Introduction to Environmental Impact Assessment

5th edition

A comprehensive, clearly structured and readable overview of the subject, *Introduction to Environmental Impact Assessment* has established itself as the leading introduction to EIA worldwide. This fifth edition is a major update reflecting many significant changes in EIA procedures, process, practice and prospects over the last decade. In particular, it includes:

- a much more international dimension, drawing on EIA activities worldwide;
- an up-to-date coverage of the revised EU EIA Directive and its implementation;
- the associated update of contemporary UK procedures and practice;
- best practice on evolving methods in the EIA process;
- a rich array of UK and many international case studies;
- a new coverage of emerging EIA impact topics, including equality/deprivation; culture; resettlement; climate change; ecosystem services; and risk, resilience and cumulative impacts;
- an appraisal of some next steps in the EIA process, including a more effective and proportionate EIA; the impact of technological change; the changing interpretation of the project; project implementation, monitoring and adaptive management; and moves towards a more integrated impact assessment. Together, these topics act as a kind of action list for future EIA;
- the development of SEA legislation and practice in the UK, EU and worldwide; and
- a set of appendices containing key legislation and an EIS review framework.

It also makes full use of colour illustrations and chapter questions for discussion. Written by two authors with extensive research, training and consultancy experience of EIA, this book brings together the most up-to-date information from many sources.

Introduction to Environmental Impact Assessment 5th Edition provides a complete, and critical, introductory text that also supports further studies. Students in undergraduate and postgraduate planning programmes will find it essential as a course text, as will students of environmental management/policy, environmental sciences/studies, geography and built environment. Key stakeholders involved in assessment activities – planners, developers, community groups, pressure groups and decision-makers in government and business – will also welcome this latest edition as a very effective means of getting to grips with the many facets of this important and evolving subject that affects a widening range of development projects.

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Introduction to Environmental Impact Assessment

5th edition

John Glasson and Riki Therivel

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For Carol and Tim

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Preface to the first edition

There has been a remarkable and refreshing interest in environmental issues over the past few years. A major impetus was provided by the 1987 Report of the World Commission on the Environment and Development (the Brundtland Report); the Rio Summit in 1992 sought to accelerate the impetus. Much of the discussion on environmental issues and on sustainable development is about the better management of current activity in harmony with the environment. However, there will always be pressure for new development. How much better it would be to avoid or mitigate the potential harmful effects of future development on the environment at the planning stage. Environmental impact assessment (EIA) assesses the impacts of planned activity on the environment in advance, thereby allowing avoidance measures to be taken: prevention is better than cure.

Environmental impact assessment was first formally established in the USA in 1969. It has spread worldwide and received a significant boost in Europe with the introduction of an EC Directive on EIA in 1985. This was implemented in the UK in 1988. Subsequently there has been a rapid growth in EIA activity, and over three hundred environmental impact statements (EISs) are now produced in the UK each year. EIA is an approach in good currency. It is also an area where many of the practitioners have limited experience. This text provides a comprehensive introduction to the various dimensions of EIA. It has been written with the requirements of both undergraduate and postgraduate students in mind. It should also be of considerable value to those in practice – planners, developers and various interest groups. EIA is on a rapid 'learning curve'; this text is offered as a point on the curve.

The book is structured into four parts. The first provides an introduction to the principles of EIA and an overview of its development and agency and legislative context. Part 2 provides a step-by-step discussion and critique of the EIA process. Part 3 examines current practice, broadly in the UK and in several other countries, and in more detail through selected UK case studies. Part 4 considers possible future developments. It is likely that much more of the EIA iceberg will become visible in the 1990s and beyond. An outline of important and associated developments in environmental auditing and in strategic environmental assessment concludes the text.

Although the book has a clear UK orientation, it does draw extensively on EIA experience worldwide, and it should be of interest to readers from many countries. The book seeks to highlight best practice and to offer enough insight to methods, and to supporting references, to provide valuable guidance to the practitioner. For information on detailed methods for assessment of impacts in particular topic areas (e.g. landscape, air quality, traffic impacts), the reader is referred to the complementary volume, *Methods of environmental impact assessment* (Morris & Therivel, 1995, London, UCL Press).

John Glasson
Riki Therivel
Andrew Chadwick
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Preface to the fifth edition

We are very pleased that *Introduction to Environmental Impact Assessment* has enjoyed great popularity and success since the publication of the first edition over 20 years ago. It is one of the most cited books in its field. Over the years, we have sought to maintain the importance of the book as a key source in EIA through the production of regular new editions containing substantial revisions, which we regard as essential for such a rapidly developing field. Such revisions have normally changed about 20% of the contents of the books. However, this fifth edition has involved a much more substantial revision, with about 50% new content. We have greatly enjoyed working on this new edition, and we regard it, without a doubt, as the best edition to date.

The aims and broad structure of this edition are unchanged from the previous editions. However, as noted in the preface to the first edition, EIA continues to evolve and adapt, and any commentary on the subject must be seen as part of a continuing discussion. We are particularly grateful to the set of reviewers who strongly endorsed our plans for this edition, and who also added other suggestions for improving the text.

While the entire content of the book has been fully revised, the major changes have been to develop the international content of the book, and to greatly advance the material in Part 4 on future prospects. As such, Chapters 9–11 are almost completely new. With at least 180 countries now with EIA systems, it is reasonable to state that, 50 years after the pioneering NEPA legislation, EIA is a universally recognized instrument for environmental management. It is appropriate that we recognize this international coverage throughout the book, and Chapter 9 in particular takes a worldwide, continent-by-continent, scan of EIA procedures and practice to add to the US, UK and EU coverage elsewhere in the book. The chapter also includes many exemplary case studies. Chapter 10, drawing on reviewer advice, builds in discussion of impact areas, focusing on new and emerging areas such as equity and deprivation, culture, climate change, ecosystem services, risk and resilience.

The very substantial Chapter 11 seeks to provide a future agenda for the development of the EIA process, including a more effective and proportionate EIA. It explores the opportunities emerging with rapidly developing technology, including social media, big data and data visualization. It also considers the evolving nature of projects, including new types, project splitting, 'in principle' projects, environmental impact design and the demolition and decommissioning stage. It concludes with a discussion of the vital link between assessment and implementation, and the case for a more integrated EIA.

Other key changes in Chapters 2 and 3 include major revisions of the legislative and procedural base of EIA to include the innovative amended EU EIA Directive (2014/52/EU), the associated 2017 UK EIA Regulations and the streamlining process underway in the USA. There are also more case studies of a wide range of projects worldwide, including a new set of very current UK major project cases. In addition, all chapters have been updated, drawing on the authors' review of current published research and practice and their own research and consultancy experience. Three full Appendices bring together the text of the latest EU EIA Directive, Schedule 2 of the UK EIA Regulations, and an updated Environmental Impact Statement Review package.

John Glasson
Riki Therivel
Oxford, July 2018

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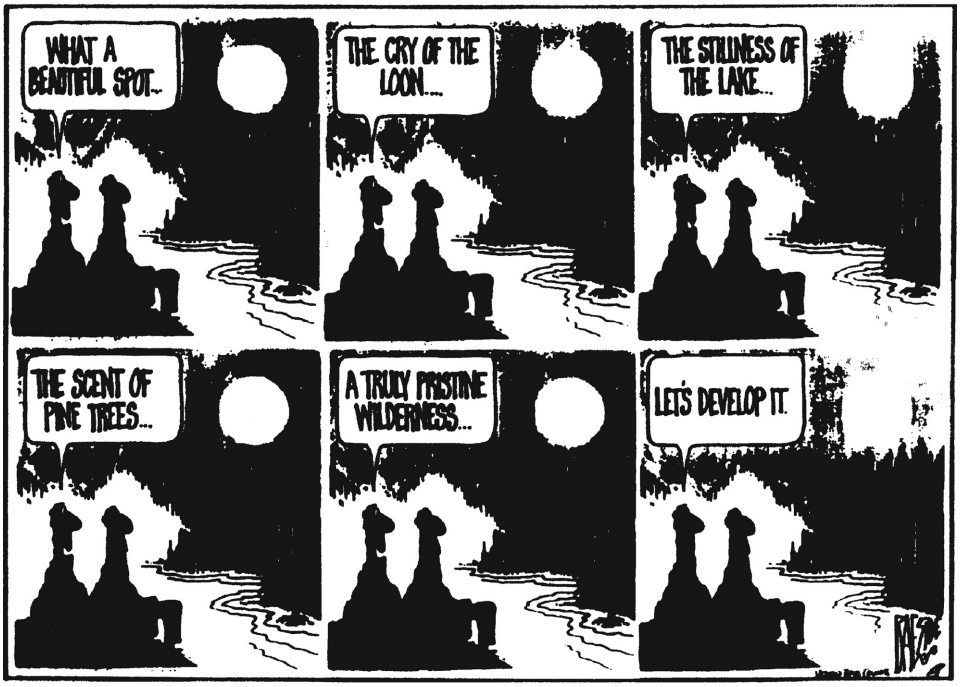
Our grateful thanks are due to many people without whose help this book would not have been produced. We are particularly grateful to the tolerance and moral support of our families. Our thanks also go to the staff of Taylor and Francis, especially Kate Schell, Alexis O'Brien and Sara Brunton, who have provided vital contributions in turning the manuscript into the innovative published document.

We are very grateful to our consultancy clients and research sponsors, who have underpinned the work of the Impacts Assessment Unit in the Faculty of Technology, Design and Environment at Oxford Brookes University and Levett-Therivel. Our students at Oxford Brookes University have critically tested many of our ideas. In this respect, we would like to acknowledge, in particular, the students on the MSc course in Environmental Assessment and Management.

