed with a 'provisional solution' involving damming the river at another location and thus arguably causing environmental damage; and
3. what were the legal effects of the notification by Hungary in 1992 of the termination of the Treaty.

On 25th September 1997, the Court found that both Hungary and Slovakia (Czechoslovakia was dissolved at the end of 1992) had breached their legal obligations. Hungary was not entitled to suspend and subsequently abandon 'the works' on the Project in 1989. Czechoslovakia had been entitled to proceed, in November 1991, to the 'provisional solution' as described in the terms of the Special Agreement but was not entitled to put it into operation, from October 1992.

The Court called on both states to negotiate in good faith and take all necessary measures in order to meet the objectives of the 1977 Budapest Treaty. The Court found that unless Parties would have agreed otherwise, Hungary had to compensate Slovakia for the damage sustained by Czechoslovakia on account of the suspension and abandonment of works for which it was responsible. Furthermore, Slovakia had to compensate Hungary for the environmental damage it had sustained on account of putting into operation the 'provisional solution' by Czechoslovakia and its maintenance in service by Slovakia.

1.3.5 European Union environmental law

The European Union

The European Union is not a federation of states like the United States. Nor is it simply an organisation for cooperation between governments, like the United Nations. It is, in fact, unique. The countries that form part of the EU (its 'member states') pool their sovereignty in order to pursue integration in economic, social, environmental and other fields.

The European Union is a family of democratic European countries, committed to working together for peace and prosperity. It is not a super-State intended to replace existing states. Its Member States have set up common institutions to which they delegate some of their sovereignty so that decisions on specific matters of joint interest can be made jointly at European level.

The historical roots of the European Union lie in World War II. Beyond the core objective of economic cooperation, European integration was conceived to prevent such killing and destruction from ever happening again. Initially, the EU consisted of just six countries: Belgium, Germany, France, Italy, Luxembourg and the Netherlands. Denmark, Ireland and the United Kingdom joined in 1973, Greece in 1981, Spain and Portugal in 1986, and Austria, Finland and Sweden in 1995. In 2004 the biggest ever enlargement took place with 10 new countries joining. In January 2007, Bulgaria and Romania joined the EU, bringing the total number of members to 27 (at present). Croatia is likely to access to the EU in the summer of 2012.

The Lisbon Treaty was signed on 13 December 2007 by the heads of government and state of the member states and was ratified in November 2009, following the Irish second referendum⁶³ and the Czech and Polish ratifications. It came into force in December 2009. Under Lisbon, the intergovernmental pillars of the EU (for criminal law and foreign policy cooperation) are abolished, and two separate bodies of law are generated: an amended version of the Treaty on the European Union and the Treaty on the Functioning of the Union, which is the new denomination of the Treaty establishing

⁶³ The Irish 'no vote' on the Treaty on 12 June 2008 had shed doubt on whether the Treaty of Lisbon would indeed be ratified by all member states.

the European Community (TEC). The Lisbon Treaty establishes a more integrated Union and allows for further scrutiny by national parliaments of EU (environmental) laws and policies.

The development of EU environmental policy

Historically the EU maintained an essentially economic-centred policy when the original six Member States signed the Treaty of Rome in 1957 and formed the *European Economic Community* (EEC).⁶⁴ However, the European Union was not merely another free trade agreement: it had profound political significance.⁶⁵ But the first, most attainable objective behind the European integration then was clearly economic – the establishment of a common market harbouring the free movement of goods, persons, services and capital.⁶⁶ This period corresponds, according to Jans and Vedder, to the first phase of the history of EC environmental law, during which the Community paid no specific attention to the development of an environment policy.⁶⁷ This phase would last until the European Council Summit in 1972 where social concerns were for the first time pushed to the fore (second phase). The Community has since progressively shifted from a traditionally economic to a more social-orientated policy making, resulting in fundamental changes – more precisely after the Single European Act in 1987 and the Treaty of the European Union in 1993 – which would be a determinant for the transformation of the Community’s role, as put by one author, ‘from bastion of free trade to vanguard of citizens welfare’.⁶⁸ Most significant has been the creation of the environmental Title in the EC Treaty after the enactment of the Single European Act (1987) (third phase), which enshrined for the first time an environmental policy in the Treaty (Articles 191–193 TEFU) (ex-Articles 174–176 EC), and the allocation of the *protection of the environment* as one of the essential objectives of the Community (ex-Article 2 EC).⁶⁹ Also significant has been the adjective connected to the level of environmental protection which has been required to be *high*.⁷⁰ The Treaty of Amsterdam (1997), which amended the EC Treaty in 1999, introduced the co-decision procedure under Article 175 EC (now Article 192 TFEU) and is an achievement for environmental protection because it strengthens the power of the Parliament (often regarded as the ‘greenest institution’).⁷¹ Also important in this perspective has been the development of the case law of the European Court of Justice (ECJ) which, on more than one occasion, has had the opportunity to disregard free trade interests to uphold measures aimed at the protection of the environment. Most remarkably, in its much applauded decision in 1988 in the *Danish Bottles* case,⁷² the ECJ recognised the protection of the environment as one of the Community’s essential objectives.

To remain a credible democratic and representative body, the EU has to give greater and greater priority to the environmental concerns of Europeans. In this context, the inclusion of the concept of ‘sustainable development’ in Article 3(3) TEU (see also former Article 2 TEC) has also been of paramount importance, incorporating into the European sphere many of the now well-established principles of international environmental law, such as the principles of inter-generational equity and prudent use of natural resources.⁷³ By recognising the principle of sustainable development, it is established that there should be no clash between trade and environmental objectives.⁷⁴ If it is true

⁶⁴ Joseph (1995).

⁶⁵ *Ibid.*

⁶⁶ *Ibid.*

⁶⁷ See Jans and Vedder (2008, pp. 3–9).

⁶⁸ Dougan (2000).

⁶⁹ TEU (4th phase).

⁷⁰ Articles 2 and 191(2) of the TFEU.

⁷¹ Burns (2005).

⁷² Case 302/86 *Commission v. Denmark* (1988) ECR 4607, paragraph 121.

⁷³ See Sands (2003, pp. 231–285).

⁷⁴ Jans and Vedder (2008) and Ziegler (1996).

that the substantial idea behind the European integration was indeed to create a strong and competitive single market, it is doubtful that the Europeans would have accepted this ‘main objective’ were it to be accomplished at the expense of their quality of life.

EU law making and the EU competence in the environmental field

Law making at the EU level generally requires the involvement of three EU institutions: the European Parliament, which represents the EU’s citizens and is directly elected by them; the Council of the European Union, which represents the individual member states; the European Commission, which seeks to uphold the interests of the Union as a whole. In principle, it is the Commission that proposes new EU legislation but it is the Parliament and Council that adopt them. The European Union institutions produce the policies and laws (directives, regulations and decisions) that apply throughout the EU. For environmental policy measures based on Articles 191 and 192 TFEU, the legislative procedure involves co-decision between the Council of Ministers and the European Parliament (thus allowing an element of democratic scrutiny over policies adopted) and qualified majority voting (rather than unanimity) in the Council (thus preventing one Member State from exercising veto powers over the measure).

The competence of the European Union in the area of environmental protection is shared with the Member States. So until national laws have been harmonised, Member States are free to pursue any environmental policy of their own, provided that it complies with the relevant provisions of the FEU Treaty.⁷⁵ If the EU fails to take action to protect a given environmental objective, Member States retain their power to legislate and to decide what they find a ‘reasonable’ degree of environmental protection.⁷⁶

The European Community is competent to pursue any environmental policy in view of achieving the objectives pursued under the first paragraph of Article 191 TFEU (ex-Article 174 EC).⁷⁷ These are (1) preserving, protecting and improving the quality of the environment; (2) protecting human health; (3) prudent and rational utilisation of natural resources; and (4) promoting measures at international level to deal with regional or worldwide environmental problems, *and [post-Lisbon] in particular combating climate change* (emphasis added).

As can be seen, the list of objectives is very broad in scope and allows the Community institutions a high level of flexibility when selecting in which areas of environmental policy to act. As there is no definition of the term ‘environment’ in the Treaty, the first objective stated in Article 191 TFEU could be used to pursue almost every aspect of environmental regulation – subject to the principle of subsidiarity and proportionality. There is no explicit EU competence under Article 191 or 192 TFEU however, for measures to be adopted with the purpose of protection of the ‘built environment’.

While the main principles and objectives of EU environmental policy remain largely unchanged following the ratification of the Lisbon Treaty in 2009, the Treaty reinforces the EU’s commitment to sustainable development, the fight against climate change and development of renewable energy sources. Arguably one of the most significant changes introduced by the Lisbon Treaty to the field of EU energy/environmental law was the creation for the first time of a clear legal basis for harmonisation of energy policies.⁷⁸ Article 194(1) TFEU states that:

In the context of the establishment and functioning of the internal market and with regard to the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of solidarity between

⁷⁵ Jans and Vedder (2008, p. 87).