We are grateful to many authors, practitioners and government sources for the use of various illustrations, as indicated in the text. The book also draws on some of the findings of recent reviews of EIA practice undertaken by, among others, the EU, the IAIA (International Association for Impact Assessment) and the IEMA (the Institute for Environmental Management and Assessment). While we have sought to acknowledge copyright as fully as possible, we apologise if there have been any accidental oversights.

Part 1

Principles and procedures



1 Introduction and principles

1.1 Introduction

Over the last five decades there has been a remarkable growth of interest in environmental issues – in sustainability and the better management of development in harmony with the environment. Associated with this growth of interest has been the introduction of new legislation and guidance, emanating from national and international sources, such as the European Commission and the World Bank/International Finance Corporation, that seek to influence the relationship between development and the environment. Environmental impact assessment (EIA) is an important example. EIA legislation was introduced in the USA over 50 years ago. A European Community (EC) directive in 1985 accelerated its application in EU Member States and it has spread worldwide. Since its introduction in the UK in 1988, it has been a major growth area for planning practice; the originally anticipated 20 environmental impact statements (EIS) per year in the UK have escalated to several hundreds. The scope of EIA continues to widen and grow. This chapter introduces EIA as a process, the purposes of this process, the institutional context, types of development, environment and impacts, changing perspectives and current issues in EIA.

1.2 The nature of environmental impact assessment

1.2.1 Definitions

Definitions of EIA abound. They range from the broad definition of Munn (1979), which refers to the need 'to identify and predict the impact on the environment and on man's health and well-being of legislative proposals, policies, programmes, projects and operational procedures, and to interpret and communicate information about the impacts', to the altogether more succinct and pithy UNECE (1991) definition: 'an assessment of the impact of a planned activity on the environment'. The EU EIA Directive requires an assessment of the effects of certain public and private projects, which are likely to have significant effects on the environment, by virtue, *inter alia*, of their nature, size or location, before development consent is granted; it is procedurally based (see Appendix 1). The EIA definition adopted by the International Association for Impact Assessment (IAIA 2009) is 'the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of proposed development proposals prior to major decisions being taken

and commitments made'. This process emphasis is now explored further.

1.2.2 Environmental impact assessment: a process

In essence, EIA is *a process*, a systematic process that examines the environmental consequences of development actions, in advance. The emphasis, compared with many other mechanisms for environmental protection, is on prevention. Of course, planners have traditionally assessed the impacts of developments on the environment, but invariably not in the systematic, holistic and multidisciplinary way required by EIA. The process involves a number of steps, as outlined in Figure 1.1.

The steps are briefly described below, pending a much fuller discussion in Chapters 4–7. Although the steps are outlined in a linear fashion, EIA should be a cyclical activity, with appropriate feedback and interaction between the various steps. It should also be noted that practice can and does vary considerably from the process illustrated in Figure 1.1. EIA is context-based, and as will be shown in later chapters, especially in Chapters 2 and 10, there are some international variations in the process. For example, only since 2014 has the EU required post-decision monitoring. The order of the steps in the process may also vary.

- *Project screening* narrows the application of EIA to those projects that may have significant environmental impacts. Screening may be partly determined by the EIA regulations operating in a country at the time of assessment.
- *Scoping* seeks to identify at an early stage, from all of a project's possible impacts and from all the alternatives that could be addressed, those that are the crucial, significant issues.
- *The consideration of alternatives* seeks to ensure that the proponent has considered other feasible approaches, including alternative project locations, scales, processes, layouts, operating conditions, and the 'no action' option.
- *The description of the project/development action* includes a clarification of the purpose and rationale of the project, and an understanding of its various characteristics – including stages of development, location, and processes.
- *The description of the environmental baseline* includes the establishment of both the present and future state of the environment, in the absence of the project, taking into account changes resulting from natural events and from other human activities.
- *The identification of the main impacts* brings together the previous steps with the aim of ensuring that all potentially significant environmental impacts (adverse and beneficial) are identified and taken into account in the process.
- *The prediction of impacts* aims to identify the magnitude and other dimensions of identified change in the environment with a project/action, by comparison with the situation without that project/action.
- *The evaluation and assessment of significance* assesses the relative significance of the predicted impacts to allow a focus on the main adverse and beneficial impacts.
- *Mitigation* involves the introduction of measures to avoid, reduce, remedy or compensate for any significant adverse impacts. In addition, *enhancement* involves the development of beneficial impacts where possible.
- *Public consultation and participation* aim to ensure the quality, comprehensiveness and effectiveness of the EIA, and that the public's views are adequately taken into consideration throughout the decision-making process.
- *EIS presentation* is a vital step in the process. If done badly, much good work in the EIA may be negated.
- *Review* involves a systematic appraisal of the quality of the EIS, as a contribution to the decision-making process.
- *Decision-making* on the project involves a consideration by the relevant authority of the EIS (including consultation responses) together with other material considerations.
- *Post-decision monitoring* involves the recording of outcomes associated with development

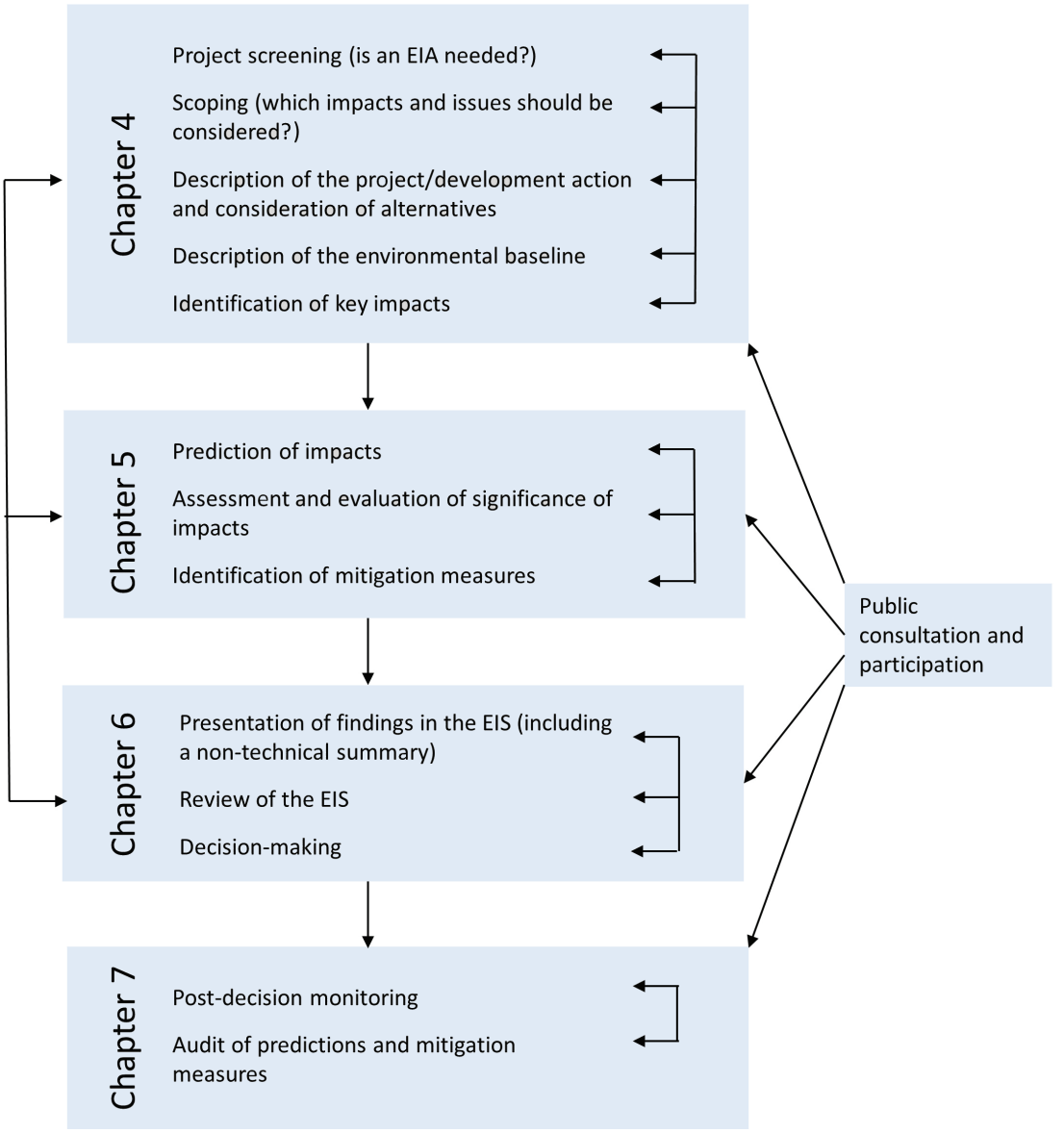


Figure 1.1

Important steps in the EIA process

Note: EIA should be a cyclical process with considerable interaction between the various steps. For example, public participation can be useful at most stages of the process; prediction of major negative impacts can lead to project redesign; monitoring systems should relate to parameters established in the initial project and baseline descriptions

impacts, after a decision to proceed. It can contribute to effective project management.

- *Auditing* follows from monitoring. It can involve comparing actual outcomes with predicted outcomes, and can be used to assess the quality of predictions and the effectiveness of mitigation. It provides a vital step in the EIA learning process.

1.2.3 Environmental impact statements: the documentation

The EIS (Environmental Impact Statement) documents the information and estimates of impacts derived from the various steps in the process. In some domains the EIS is referred to as the ES (Environmental Statement) or the EIAR (Environmental Impact Assessment Report). These terms are used interchangeably in this book.

Prevention is better than cure; an EIS revealing many significant unavoidable adverse impacts would provide valuable information that could contribute to the abandonment or substantial modification of a proposed development action. Where adverse impacts can be successfully reduced through mitigation measures, there may be a different decision. Table 1.1 provides an example of the content of an EIS for a project.