⁷⁶ Kraemer (2007, p. 74).

⁷⁷ Introduced by the 1987 Single European Act.

⁷⁸ On the impact of the Lisbon Treaty on EU environmental law, see further Benson and Jordan (2008) and, in depth, *The Treaty of Lisbon – Implications for the Environment*, available at <http://www.europarc.org/news/in-depth-the-treaty> (accessed 13 June 2011).

Member States, to . . . ensure the functioning of the *energy market*; . . . *ensure security of energy supply in the Union*; . . . *promote energy efficiency and energy saving and the development of new and renewable forms of energy*; and . . . *promote the interconnection of energy networks*.

This legal basis under the TFEU will allow the member states to pursue further integration in the energy field beyond the measures already adopted, as discussed in Chapter 6.

1.3.6 UK environmental law

Environmental policy in the UK aims to safeguard and improve the environment, and to integrate the environment with other policies (such as those related to health, construction, agriculture, nano-technology, risk management, etc.) across Government, business and consumers. Although there is no ‘policy blueprint’ (as there is no written constitution) in the UK, environmental law and policy is built upon the principles of polluter pays; precaution; prevention; sustainable development; and equity, and takes into account human rights and fundamental freedoms, and a variety of broader environmental values. The UK’s legacy in environmental protection dates back to the 1800s on account of the environmental and health-related impacts of the industrial revolution (with the promulgation of the 1875 Public Health Act).

One of the major features of environmental protection policy development in the UK is the creation of White Papers, which are Government reports that outline policy. These can be contrasted with Green Papers, which are issued less frequently, are more open-ended and ideas-based and may merely propose a strategy to be implemented in future legislation. Both White Papers and Green Papers may influence or be influenced by those working in the engineering sector.

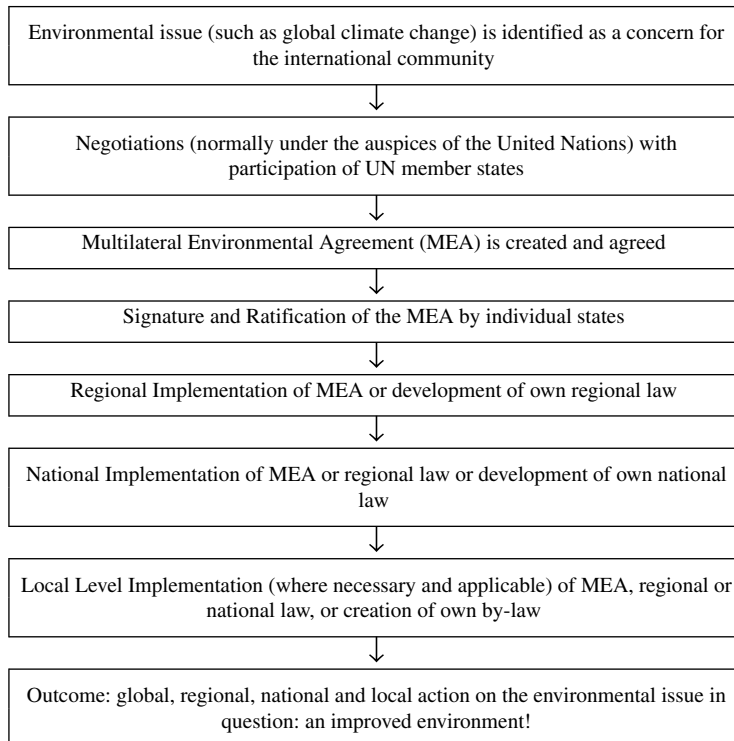


Fig. 1.1 Basic environmental law making and implementation hierarchy.

- A Green Paper is a discussion document intended to stimulate a debate and launch a process of consultation.
- A White Paper is an authoritative report that is used to inform readers, help people make decisions and is often requested and used in politics, policy, business and technical fields (as discussed in Chapter 5).

The main body of environmental legislation covering Great Britain⁷⁹ is found in the Environmental Protection Act 1990⁸⁰ (EPA) and the Environment Act of 1995.⁸¹

The Environmental Protection Act 1990 (as amended) comprises nine parts. Part I concerns prescribed processes, substances and emissions control. Part II covers waste on land, Part IIA contaminated land, Part III regulates statutory nuisance and clean air, Part IV litter etc., Part V amendment of the Radioactive Substances Act 1960, Part VI genetically modified organisms, Part VII nature conservation in Great Britain and countryside matters in Wales, Part VIII miscellaneous and Part IX contains general administrative provisions.

The 1995 Environment Act established the Contaminated Land regime (introduced as Part IIA of the EPA 1990) and also provided the legal basis for the creation of the Environment Agency of England and Wales.⁸² See further Chapter 19.

The Environment Agency of England and Wales and the Scottish Environmental Protection Agency have jurisdiction over enforcement matters under the Environment Act 1995 with powers to inspect, report and take action over pollution.

There are numerous pieces of secondary/sector-specific/issue-specific legislation (known as Statutory Instruments) which regulate certain issues or activities such as the use of certain hazardous substances in electric and electronic equipment, the disposal of batteries, or the trading of greenhouse gases permits. Often, these instruments implement EU environmental law. Other key UK legislation is discussed elsewhere in this book, such as the Pollution Prevention and Control Act 1999.

How to 'find' and 'use' legislation'

The easiest way to access legislation is on the Internet. It is advisable to go to the official government source of the legislation rather than to rely on what others may have uploaded or to solely rely on their interpretation of it. So, in relation to the Environmental Protection Act 1990, above, for example, we would go to the official UK Government website <http://www.legislation.gov.uk>,⁸³ type in the name of the Act (or if the title of the legislation that regulates an issue is not known, simply type in the subject matter of the legislation). Legislation can be long and at times overwhelming, so spend some time trying to figure it out and searching around the site for information relevant to you. On the UK government's website, for example, after the search, the document is returned with tabs for Table of Contents, Content, Explanatory Notes, and More Resources.

Often, legislation has been *amended* or *repealed*, so it is important to be aware of such changes and to look for the most recent versions. Sometimes you may have to cross-refer to other pieces of law to be fully up-to-date on an issue.

⁷⁹ N.B. This does *not* cover Northern Ireland.

⁸⁰ Available online from the official Government web repository: <http://www.legislation.gov.uk/ukpga/1990/43/contents> (accessed 18 March 2011).

⁸¹ <http://www.legislation.gov.uk/ukpga/1995/25/contents> (accessed 18 March 2011).

⁸² <http://www.environment-agency.gov.uk/> (accessed 18 March 2011).

⁸³ Correct at the time of writing (accessed on 13 June 2011), though this URL may change in the future.

The key administrations in the UK

The State of the United Kingdom of Great Britain and Northern Ireland (the United Kingdom or UK) comprises the four constituent parts of England, Scotland, Wales (the grouping to which the political term Great Britain is attributed) and Northern Ireland. The United Kingdom has, however, been a centralised, unitary state for much of its history.

The United Kingdom is a constitutional monarchy. The monarch has extensive powers in theory, but plays more of a ceremonial role than a governing role. The monarch is nevertheless an integral part of the UK legislature, the Parliament, and theoretically gives Parliament the power to meet and create legislation. In order for an Act of Parliament to become law it has to be given the Royal Assent and be signed by the Queen (though this is merely a formality).

Executive power is exercised by the Government drawn from Parliament, headed by the Prime Minister. The Parliament is bicameral and comprises the upper, unelected House of Lords and the lower, elected House of Commons. The House of Lords consists of hereditary life peers while the lower House of Commons is completely and directly elected. The House of Commons has more power of the two Houses. The Prime Minister is the head of Government and appoints other Ministers from Parliament who together form the Cabinet. Sovereignty, however, remains fully vested in the monarch, who is Head of State, but under the United Kingdom's constitutional monarchy, the Government is answerable and accountable to the House of Commons.

At the central level of State Government there are diverse Departments with nominated Cabinet members, who are designated as Ministers, responsible for their running. Most departments are headed by Ministers. However, there are some non-ministerial departments headed by a permanent office holder and Ministers with other duties that are accountable to Parliament.

On account of the 1998 devolution away from the central government to regional assemblies, the Scottish Parliament, the Welsh Assembly and the Northern Ireland Assembly⁸⁴ have responsibility for the day-to-day issues devolved to them from the UK Parliament and can also make legislation in those areas. However, the UK Parliament ultimately has the power over reserved areas, an example of which is defence.

At the time of writing, there were two main Ministerial Departments for dealing with environmental matters: the Department of Energy and Climate Change (DECC) and the Department for Environment, Food and Rural Affairs (DEFRA). DEFRA has responsibility for the following areas: Agriculture; Air quality; Animal health and welfare; Biodiversity; Conservation; Chemicals and pesticides; Fisheries; Flooding; Food; Forestry; Hunting; Inland waterways; Land management; Marine policy; National parks; Noise; Plant health; Rural development; Sustainable development; Waste management; and Water management. Moreover, the Department for Business, Innovation and Skills (BIS) has responsibility, *inter alia*, for business regulation, science, research and innovation.