The *non-technical summary* is an important element in the documentation; EIA can be complex, and the summary can help to improve communication with the various parties involved. Reflecting the potential complexity of the process, an *introduction* should clarify, for example, who the developer is, who has produced the EIS, and the relevant legal framework. Also at the beginning, a *methodology section* provides an opportunity to clarify some basic information (e.g. what methods have been used, how the key issues were identified, who was consulted and how, what difficulties have been encountered, and what are the limitations of the EIA). The *background to the proposed development* covers the early steps in the EIA process, including clear descriptions of a project, and baseline conditions (including relevant planning policies and plans).

Within each of the *topic areas* of an EIS there would normally be a discussion of existing conditions, predicted impacts and their significance, scope for mitigation and enhancement, and residual impacts, with subsections as relevant for the key stages of the development life cycle – especially for construction and operation (see Figure 1.6). The list here is generic, and there are some topics which are still poorly covered, for example climate change and cumulative impacts. A concluding section, although often omitted from EISs, should cover key *follow-up issues*, covering monitoring and management.

Table 1.1 An EIS for a project – example of contents

Non-technical summary

Part 1: Introduction, methods and key issues
- Introduction
- Methodology
- Summary of key issues

Part 2: Background to the proposed development
- Preliminary studies: need, planning, alternatives and site selection
- Site description, baseline conditions
- Description of proposed development
- Development programme, including site preparation, construction, operation, decommissioning and restoration (as appropriate)

Part 3: Environmental impact assessment – topic areas
- Land use
- Geology, topography and soils
- Hydrology and water quality
- Air quality
- Climate and climate change
- Ecology: terrestrial and aquatic
- Ecosystem services
- Noise and vibration
- Socio-economics
- Health
- Transport
- Landscape, visual quality
- Cultural heritage
- Recreation and amenity
- Interrelationships between effects
- Cumulative impacts
- Summary of residual impacts

Part4: Follow-up and management
- Monitoring of impacts
- Management of impacts and management plans

Environmental impact assessment and EIS practices vary from study to study, from country to country, and best practice is constantly evolving. An early UN study of EIA practice in several countries advocated changes in the process and documentation, including giving a greater emphasis to the socio-economic

dimension, public participation, and 'after the decision' activity, such as monitoring (UNECE 1991). More recent reviews of the operation of the amended EC Directive (e.g. EU 2014a) raised similar, and other emerging, issues two decades later (see Chapter 3).

1.3 The purposes of environmental impact assessment

1.3.1 An aid to decision-making

EIA is an aid to decision-making. For the decision-maker, for example a local authority, it provides a systematic examination of the environmental implications of a proposed action, and alternatives, before a decision is taken. The EIS can be considered by the decision-maker along with other documentation related to the planned activity. EIA is normally wider in scope and less quantitative than other techniques, such as cost–benefit analysis. It is not a substitute for decision-making, but it does help to clarify some of the trade-offs associated with a proposed development action, which should lead to more informed and structured decision-making. The EIA process has the potential, not always taken up, to be a basis for negotiation and to find common ground between the developer, interest groups and affected parties, and the planning regulator. This can lead to an outcome that balances well the interests of the development action and the environment.

1.3.2 An aid to the formulation of development actions

Developers may see the EIA process as another set of hurdles to jump before they can proceed with their various activities; as yet another costly and time-consuming activity in the development consent process. However, EIA can be of great benefit to them, because it can provide a framework for considering location and design issues and environmental issues in parallel. It can be an aid to the formulation of development actions, indicating areas where a project can be modified to minimize or eliminate altogether its adverse impacts on the environment. The consideration of environmental impacts early in the planning life of a development can lead to more environmentally sensitive development; to improved relations between the developer, the planning authority and the local communities; to a smoother development consent process; to reduced risks during project construction and operation; and sometimes to a worthwhile financial return on the extra expenditure incurred.

O'Riordan (1990) links such concepts of negotiation and redesign to the important environmental themes of 'green consumerism' and 'green capitalism'. The growing demand by consumers for goods that do no environmental damage, plus a growing market for clean technologies, is generating a response from developers. EIA can be the signal to the developer of potential conflict; wise developers may use the process to negotiate 'environmental gain' solutions, which may eliminate or offset negative environmental impacts, reduce local opposition and avoid costly public inquiries. This can be seen in the wider and contemporary context of Corporate Social Responsibility (CSR) being increasingly practised by major businesses (Crane et al. 2008) and the pursuit of a 'Social Licence to Operate' (IAIA 2015).

1.3.3 A vehicle for stakeholder consultation and participation

Development actions may have wide-ranging impacts on the environment, affecting many different groups in society. There is increasing emphasis by government at many levels on the importance of consultation and participation by key stakeholders in the planning and development of projects; see, for example, the 'Aarhus Convention' (UNECE 2001) and the EC Public Participation Directive (CEC 2003). EIA can be a very useful vehicle for engaging with communities and stakeholders, helping those potentially affected by a proposed development to be much better informed and to be more fully involved in the planning and development process (O'Faircheallaigh 2010).

1.3.4 An instrument for sustainable development

Existing environmentally harmful developments have to be managed as best as they can. In extreme cases, they may be closed down, but they can still leave residual environmental problems for decades to come. Surely it would be much better to mitigate the harmful effects in advance, at the planning stage, or in some cases avoid the particular development altogether. Prevention is better than cure. This is the theme of the pioneering US and EC legislation on EIA. For example, the preamble to the 1985 EC EIA Directive includes 'the best environmental policy consists in preventing the creation of pollution or nuisances at source, rather than subsequently trying to counteract their effects' (CEC 1985). This of course leads on to the fundamental role of EIA as an instrument for sustainable development – a role which some writers have drawn attention to as one which is sometimes more hidden than it should be when EIA effectiveness is being assessed (Jay et al. 2007).

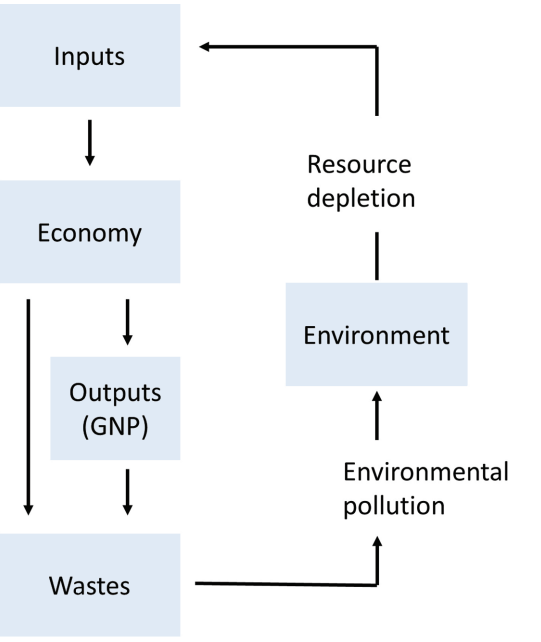


Figure 1.2

The economic development process in its environmental context

Source: adapted from Boulding (1966)

The nature of sustainable development

Economic development and social development must be placed in their environmental contexts. The classical work by Boulding (1966) vividly portrays (see Figure 1.2) the dichotomy between the 'throughput economy' and the 'spaceship economy' or the 'circular economy' as now strongly advocated by the EU (2015). The economic goal of increased *gross national product* (GNP), using more inputs to produce more goods and services, contains the seeds of its own destruction. Increased output brings with it not only goods and services but also more waste products. Increased inputs demand more resources. The natural environment is the 'sink' for the wastes and the 'source' for the resources. Environmental pollution and the depletion of resources are invariably the ancillaries to economic development. The increasing recognition that the natural environment is also invaluable for the delivery of a multitude of ecosystem services, including, for example, climate change regulation, water purification, valued landscapes, recreational opportunities, and inspiration, provides a further and more contemporary reinforcement of the value of the natural environment (DEFRA 2011).

The interaction of economic and social development with the natural environment and the reciprocal impacts between human actions and the biophysical world have been recognized by governments from local to international levels, and attempts have been made to manage the interaction better. In its *7th Environment Action Programme* (EU 2014b), the EU stresses the importance of the circular economy, ecological resilience and zero carbon emissions in achieving its vision for EU citizens. However, the European Environment Agency report, *European Environment – State and Outlook 2015* (EEA 2016, 2017), showed a mix of some good progress but remaining fundamental challenges with potentially very serious consequences for the quality of the environment. For example, while greenhouse gas emissions have been cut and the EU is

on track to over deliver on a reduction target of 20% by 2020, the Member States still produced close to 4.5 billion tonnes of CO_2-equivalent emissions in 2013. Similarly, while Europe's waste management has shifted steadily from landfill to recycling and prevention, still half of the 3 billion tonnes of total waste generated in the EU-27 in 2006 was landfilled. In nature and biodiversity, Europe has expanded its Natura 2000 network of protected areas to cover 18% of EU land and 4% of EU marine waters, but missed its 2010 target to halt biodiversity loss. Europe's freshwaters are affected by water scarcity, droughts, floods, physical modifications and the continuing presence of a range of pollutants. Both ambient air and water quality remain inadequate and health impacts are widespread.

We also live in an interconnected world. European policy makers aren't only contending with complex systematic interactions within Europe. There are also unfolding global drivers of change that are likely to affect Europe's environment, and many are beyond Europe's control. Some environmental trends are likely to be even more pronounced in developing countries, where, because population growth is greater and current living standards lower, there will be more pressure on environmental resources.

The 1987 Report of the UN World Commission on Environment and Development (Brundtland Report) defined sustainable development as 'development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs' (UN World Commission on Environment and Development 1987). Sustainable development means handing down to future generations not only 'man-made capital', such as roads, schools and historic buildings, and 'human capital', such as knowledge and skills, but also 'natural/environmental capital', such as clean air, fresh water, rainforests, the ozone layer and biological diversity. In addition to a concern for the environment and the future, Brundtland also emphasizes participation and equity, thus highlighting both inter- and intragenerational equity. This definition is much wider than ecology and the natural environment; it entails social organization of intra- and intergenerational equity. Importance is also assigned to economic and cultural aspects, such as preventing poverty and social exclusion, concern about the quality of life, attention to ethical aspects of human well-being, and systematic organization of participation by all concerned stakeholders.

Over time, 'sustainability' has evolved as a partial successor to 'sustainable development' (although they can be seen as synonymous), partly because the latter has become somewhat ill-used – for example, governments seeking to equate sustainable development with sustained growth, firms seeking to equate it with sustained profits. However, despite the global acceptance of the 'sustainability/sustainable development' concept, its scope and nature are a somewhat contested and confused territory (Faber et al. 2005; Blewitt 2017). There are numerous definitions, but a much-used one is that of the triple bottom line, reflecting the importance of environmental, social and economic factors in decision-making and the integration and synergies between factors (Figure 1.3); however, the assessment of such synergies presents particular challenges. Figure 1.4 emphasizes that within this three-element definition of sustainability, there is an important hierarchy. The environment and

Figure 1.3

Integrating environmental, social and economic dimensions of sustainability

its natural systems are the foundation to any concept of sustainability. We cannot survive without the 'goods and services' provided by the earth's natural and physical systems – breathable air, drinkable water and food. Living on the earth, we need social systems to provide social justice, security, cultural identity and a sense of place. Without a well-functioning social system, an economic system cannot be productive.

More recently, a fourth element, governance, has been added to the other three to create a quadruple bottom line (QBL) approach to sustainability (e.g. see DEFRA 2005). Good governance at all levels, from international to individual, is needed to foster the integration of the other three elements in the interests of sustainable outcomes. EIA can be a valuable vehicle for such integration. Figure 1.5 provides a simple representation of the QBL approach with good governance included as 'purpose'.

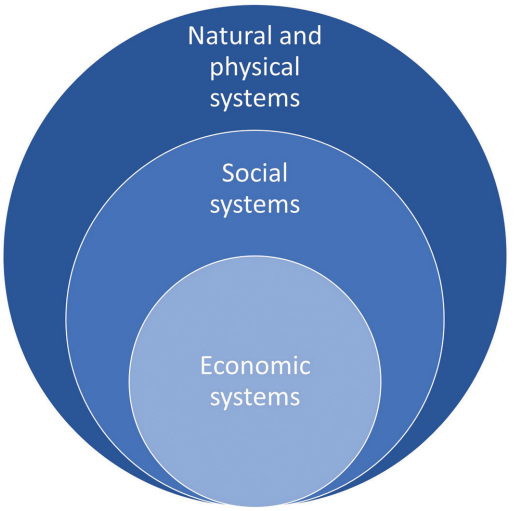


Figure 1.4

Alternative (hierarchical) perspective on the dimensions of sustainability

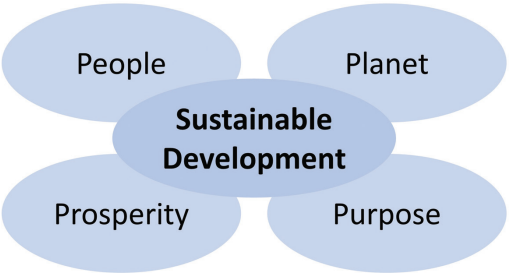


Figure 1.5

Quadruple bottom line (QBL) representation

Institutional responses to sustainable development

The good governance approach to meet the goal of sustainable development, and including the use of EIA, is required at several levels. A *global response* is needed for issues of global concern such as climate change, ocean acidification, deforestation and biodiversity loss. However, delivering global accord and action, for example on climate change and the legally enforceable reductions of greenhouse gases, has proved particularly difficult. The results of the 2009 Copenhagen climate conference fell short of the EU's goal of progress towards the finalization of an ambitious and legally binding global climate treaty to succeed the Kyoto Protocol in 2013 (Wilson and Piper 2010). The 2016 Paris Agreement may mark a turning point, with leaders from across the world uniting for the first time in history to legally ratify action against pollution through the UN Framework Convention, and to work towards the long-run goal of keeping the increase in temperature in global average temperatures to below 2°C above pre-industrial levels.

Part of this global response has been the introduction and advance of the use of EIA as a vehicle for more sustainable governance. The UN Environment Programme of the 1990s was an early pioneer of EIA training resources. An important private-sector initiative of the following decade was the launch of the Equator Principles, which provide EIA guidelines for financial institutions in relation to funding decisions on major projects. International banks have introduced environmental and social procedures. Of particular significance are the Performance Standards on Environmental and Social Sustainability introduced by the World Bank Group, through the International Finance Corporation (2012). These and other international initiatives are discussed further in Chapter 2.

Within the EU, there have been seven Action Programmes on the Environment implemented between 1972 and 2013. These gave rise to specific legislation on a wide range of topics, including waste management, the pollution of the atmosphere, the protection of nature and EIA. The current and Seventh Programme (2014–2020), *Living well within the limits of our planet* (EU 2014) notes that 'systematically assessing the environmental, social and economic impacts of policy initiatives, and full implementation of EIA legislation will ensure better decision making and coherent policy approaches that deliver multiple benefits'. The details of the important EU EIA Directive are discussed in Chapter 3.

At the *national level*, the key and pioneering initiative on EIA was the *US* National Environmental Policy Act (NEPA 1970), introduced in response to increasing concern about widespread examples of environmental damage in the USA. The history and implementation of EIA in the USA is covered in depth in Chapter 2. *In the UK*, government reports, such as *Sustainable development: the UK strategy* (HMG 1994), recognized the role of EIA in contributing to sustainable development and raised the EIA profile among key user groups. In *Securing the future: delivering the UK sustainable development strategy* (DEFRA 2005), the UK Government introduced a set of guiding principles, priorities for action and 20 key headline indicators, with a focus on delivery. The guiding principles were: living within environmental limits; ensuring a strong, healthy and just society; achieving a sustainable economy; promoting good governance; and using sound science responsibly. As noted earlier, EIA is a key good governance vehicle, hopefully using sound science responsibly!

1.4 Projects, environment and impacts

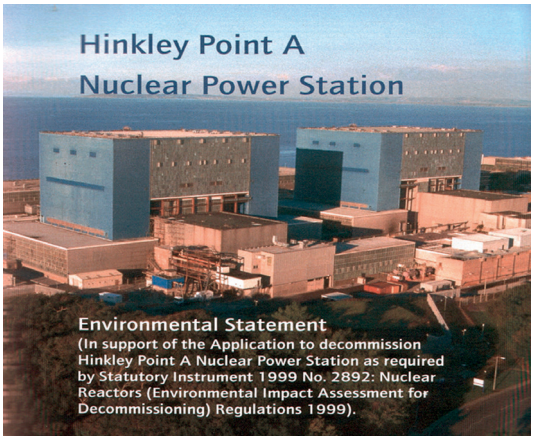
1.4.1 The nature of major projects

As noted in Section 1.2, EIA is relevant to a broad spectrum of development actions, including policies, plans, programmes and projects. The focus here is on projects, reflecting the dominant role of project EIA in practice. The Strategic Environmental Assessment (SEA) and Sustainability Appraisal (SA) of the 'upper tiers' of development actions are considered further in Chapter 12. The scope of projects covered by EIA is widening, and is discussed further in Chapters 3, 4 and 11. Traditionally, project EIA has applied to major projects; but what are major projects, and what criteria can be used to identify them? One could take Lord Morley's approach to defining an elephant: it is difficult, but you easily recognize one when you see it. In a similar vein, the acronym LULU (locally unacceptable land uses) has been applied in the USA to many major projects, such as in energy, transport and manufacturing, clearly reflecting the public perception of the potential negative impacts associated with such developments. There is no easy definition, but it is possible to highlight some important characteristics (see Plate 1.1 and Table 1.2).

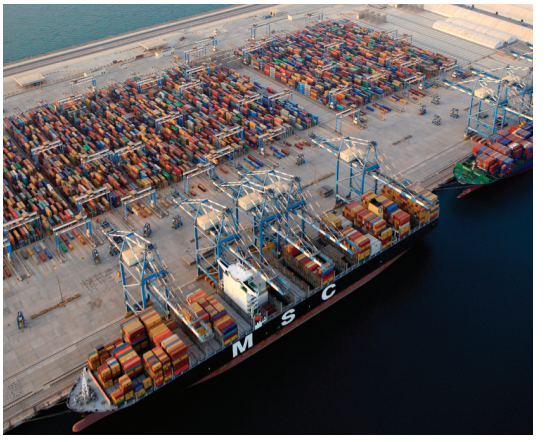
Most large projects involve considerable investment. In the UK context, 'megaprojects' such as the Channel Tunnel and the associated Rail Link, London Heathrow Terminal 5, the Olympic 2012 project, motorways (and their widening), nuclear power stations, gas-fired power stations and renewable energy projects, such as major offshore wind farms and the proposed Severn Barrage, constitute one end of the spectrum. At the other end may be industrial estate developments, small stretches of road, and various waste-disposal facilities, with considerably smaller, but still substantial, price tags. Such projects often cover large areas and employ many workers, usually in construction, but also in operation for some projects. They also invariably generate a complex array of inter- and intraorganizational activity during the various stages of their lives. The developments may have wide-ranging, long-term and often very significant impacts on the environment.