Legislation and its implementation

The Parliament of the United Kingdom of Great Britain and Northern Ireland is the supreme legislative institution in the country. The doctrine of parliamentary sovereignty vests the Parliament with ultimate legislative authority in the United Kingdom. Laws are created through Acts of the United Kingdom Parliament. England and Wales, Scotland and Northern Ireland have their own devolved domestic legal systems pertaining to certain matters though they are still subject to Acts of Parliament of the United Kingdom as the UK Parliament has ultimate authority. In 1973 it was the

⁸⁴ Northern Ireland is currently, at the time of writing, under direct rule from the UK Parliament. The Secretary of State for Northern Ireland suspended the Northern Ireland Assembly and the Executive with effect from midnight on 14 October 2002 due to non-cooperation over the Good Friday Peace Agreement.

United Kingdom which acceded to what is now the EU and not England, Wales, Scotland or Northern Ireland separately.

The United Kingdom has an uncodified and partially unwritten constitution. As a result, no single document regulates how the government works, and unwritten constitutional conventions (informal and uncodified procedural agreements that are followed by the institutions of the State) are widely used. The ‘constitution’ is based on the principle that Parliament is the ultimate sovereign body in the country.

The House of Commons comprises publicly elected Members of Parliament (MPs). The MPs debate topical issues and propose legislation. The House of Lords makes laws, holds government to account and investigates policy issues. Most members are appointed because they are experts in their fields. The Supreme Court, created in 2005 and in operation from 2009, is the highest court in the UK. The Court hears appeals from lower courts in the United Kingdom’s three legal systems: England and Wales, Northern Ireland and Scotland.

England and Wales, Scotland and Northern Ireland have distinctly different ‘domestic’ legal systems and jurisdiction based on their own devolved parliaments. In the particular case of environmental legislation, the devolved governments have powers to make subsidiary legislation in the form of regulations but primary legislation (Acts of Parliament) remains the responsibility of the UK Government.

Scotland has retained a distinct legal system (Scots law) based on Roman law which combines features of both civil law and common law for domestic matters. The Scottish Executive governs the country on specific domestic matters and is accountable to the Scottish Parliament while the UK Parliament has responsibility for Scotland’s defence, international relations and certain other areas. On account of the separation of Scots law many Acts of the UK Parliament do not apply to Scotland and are either matched by equivalent Acts which apply to Scotland alone or, since 1999, by legislation set by the Scottish Parliament relating to devolved matters. Scots law is also subject to European law under the Treaty of Rome, and laws which implement EU legislation can now be passed by the Scottish Executive within its areas of legislative competence.

The legal system of Northern Ireland, governed by the Northern Ireland Assembly, has, like Scotland, responsibility for domestic matters and can adopt primary legislation in certain areas although it is common law-based like England and Wales. However, while the Scottish Executive and the Northern Ireland Assembly can pass primary legislation in such areas as agriculture and health, the Welsh Assembly’s powers only allow it to pass secondary legislation in the form of statutory instruments and to develop and implement environmental policy. All three national assemblies, nevertheless, have to align their environmental laws with those of the EU, as the UK is a Member State.

Traditionally the legal system of England and Wales has largely been based on Common Law which is unwritten law (or non-statutory law) with sources in custom, in legal writings and in previous court decisions, as opposed to being defined in statute. Contemporary environmental law has been developed through the courts and also through the statute books, forming Statute Law. Statute law is developed to control, permit or protect activities and the environment.

Her Majesty’s Stationary Office (HMSO) has core responsibility for the management of Crown copyright and the statutory responsibilities for dissemination of legislation from the UK and sub-national levels and the official Gazettes. HMSO performs its core activities operating from within the Office of Public Sector Information (OPSI). The OPSI maintains a publicly accessible website which contains information and links to legislation and explanatory notes.⁸⁵

Statute law consists of Acts of Parliament – primary legislation – and ‘delegated’ or secondary legislation made by Ministers under powers conferred on them by an Act. UK Primary legislation begins life as a draft law in the form of a Parliamentary Bill. When approved by both House of Parliament and given the royal assent the Bill then becomes an Act and enters into force on the day the Bill receives the Royal Assent, unless the Act provides for other dates. UK Acts of Parliament

⁸⁵ See <http://www.opsi.gov.uk/about/index.htm> (accessed 13 June 2011).

comprise two main types. Public General Acts are measures that normally have complete effect within their subject area and normally apply to the whole of the UK although they can be limited to one or more constituent parts of the UK. They are the most common type of Act. Private Acts, which are subject to a special form of parliamentary procedure, are more specific and often affect the powers of particular bodies, such as local authorities, or the rights of individuals. ‘Hybrid’ Acts that are partly public, partly private are possible but rare.