The definition of significance with regard to environmental effects is an important issue in EIA. It may relate, *inter alia*, to scale of development, to sensitivity of location and to the nature of adverse and beneficial effects; it will be discussed further in later chapters (see especially

Itaipu Dam between Brazil and Paraguay
Source: Angelo Leithold



ES for decommissioning Hinkley Point A, UK
Source: Magnox Electric



Khalifa Port, Abu Dhabi
Source: Abu Dhabi Ports

Flamanville nuclear power station
Source: EDF

The Oresund Bridge connecting Sweden and Denmark
Source: Wikimedia

Danish offshore wind farm
Source: Wikimedia

Plate 1.1

Some examples of major projects

Figure 1.6

Generalized planning and development life cycle for major projects (with particular reference to impact assessment on host area)

Adapted from Breese et al. (1965)

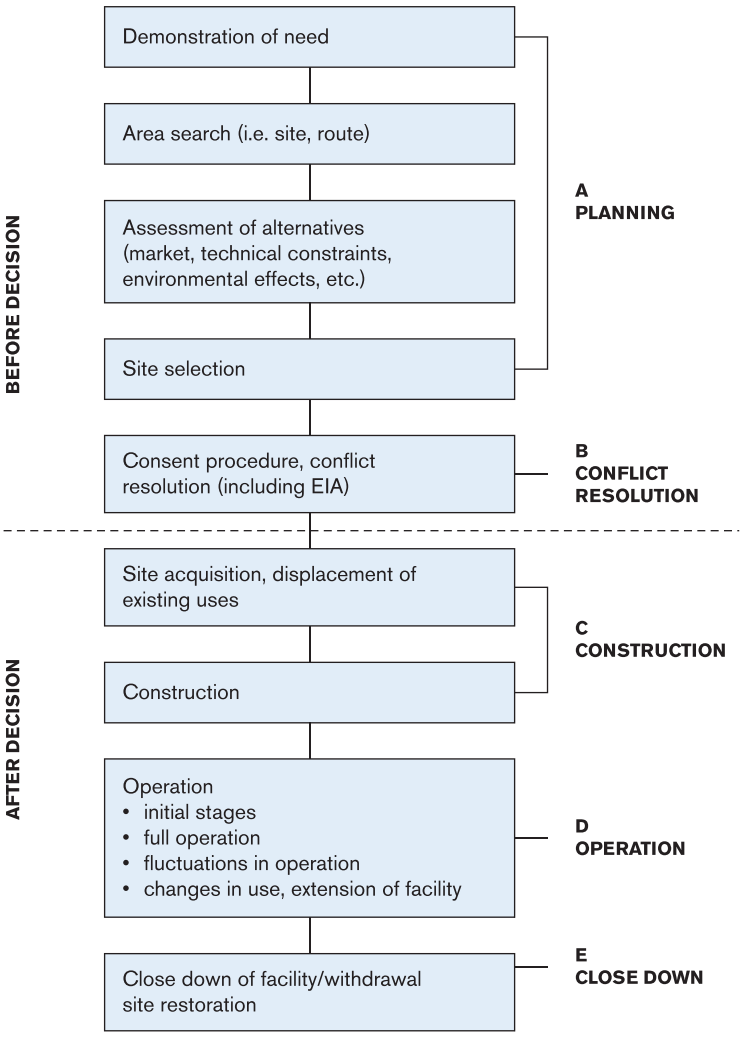


Table 1.2 Characteristics of major projects

- Substantial capital investment
- Cover large areas; employ large numbers (construction and/or operation)
- Complex array of organizational links
- Wide-ranging impacts (geographical and by type)
- Significant environmental impacts
- Require special procedures
- Infrastructure and utilities, extractive and primary (including agriculture); services
- Band, point

Chapter 5). Like a large stone thrown into a pond, a major project can create ripples with impacts spreading far and wide. In many respects, such projects tend to be regarded as exceptional, requiring special procedures. In the UK, in addition to EIA, these procedures have included public inquiries and hybrid bills that have to be passed through parliament (for example, for the Channel Tunnel). Under the 2008 Planning Act (HMG 2008), a special subset of Nationally Significant Infrastructure Projects (NSIPs) was identified. Impacts are examined under a new set of procedures led by the National Infrastructure Division of the Planning Inspectorate. NSIPs include major energy projects, transport projects (road, rail and port), water and waste facilities.

Major projects can also be defined according to type of activity. In addition to the infrastructure and utilities, they also include manufacturing and extractive projects, such as petrochemicals

plants, steelworks, mines and quarries; and services projects, such as leisure developments, out-of-town shopping centres, new settlements and education and health facilities. A further distinction is between linear/band and point infrastructures; point infrastructure includes, for example, power stations, bridges and harbours; band or linear infrastructure includes, for example, electricity transmission lines, roads and canals (CEC 1982).

Projects are initiated in several ways. Many are responses to market opportunities (e.g. a holiday village, subregional shopping centre, gas-fired power station, wind farm); others may be seen as necessities (e.g. flood protection works); others may have an explicit prestige role (e.g. the programme of Grands Travaux in Paris including Opera Bastille, Grande Arche de la Defense and Bibliotheque Nationale). Some major projects are public-sector initiatives, but with the shift towards privatization in many countries, there has been a move towards private-sector funding, exemplified in the UK by such projects as the North Midlands Toll Road, the Channel Tunnel, and now most major utility energy, water and waste projects.

A major project also has a planning and development life cycle, including a variety of stages. It is important to recognize such stages because impacts can vary considerably between them. The main stages in a project's life cycle are outlined in Figure 1.7. There may be variations in timing between stages, and internal variations within each stage, but there is a broadly common sequence of events. In EIA, an important distinction is between 'before the decision' (stages A and

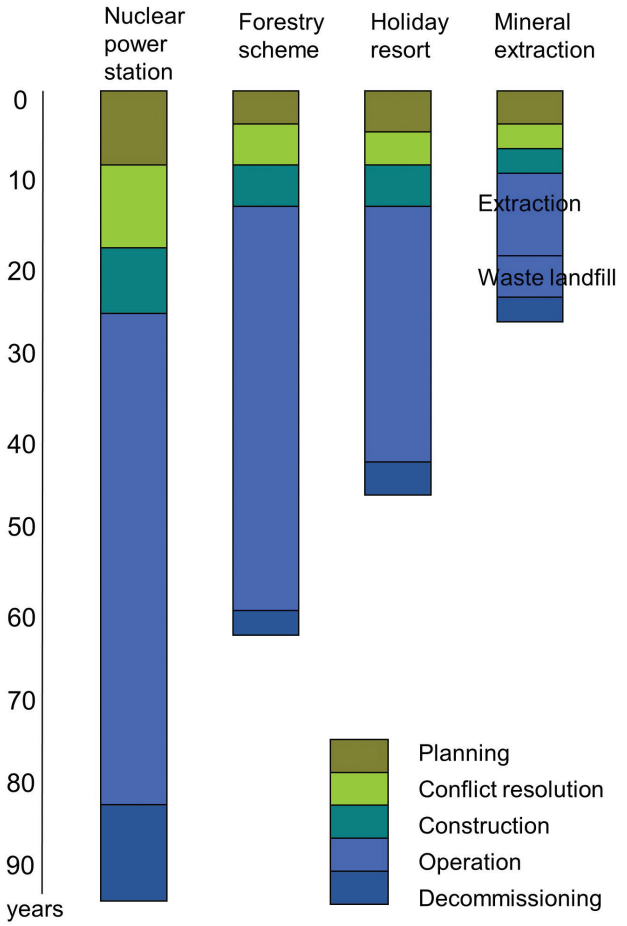


Figure 1.7

Broad variations in life cycle stages between different types of project

B) and 'after the decision' (stages C, D and E). As noted in Section 1.2, the monitoring and auditing of the implementation of a project following approval are often absent from the EIA process.

The initial planning stage A may take several years, and lead to a specific proposal for a particular site. It is at stage B that the various control and regulatory procedures, including EIA, normally come into play. The construction stage can be particularly disruptive, and may last up to 10 years for some projects. Major projects invariably have long operational lives, although extractive projects can be short compared with infrastructure projects. The environmental impact of the eventual close-down/decommissioning of a facility should not be forgotten; for nuclear power facilities it is a major undertaking. Figure 1.7 shows how the stages in the life cycles of different kinds of project may vary.

1.4.2 Dimensions of the environment

The environment can be structured in several ways, including components, scale/space and time. A narrow definition of environmental components would focus primarily on the bio-physical environment such air, water and soil; flora, fauna and human beings; landscape, and the built heritage. However, as already noted in Section 1.2, the environment has important economic and socio-cultural dimensions. These include economic structure; labour markets; demography; housing; services (education, health, police, fire, etc.); well-being, lifestyles and values; and these are added to the checklist in Table 1.3. This wider definition is in line with current international definitions, as noted by the IAIA definition of EIA in Section 1.2.1. Similarly an Australian definition notes, 'For the purposes of EIA, the meaning of environment incorporates physical, biological, cultural, economic and social factors' (ANZECC 1991).

The environment can also be analysed at various scales (Figure 1.8). Many of the spatial impacts of projects are at a local level, although the nature of 'local' may vary according to the aspect of environment under consideration and to the stage in a project's life. However, some impacts are more than local. Traffic noise, for example, may be a local issue, but changes in traffic flows caused by a project may have a regional impact, and the associated CO_2 pollution contributes to the global greenhouse problem. The environment also has a time dimension. Baseline data on the state of the environment are needed at the time a project is being considered. There has been a vast increase in data available on the internet, from the local to the national level. For some areas such data may be packaged in tailor-made State-of-the Environment reports and audits; for example see, at the national level, the *Australian State of the Environment Report* (Australian Government 2016), and at the local level, *Buckinghamshire and Milton Keynes State of the Environment Report* (Bucks and Milton Keynes Local Nature Partnership 2016). For all data it is important to have a time series highlighting trends in environmental quality, as the environmental baseline is constantly changing,

Figure 1.8

Environment: components, scale and time dimensions

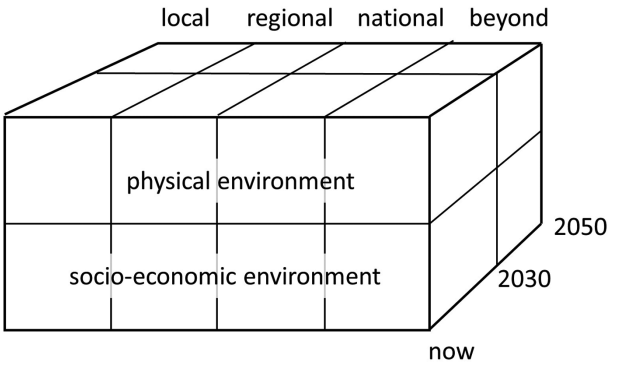


Table 1.3 Environmental components

Physical environment	
Air and atmosphere	Air quality
Water resources and water bodies	Water quality and quantity
Soil and geology	Classification, risks (e.g. erosion, contamination)
Flora and fauna	Birds, mammals, fish, etc.; aquatic and terrestrial vegetation
Landscape	Characteristics and quality of landscape
Cultural heritage	Conservation areas; built heritage; historic and archaeological sites; other material assets
Climate	Temperature, rainfall, wind, etc.
Energy	Light, noise, vibration, etc.
Socio-economic environment	
Demography	Population structure and trends
Human beings	Physical and mental health and well-being
Economic base – direct	Direct employment; labour market characteristics; local and non-local trends
Economic base – indirect	Non-basic and services employment; labour supply and demand
Housing; transport; recreation	Supply and demand
Other local services	Supply and demand of services: health, education, police, etc.
Socio-cultural stress and conflict	Lifestyles, quality of life; well-being; social problems; community

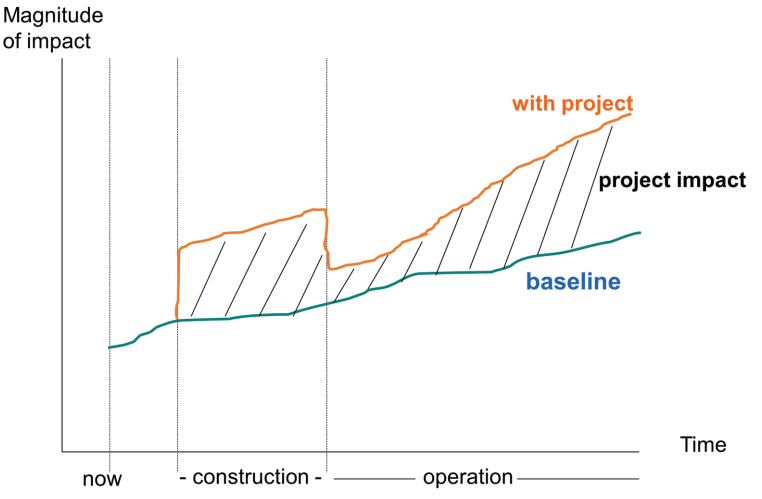


Figure 1.9

The nature of an environmental impact

irrespective of any development under consideration, and requires a dynamic rather than a static analysis.

1.4.3 The nature of impacts

The environmental impacts of a project are those resultant changes in environmental parameters, in space and time, compared with what would have happened had the project not been undertaken. The parameters may be any of the type of environmental receptors noted previously: air quality, water quality, noise, levels of local unemployment and crime, for example. Figure 1.9 provides a simple illustration of the concept.

Table 1.4 provides a summary of some of the types of impact that may be encountered in EIA. The *biophysical and socio-economic* impacts have already been noted. These are sometimes seen as synonymous with *adverse and beneficial*. Thus, new developments may produce harmful wastes but also produce much-needed jobs in areas of high unemployment. However, the correlation

Figure 1.10

Key participants in the EIA process

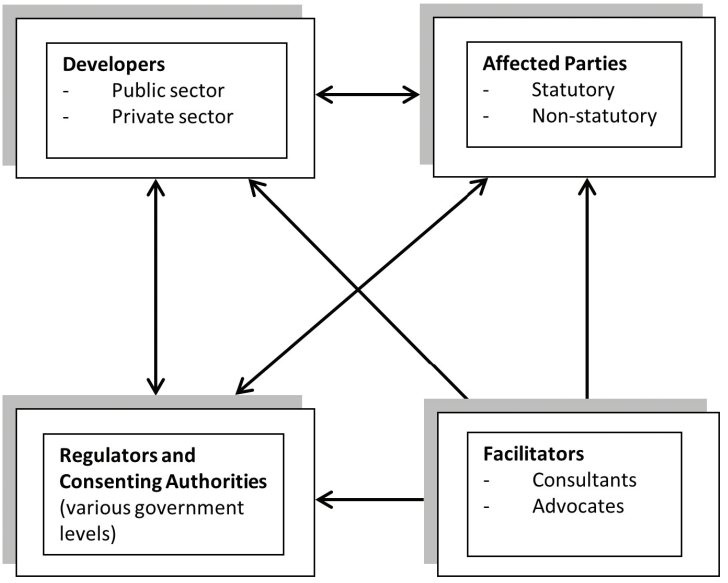


Table 1.4 Types of impact

- Physical and socio-economic
- Adverse and beneficial
- Direct and indirect
- Short-run and long-run
- Local and strategic (including regional, national and beyond)
- Reversible and irreversible
- Quantitative and qualitative
- Distribution by group, area or other characteristic
- Actual and perceived
- Relative to other developments; cumulative

does not always apply. A project may bring physical benefits when, for example, previously polluted and derelict land is brought back into productive use; similarly, the socio-economic impacts of a major project on a community could increase pressure on local health services and on the local housing market, and exacerbate community conflict and crime.

Projects may also have immediate and *direct* impacts that give rise to *secondary*/*indirect* impacts later. A reservoir based on a river system not only takes land for the immediate body of water but may also have severe downstream implications for flora and fauna and for human activities such as fishing and sailing. The direct and indirect impacts may sometimes correlate with short-run and long-run impacts. For some impacts the distinction between short-run and long-run may also relate to the distinction between a project's construction and its operational stage; however, other construction-stage impacts, such as change in land use, are much more permanent.

Environmental resources cannot always be replaced; once destroyed, some may be lost forever. The distinction between *reversible* and *irreversible* impacts is a very important one, and the irreversible impacts, not susceptible to mitigation, can constitute particular significant impacts in an EIA. It may be possible to replace, compensate for or reconstruct a lost resource in some cases, but substitutions are rarely ideal. The loss of a resource may become more serious later, and valuations need to allow for this.

Some impacts can be *quantified*, others are less tangible. The latter should not be ignored. Nor should the distributional impacts of a proposed development be ignored. Impacts do not fall evenly on affected parties and areas. Although a particular project may be assessed as bringing a general benefit, some groups and/or geographical areas may be receiving most of any adverse effects, the main benefits going to others elsewhere. *Distributional* impacts cover a wide array of groups, including: age, gender, ethnicity, language, socio-economic, geographical and inter- and intragenerational equity. There is also a

distinction between *actual* and *perceived* impacts. Subjective perceptions of impacts may significantly influence the responses and decisions of people towards a proposed development. They constitute an important source of information, to be considered alongside more objective predictions of impacts.

> Social constructions are not mere perceptions or emotions, to be distinguished from reality; rather, how we view a social situation determines how we behave. Furthermore, social constructions of reality are characteristic of all social groups, including the agencies that are attempting to implement change as well as the communities that are affected. (IOCGP 2003)

Finally, all impacts should be compared with the 'do-nothing' situation (i.e. the state of the environment predicted without the project). This can be widened to include comparisons with anticipated impacts from alternative development scenarios for an area. Some projects may also have cumulative impacts in combination with other development actions – current and future; for example, the impacts of several wind farms in an area, or the build-up of several major, but different, developments (e.g. port, power station, steel works, waste water facility) around an estuary. The important topic of cumulative impacts is discussed further in Chapter 10.

We conclude on a semantic point: the words 'impact' and 'effect' are widely used in the literature and legislation on EIA, but it is not always clear whether they are interchangeable or should be used only for specifically different meanings. In the USA, the regulations for implementing the National Environmental Policy Act (NEPA) expressly state that 'effects and impacts as used in these regulations are synonymous'. This interpretation is widespread, and is adopted in this text. However, there are other interpretations relating to timing and to value judgements. Catlow and Thirlwall (1976) make a distinction between effects which are 'the physical and natural changes resulting, directly or indirectly, from development' and impacts which are 'the consequences or end products of those effects represented by attributes of the environment on which we can place an objective or subjective value'. In contrast, an Australian study (CEPA 1994) reverses the arguments, claiming that 'there does seem to be greater logic in thinking of an impact resulting in an effect, rather than the other way round'. Other commentators have introduced the concept of value judgement into the differentiation. Preston and Bedford (1988) state that 'the use of the term "impacts" connotes a value judgement'. This view is supported by Stakhiv (1988), who sees a distinction between 'scientific assessment of facts (effects), and the evaluation of the relative importance of these effects by the analyst and the public (impacts)'. The debate continues!

1.5 Key participants in the EIA process

Any proposed major project has an underlying configuration of interests, strategies and perspectives. However, whatever the development, be it a motorway, wind farm, bridge, reservoir, urban development or a forest, it is possible to divide those involved in the planning and development process broadly into four main groups. These are:

- the developers;
- those directly or indirectly affected by or having an interest in the development;
- the regulators and consenting authorities; and
- various intermediaries (consultants, advocates, advisers) with an interest in the interaction between the developer, the affected parties and the regulators (Figure 1.10).