Some Acts of Parliament provide government ministers or other authorities with the power to regulate administrative details by means of ‘delegated’ or secondary legislation, or otherwise known as Statutory Instruments (SIs) or Statutory Rules (SRs – Northern Ireland only). SIs (and SRs) can comprise Orders in Council, Regulations and Rules and they are normally drafted by the legal department of the Ministry concerned and may be subject, when in draft form, to consultations with interested parties.

Environmental management

The Secretary of State for Environment, Food and Rural Affairs (the ‘Secretary of State’) is the ‘Minister’ in charge of the Department for the Environment, Food and Rural Affairs (DEFRA),⁸⁶ the central ‘ministry’ with responsibility for UK environmental issues and policy. The Secretary of State has powers to enact secondary environmental legislation for England and Wales. The Secretary of State, at the time of writing, had three main responsibilities including overall responsibility for all Departmental issues, representation of the UK at the EU Agriculture and Fisheries Council and at the EU Environment Council and lobbying for the UK in other international negotiations on sustainable development and climate change.

DEFRA, which has many functions including those of research and public consultation, has the competency to submit proposals for environmental legislation. DEFRA works for the essentials of life – food, air, land, water, people, animals and plants. Their remit is the pursuit of sustainable development – weaving together economic, social and environmental concerns. DEFRA therefore brings all aspects of the environment, rural matters, farming and food production together; is a focal point for all rural policy, relating to people, the economy and the environment; and has roles in both European Union and global policy making, so its work has a strong international dimension.

The Department for Transport has competency, among other things, for integrated transport and local transport. The Department of Health is concerned with, *inter alia*, those environmental issues that (may) impact upon human health.

The Environment Agency of England and Wales (the Agency)⁸⁷ was established through Part I of the 1995 Environment Act as an independent body. It does not have Crown immunity unless in cases of exercising a Ministerial function (s.38). The Agency has a regulatory and enforcement responsibility including licensing and pollution control in relation to Water Quality; Process Industries Regulation; Radioactive Substances Regulation; Waste Management and Regulation; Land Quality; Flood Defence; Water Resources; Fisheries; Conservation; Recreation; Navigation; and Environmental Protection in general. It does not have law-making powers. The Secretary of State is empowered to issue additional directions to the Agency. The Agency operates a central Head office, National Laboratory and Information Services, Regional Offices and Area Offices.

The Agency plays a major role by regulating the release of pollutants into air from over 2000 of the larger or more complex industrial processes. Over the next few years the role will expand in accordance with European legislation requirements to regulate a wider range of processes, including landfills and some sewage treatment works.

⁸⁶ See <http://www.defra.gov.uk/> (accessed 13 June 2011).

⁸⁷ See <http://www.environment-agency.gov.uk> (accessed 13 June 2011).

Through its powers in pollution control, the Environment Agency also has an important role in working with Local Authorities, the Highways Agency and other organisations to deliver the Government's Air Quality Strategy in England and Wales.

The National Assembly of Wales is responsible for the development and implementation of the planning system in Wales and the Planning Division of the Department for Environment, Planning & Countryside has responsibility for developing and keeping under review secondary legislation and for supervising the activities of the Planning Inspectorate Executive Agency in Wales. The Inspectorate is an executive agency responsible for planning appeals and other planning, housing and related developmental casework, including public inquiries or hearings and appeals.

Policies, plans and programmes

One of the major features of environmental protection policy development in the UK is the creation of White Papers, which are Government reports that outline policy. These can be contrasted with Green Papers, which are issued less frequently, are more open-ended and may merely propose a strategy to be implemented in future legislation.

A groundbreaking White Paper was the 1990 report, 'This Common Inheritance' (Cm 1200), which outlined the commitment to the planned development of environmental policy. This was followed in 1999 by the White Paper, 'A Better Quality of Life' (Cm 4345) which addressed sustainable development.

The Environment Agency produces Position Statements to outline where they stand on important issues and to present the solutions that they call for. Consultation documents and guidance documents on various aspects of the environmental protection and industrial pollution control regimes are produced by DEFRA and by the Environment Agency.