Developers and developments come in all shapes and sizes. An important distinction in many countries is between public-sector developments sponsored by central government departments, including projects such as roads and various utilities, and those promoted by the private sector, although with privatization there may be a shift in the balance of projects towards the latter

sector. Developers can also vary in size and the extent of their major project activities. Some big public- and private-sector developers have continuing programmes of projects, have strong in-house planning and EIA teams, and can advance and refine EIA procedures, learning from experience. In contrast, for some developers, a major project may be a one-off or 'once in a lifetime' activity, and for them the EIA process, and the associated planning and development process, may be much less familiar, requiring quick learning and hopefully drawing on good advice and guidance.

Affected and interested parties also cover a broad spectrum. One approach to making some sense of this broad spectrum is to categorize the various parties by their degree of power (e.g. statutory, advisory), by level of operation (e.g. from international to local), and by area of interest (e.g. biodiversity, employment). Statutory groups (e.g. environment and heritage bodies), with their formal roles and information on potential project impacts, are usually important in the EIA process. Advisory groups may also have power via the size of their membership, their public profile and often longstanding role in a country. In contrast, local interest groups may have a shorter life, being associated with a particular project, but they may still exert very intense pressure on a developer if they see an unjust distribution of the costs and benefits of a proposed development. Such local groups may point to considerable local community disruption and environmental costs from project developments, and the leakage of any potential economic benefits. In response, as noted in Section 1.3.2, developers are becoming increasingly sensitive to the need to pursue a 'Social Licence to Operate' (IAIA 2015). Some local groups may be seen as NIMBY ('not in my backyard'), and their aims often include the maintenance of property values and existing lifestyles, and the diversion of any necessary development elsewhere. A colourful relation of this group is BANANA ('build absolutely nothing anywhere near anything').

Regulators and consenting authorities include various levels of government/government agencies which have significant roles in regulating and managing the relationship between the groups previously outlined and in making decisions on whether a project is awarded development consent. In most countries the EIA legislation is provided by national government/agencies, although there may be regional variations within countries. In the EU the European Commission provides a supra-government level of regulation via its Directive on EIA (EU 2014a); this is implemented by Member States through their own national regulations. The location of decision-making varies between countries. The decision-maker may be at the national or regional level. However, it is often the more local level of government, and its relevant departments, such as planning, which provide the filter through which schemes proposed by developers usually have to pass, and which makes the decisions on projects. In addition, the local authority often opens the door for other agencies, and the public, to be involved in the planning and development process.

Facilitators and others provide another significant group in the EIA process. This group includes consultants, advisers and advocates. Consultants may range from large international firms which can cover all aspects of the process to specialist, and often smaller, firms focusing on specific impact types (e.g. landscape, ornithology, socio-economic). The advisers and advocates may come from legal practices, again of various sizes. Such facilitators are often employed by developers, although some very large developers with ongoing programmes of projects may have their own in-house EIA teams. Facilitators may also be employed by government; for example, to help in the drafting of EIA guidance. They may also be employed by local groups, environmental groups and others to help to mount opposition to, or to encourage change in the nature of, the proposed project. This fourth group also includes environmental and planning professional bodies and academia which seek to advance best practice and also undertake research in this ever-changing and evolving subject area.

Agency interaction: the various groups outlined here represent a complex array of interests and aims, any combination of which may come into play for a particular development. This array has several dimensions, and within each there may be a range of often

conflicting views. For example, there may be conflict between local and national views, between the interests of profit maximization and those of environmental conservation, between short-term and long-term perspectives and between corporate bodies and individuals. Regard must also be given to the power of the various parties involved in the process. Some of these parties – for instance, national governments and major private-sector developers – are also normally considerably more powerful than local governments and community groups (Richardson 2005). In a case study of several developing countries, Kolkoff et al. (2013) highlight a potential conflict even within national government, between environmental authorities supporting EIA and sector authorities hindering the process.

The agencies are also linked in various ways. Some links are statutory, others advisory. Some are contractual, others regulatory. The EIA regulations and guidance in any particular country provide a set of procedures linking the various actors discussed. EIA is also one way of helping to redress imbalances between participants by making project decisions more transparent and publicly accountable. A more detailed EIA agency framework operational for the UK is set out in Chapter 3.

1.6 Evolving perspectives on EIA

1.6.1 EIA in its theoretical context

Since the 1990s there has been increasing interest in exploring EIA in its *theoretical context*, and in particular in the context of decision-making theory (see Lawrence 1997, 2000; Bartlett and Kurian 1999; Weston 2000, 2003, 2010; Pope et al. 2013). EIA had its origins in a climate of a rational approach to decision-making in the USA in the 1960s (Caldwell 1988). The focus was on the systematic process, objectivity, a holistic approach, a consideration of alternatives and an approach often seen as primarily linear. This rational approach is assumed to rely on a scientific process in which facts and logic are pre-eminent. In the UK this rational approach was reflected in planning in the writings of, *inter alia*, Faludi (1973), McLoughlin (1969) and Friend and Jessop (1977).

However, other writings on the theoretical context of EIA have recognized the importance of the subjective nature of the EIA process. Kennedy (1988) identified EIA as both a 'science' and an 'art', combining political input and scientific process. More colourfully, Beattie (1995), in an article entitled 'Everything you already know about EIA, but don't often admit', reinforces the point that EIAs are not science; they are often produced under tight deadlines, and data gaps and simplifying assumptions are the norm under such conditions. They always contain unexamined and unexplained value judgements, and they are always political. They invariably deal with controversial projects, and they have distributional effects – there are winners and losers. Therefore, EIA professionals should not be surprised, or dismayed, when their work is selectively used by various parties in the process, or is distorted into 'fake news'. Leknes (2001) notes that it is particularly in the later stage of decision-making that the findings of EIA are likely to give way to political considerations. Weston (2003) notes the weakening of deference to science, experts and the rational approach. Confidence in decision-making for major projects is eroded by events such as nuclear accidents, chemical spills, numerous environmental disasters and massive financial and time overruns of projects (Flyberg 2003). The public increasingly fear the consequences of change over which they have little control and there is more emphasis on risk (see Beck 2008).

However, in the context of decision-making theory, this recognition of the political, the subjective and value judgement is reflected in a variety of behavioural/participative theories, and is not new. For example, in the 1960s Braybrooke and Lindblom (1963) saw decisions as incremental adjustments, with a process that is not comprehensive, linear and orderly, and is best characterized as 'muddling through'. Lindblom (1980) further developed his ideas through the concept of 'disjointed incrementalism', with a focus on meeting the needs and objectives of society, often politically defined. The importance of identifying and confronting trade-offs, a

major issue in EIA, is clearly recognized. The participatory approach includes processes for open communication among all affected parties.

The recognition of multiple parties and the perceived gap between government and citizens has stimulated other theoretical approaches, including communicative and collaborative planning (Healey 1997). This approach draws upon the work of Habermas (1984), Forester (1989) and others. Much attention is devoted to consensus-building, coordination and communication, and the role of government in promoting such actions as a means of dealing with conflicting stakeholder interests to come to collaborative action. In this context, the US Council on Environmental Quality (CEQ 2007) produced a report for practitioners on *Collaboration in NEPA*, which noted, *inter alia*, that 'collaborative approaches to engaging the public and assessing the impacts of federal actions under NEPA can improve the quality of decision making and increase public trust and confidence in agency decisions'. CEQ also noted the challenges of a collaborative approach including 'collaboration is rarely inexpensive, easy or a quick fix to a problem. The high stakes of environmental conflict – whether it involves property rights, the economic health of communities, endangered species, or fragile ecosystems – often involve complex facts and deeply held views'. Critics of such a collaborative approach (Richardson 2005) highlight in particular the lack of regard for power relationships within society, and especially the role of powerful private-sector developers – invariably the proponents in EIA.

It is probably now realistic to place the current evolution of EIA somewhere between the rational and behavioural approaches, reflecting elements of both. It does include important strands of rationalism, but there are many participants, and many decision points – and politics, power relationships and professional judgement are often to the fore. In EIA there are many decisions, for example, on: whether EIA is needed at all (screening), the scope of the EIA, the alternatives under consideration; project design and redesign; the range of mitigation and enhancement measures, and implementation and monitoring during the 'post-key-decision' stages of the project life cycle (Glasson 1999). This tends to fit well with the concept of 'mixed scanning' (Etzioni 1967), utilizing rational techniques of assessment, in combination with more intuitive value judgements, based upon experience and values. The rational-adaptive approach of Kaiser et al. (1995) also stresses the importance of a series of steps in decision-making, with both (scientific-based) rationality and (community-informed) participation moderating the selection of policy options and desired outcomes. In conclusion, in drawing up their impact assessment research agenda, Pope et al. (2013) note the evolution in, and increasing sophistication of, impact assessment theory, but also stress the need for continuing development of theory, especially in relation to effectiveness in different decision contexts (see Section 1.7 and 11.2).

1.6.2 The importance of adaptive EIA

The arguments for EIA vary in time and space and according to the perspectives of those involved. From a minimalist defensive perspective, some developers, and still possibly parts of some governments, might see EIA as a necessary evil, an administrative exercise to be gone through that might result in some minor, often cosmetic, changes to a development that would probably have happened anyway. In contrast, for the 'deep greens', EIA cannot provide total certainty about the environmental consequences of development proposals; they feel that any projects carried out under uncertain circumstances should be abandoned. EIA and its methods must straddle such perspectives on weak and strong sustainability. EIA can be, and is now often, seen as a positive process that seeks a harmonious relationship between development and the environment. The nature and use of EIA will change as relative values and perspectives also change. EIA must adapt, and O'Riordan's (1990) positive view of 30 years ago is still very relevant today:

> If one sees EIA not so much as a technique, rather as a process that is constantly changing in the face of shifting environmental politics and managerial capabilities, one

can visualize it as a sensitive barometer of environmental values in a complex environmental society. Long may EIA thrive.