The Freedom of Information Act 2000 gives rights of access to a wide range of information. However, rights of access to environmental information are provided by a separate statutory regime. The Environmental Information Regulations (SI No. 3391) were laid down in December 2004, and bring into UK law a new EU Directive 2003/4/EC on public access to environmental information. The new regulations came into effect in January 2005.

Local self-government in England and Wales

In non-metropolitan areas, environmental governance is divided between District Councils and County Councils ('local authorities'). To illustrate, County Councils (there are 34 in England) have competency for issues related to transport, highways, mineral extraction, strategic planning, emergency planning and local planning issues within their jurisdiction. They are responsible for overseeing the operation of waste disposal companies. The County Councils are elected bodies with several departments and full-time civil servant staff.

District Councils (375 in England and Wales; 32 London Boroughs, plus the Corporation of London; 36 Metropolitan District Councils; 238 English District Councils; 47 English Unitary Councils and 22 Welsh Unitary Councils) have competency for land-use planning (including deciding whether an EIA is required), housing, public health, waste collection and recycling, noise and air pollution matters. District Councils in England and Welsh Unitary Councils are also responsible for waste collection. Waste disposal is also the responsibility of Welsh Unitary Councils.

Local Authorities control air pollution from 20 000 or so smaller industrial processes. Emissions from some other major sources of air pollution, such as transport, are tackled through a combination of measures at European, national and local level.

By way of further example of the functions of a London Borough Council, the Royal Borough of Kensington and Chelsea Directorate of Environmental Health includes several different implementation functions, namely trading standards, food safety, health and safety at work, private sector housing, noise and nuisance control and licensing. Each area of work uses different

legislation to secure its aims and each has its own extensive body of guidance, which has been developed from experience.

Environmental legislation

The main body of environmental legislation (supported by numerous pieces of secondary legislation) covering Great Britain (N.B. This does *not* cover Northern Ireland) is found in the Environmental Protection Act 1990, the Environment Act of 1995 and the Pollution Prevention and Control Act 1999. There are, however, distinct secondary legislative procedures for Wales and Scotland in regard to the latter Act. Northern Ireland does not have (and is unlikely to have) an all-encompassing Act such as the EPA 1990.

The Environmental Protection Act 1990 (as amended) comprises nine Parts. In summary, Part I concerns prescribed processes, substances and emissions control. Part II covers waste on land and Part III regulates statutory nuisance and clean air. Part VI defines a regime of statutory notification and risk assessment for genetically modified organisms (GMOs). Part VII governs nature conservation in Great Britain and countryside matters in Wales.

The Environment Agency of England and Wales and the Scottish Environmental Protection Agency have jurisdiction over enforcement matters under this Act.

The 1995 Environmental Act established the Contaminated Land regime (introduced as Part IIA of the EPA 1990) and provided the legal basis for the creation of Environment Agency of England and Wales.

The Pollution Prevention and Control (PPC) Regulations⁸⁸ implement the European Community (EC) Directive 96/61/EC on Integrated Pollution Prevention and Control ('the IPPC Directive'), insofar as it relates to installations in England and Wales. Separate Regulations apply the IPPC Directive in Scotland and Northern Ireland and to the offshore oil and gas industries. Prior to the coming into force of the PPC Regulations, many industrial sectors covered by the IPPC Directive have been regulated under Part I of the EPA 1990. This part introduced the systems of Integrated Pollution Control (IPC), which controlled releases to all environmental media, and Local Air Pollution Control (LAPC), which controlled releases to air only. Other industrial sectors new to integrated permitting, such as the landfill, intensive farming and food and drink sectors were regulated, where appropriate, by separate waste management licences issued under Part II of the EPA and/or water discharge consents under the Water Resources Act 1991 or Water Industry Act 1991.

The PPC Regulations create a coherent new framework to prevent and control pollution, with two parallel systems similar to the old regimes of IPC and LAPC which were completely replaced by 2007. The first of these – the 'Part A' regime of IPPC – applies a similar integrated approach to IPC while delivering the additional requirements of the IPPC Directive. 'Part A' extends the issues that regulators must consider alongside emissions into areas such as energy use and site restoration. The main provisions of IPPC apply equally to the ex-IPC processes and the other sectors new to integrated permitting. There are also some further requirements that apply solely to waste management activities falling under IPPC. The IPPC Directive applies to those landfills receiving more than 10 tonnes per day or with a total capacity exceeding 25 000 tonnes (but excluding landfills taking only inert waste), the Landfill Directive applies to all landfills. The PPC Regulations have been amended to include all landfills.

The 'Part B' regime of Local Air Pollution Prevention and Control (LAPPC) represents a continuation of the old LAPC regime. LAPPC is similar to IPPC from a procedural perspective, but it

⁸⁸ Pollution Prevention and Control (England and Wales) Regulations 2000, SI 2000/1973 and Pollution Prevention and Control (Scotland) Regulations 2000, SSI 2000/323.

still focuses on controlling emissions to air only. DEFRA provides separate guidance on local authority air pollution control. The new Industrial Emissions Directive (2010) (discussed in Chapter 17) must be transposed to UK law by 6 January 2013.

1.4 KEY CONCLUSIONS

- There is significant interplay between science and law and policy making. Given the strong role of science in influencing policy developments, scientific developments are under increasing scrutiny by the media and the public. Technologies cannot by themselves solve environmental problems, requiring an interplay between technologies, policies and regulation.
- Nation states are at the centre of international environmental law making. In order to ensure maximum participation and flexible implementation, states have adopted non-binding declarations of principles and ‘framework’ conventions in major multilateral environmental conferences, which set the fundamentals of how environmental policy should develop at the international, regional and national levels.
- Although the Lisbon Treaty (2009) has not brought fundamental changes specific to the framework of EU environmental policy, there is a much clearer commitment to sustainable development, to combating climate change and to sustainable energy.
- The governance structure of UK environmental law suggests that there is need for increased coordination among different government departments and organisations whose roles on advancing environmental policy often overlap.

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- Ziegler, A.R. (1996). *Trade and Environmental Law in the European Community*. Oxford University of Press, Oxford.

CASE STUDIES

http://www.ice.org.uk/downloads/little_book_full_colour.pdf

<http://www.imeche.org/about/keythemes/environment/>

Follow-up information

Students can seek out and gather information on environmental law developments from many sources. Professional engineering bodies regularly provide internet-based information about the latest proposals or actual legal developments in certain areas or in relation to particular techniques, materials, chemicals or processes that may be employed in certain fields of engineering.

Reputable newspapers carry insights into developments in the environmental law arena (see, for example, the Guardian, www.guardian.co.uk). Searching on the European Commission 'Europa' website (europa.eu/index_en.htm) the student will find a wealth of information and legislation. Further information about and the text of major multilateral environmental agreements are accessible online from the website maintained by their Secretariats (see e.g. <http://unfccc.int>).

List of engineering associations that have an environmental arm:

<http://www.engc.org.uk/institutions/institutions.aspx>

<http://www.environmental.org.uk/index.php?name=Content&pid=32>

<http://www.ice.org.uk/knowledge/index.asp>

<http://www.netregs-swmp.co.uk/simple-guide.pdf>

<http://www.feani.org/>

<http://www.iom3.org/divisions.htm>

<http://www.imeche.org/index.htm>

<http://www.ceees.org/>

<http://www.sees.se/index.htm>

<http://www.icheme.org/enetwork/mainframeset.asp?areaid=176>

<http://www.bgs.ac.uk/science/alert/home.html>

<http://www.bgs.ac.uk/science/environ.html>

PART ONE – QUESTIONS AND ACTIVITIES

1. In which ways does science influence law and policy?
2. To what extent is science considered in law-making processes at the international, EU and UK levels?
3. Are the UK government departments given advice by scientists? How is scientific advice given to the government and particular government departments?
4. To what extent do technological developments require intervention by regulators?
5. Do you agree that international environmental law is inherently weak as, arguably, a common denominator must be found among the different viewpoints and interests of developed and developing states?
6. What is soft law? Why have soft-law declarations been used in order for states to agree on minimum standards/principles of environmental protection?
7. What is required for the emergence of a rule of customary international law? Has Principle 21 of the Stockholm Declaration reached this status?
8. How relevant was the Rio 1992 conference to the development of international environmental law? To what extent have the 'Rio principles' been consolidated in subsequent conference(s)?

9. Describe how environmental law is made in the EU. Who are the main actors in EU environmental law making and what role do they play?
10. To what extent is 'sustainable development' enshrined in the EU legal framework?
11. What were the changes introduced by the Lisbon Treaty (2009) to EU environmental law? Are these changes significant?
12. Which government departments contribute to environmental law making in the UK?
13. Is there a need for stronger collaboration between the different UK government departments and organisations dealing with environmental law and policy? Substantiate your answer by citing specific environmental policy examples.