EIA must continue to adapt in our rapidly changing world, a world where there are serious challenges to all the pillars of sustainability. Climate change is now recognized by many governments as the most important challenge of the twenty-first century, necessitating major initiatives – yet progress is sporadic. In recent years the world has also been on the edge of financial meltdown, and has endured serious economic recession, leading on the one hand to stimulus investment often through infrastructure projects, but also to drastic measures for deficit reduction. Poverty and social inequalities persist and are deep-seated. Protectionism and moves towards self-sufficiency (e.g. of energy) are also afoot. While there are global common issues, there are also varying situations and perspectives between countries, and EIA needs to be context-responsive.

There are many dimensions to an adaptive EIA. As early as 1978, Holling (1978) recommended an *adaptive EIA process* to cope with decision-making under uncertainty. He advocated periodic reviews of the EIA through a project's life cycle, and a 'predict, monitor and manage approach'. IAIA good practice guidance has also called for an adaptive EIA which is iterative and adjusted to changing circumstances, while not compromising process integrity (IAIA 1999). Lawrence (2013) sees an adaptive EIA process as appropriate for turbulent and complex situations, where risk, health and uncertainty predominate. The adaptive EIA process is explored further in subsequent chapters, especially Chapter 11. There is also adaption represented by the changing nature of the impact assessment family, as discussed in the next section.

1.6.3 EIA in a rapidly growing impact assessment (IA) family

Over the last 50 years, EIA has been joined by a growing family of assessment tools. The IAIA uses the generic term of impact assessment (IA) to encompass the semantic explosion, whereas Sadler (1996) suggested that we should view 'Environmental Assessment (EA) as the generic process that includes EIA of specific projects, SEA of PPPs, and their relationships to a larger set of impact assessment and planning-related tools'. Whatever the family name, there is little doubt that membership is increasing apace, with a focus on widening the *scope, scale and integration of assessment*. Impact assessment now includes, for example, SIA, HIA, EqIA, LA, TIA, SEA, SA, S&EIA, HRA/AA, EcIA, CIA, plus a range of associated techniques such as RA, LCA, MCDA, CBA, and many more. Lawrence (2013) makes a rough distinction between the EIA project-level family members and the SEA strategic-level family members, although there are also overlaps between the project and strategic levels – for example, in relation to cumulative impact/effects assessment (CIA/CEA) and transboundary impacts assessment (TIA). Some of the tools have been led by legislation; others have been more driven by practitioners from various disciplines that have endeavoured to separate out and highlight the theme(s) of importance to their discipline, resulting in thematically focused forms of assessment. Vanclay identified over 150 forms of impact assessment, with the highest proportionate growth over the period 2003–2014 (i.e. the hot topics) being in the social field (Vanclay 2015). Dalal-Clayton and Sadler (2004) rightly observe that 'the alphabet soup of acronyms [and terms] currently makes for a confusing picture', and the case for simplification is gaining increasing attention (see, for example, Morrison-Saunders et al. 2014). The various assessment tools are now briefly outlined in terms of scope, scale and integration; most are discussed further in subsequent chapters.

Scope

Development actions may have impacts not only on the physical environment but also on the social and economic environment. Typically, employment opportunities, services (e.g. health, education) and community structures, lifestyles and values may be affected. *Socio-economic impact assessment* or *social impact assessment* (SIA) is regarded in this book as an integral part of EIA. However, in some countries it is (or has been) regarded as a separate process, sometimes parallel

to EIA, and the reader should be aware of its separate existence (Finsterbusch 1985, Esteves et al. 2011, Vanclay 2013, IAIA 2015). Some domains explicitly use *S&EIA* to denote *socio-economic and environmental impact assessment*. *Health impact assessment (HIA)* has been a particularly important area of growth in recent years, evolving out of the socio-economic strand; its focus is on the effects which a development action may have on the health of its host population (IPHI 2009; Birley 2011). A more recent area still is *equality impact assessment (EqIA)*, which seeks to identify the important distributional impacts of development actions on various groups in society (e.g. by gender, race, age, disability, sexual orientation, language, etc.) (Downey 2005). Vanclay and Bronstein (1995) and others note several other relevant definitions, based largely on particular foci of specialization and including, for example, transport impact assessment, demographic impact assessment, human rights impact assessment (Oxfam and FIDH 2016), cultural impact assessment, climate impact assessment (Wilson and Piper 2010), gender impact assessment, psychological impact assessment, noise impact assessment, economic impact assessment, and cumulative impacts assessment (Canter and Ross 2010).

Scale

Strategic environmental assessment (SEA) expands the scale of operation from the EIA of projects to a more strategic level of assessment of programmes, plans and policies. Development actions may be for a project (e.g. a nuclear power station), for a programme (e.g. a number of pressurized water reactor nuclear power stations), for a plan (e.g. in the town and country planning system in England) or for a policy (e.g. the development of renewable energy). EIA to date has generally been used for individual projects, and that role is the primary focus of this book. However, SEA has been introduced in the EU since 2004 and is also used in many other countries (Therivel et al. 1992; Therivel 2010; Sadler et al. 2011). SEA informs a higher, earlier, more strategic tier of decision-making. In theory, EIA should be carried out in a tiered fashion first for policies, then for plans, programmes, and finally for projects. The focus of SEA has been primarily biophysical, and there are close links with another relatively new area of assessment, *habitats regulation assessment/appropriate assessment (HRA/AA)*, which is required in the EU for projects and plans which may have significant impacts on key Natura 2000 sites of biodiversity. HRA/AA can be a particularly powerful form of assessment; it is very precautionary, and a plan or project may only be permitted to go ahead if it will have no significant impact on site integrity, or if other very tough tests are passed. In contrast, a wider approach to strategic assessment, seeking to include biophysical and socio-economic impacts, is provided by *sustainability assessment* (Bond et al. 2013). In England this is required for the assessment of the impacts of plans under the town and country planning system (DCLG 2015). In some domains, where there is not a strategic level of assessment or planning, project-level assessment may adopt, to varying degrees, a strategic perspective, with features of either SEA or SA; good examples are provided by mega-projects, such as the major mineral development projects in the remote areas of Australia.

Integration

Hacking and Guthrie (2008) have sought to provide a relational framework (Figure 1.11) to clarify the position of assessment tools, in the context of planning and decision-making for sustainable development. In addition to scope (referred to as comprehensiveness of coverage) and scale (strategicness of the focus and scope), they also include integratedness of techniques and themes. The latter includes a package of techniques which seek to achieve integration in the assessment process (e.g. between biophysical and socio-economic impacts) (Scrase and Sheate 2002); this was termed 'horizontal integration' by Lee (2002).

Petts (1999) provides a good overview of some of the techniques which include, for example, *life cycle assessment (LCA)*, *cost–benefit analysis (CBA)*, *environmental auditing*, *multi-criteria decision assessment (MCDA)* and *risk assessment (RA)*. LCA differs from EIA in its focus not on a particular site or facility, but on a product or system and the cradle-to-grave environmental effects of that

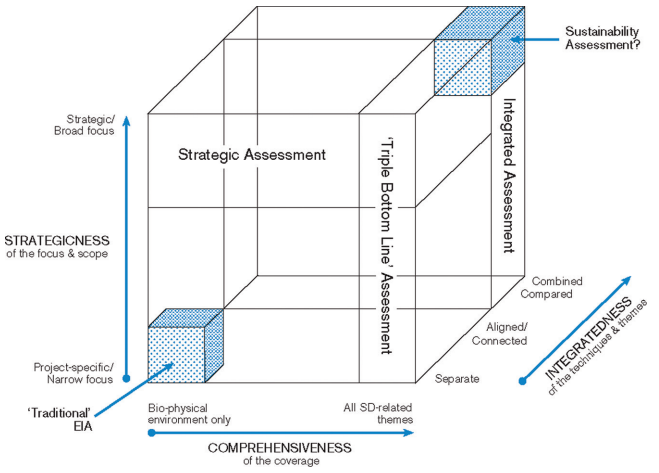


Figure 1.11

A relational framework of SD-focused assessment tools

Source: Hacking and Guthrie 2008

product or system (Hauschild et al. 2018). In contrast, CBA focuses on the economic impacts of a development, but taking a wide and long view of those impacts. It involves as far as possible the monetization of all the costs and benefits of a proposal. It came to the fore in the UK in relation to major transport projects in the 1960s, but has subsequently enjoyed a new lease of life (see Hanley and Splash 1993; Boardman et al. 2017). Environmental auditing is the systematic, periodic and documented evaluation of the environmental performance of facility operations and practices, and this area has seen the development of procedures, such as the International Standard 14001 (ISO 2015).

Multi-criteria decision assessment (MCDA) covers a collection of approaches, often quantitative, that can be used to help key stakeholders explore alternative approaches to important decisions by explicitly taking account of multiple criteria (Ishizaka and Nemery 2013); it is quite widely used. *Risk assessment* is another term sometimes found associated with EIA. Partly in response to events such as the chemicals factory explosion at Flixborough (UK) and Bhopal (India), nuclear power station accidents at Three Mile Island (USA) and Chernobyl (Ukraine), the *Exxon Valdez* oil spill, and 9/11 and subsequent focus on 'terrorist threats', RA developed as an approach to the analysis of risks associated with various types of development. Calow (1997) gives an overview of the growing area of environmental RA and management; Flyberg (2003) provides a critique of risk assessment in practice; and Middle and MacCallum (2015) highlight the important distinction between quantitative and qualitative risk assessment. While these tools tend to be more technocentric, they can be seen as complementary tools to EIA, seeking to achieve a more integrated approach. Thus, Chapter 5 explores the potential role of CBA and MCDA approaches in EIA evaluation. Chapter 11 develops further the concept of integrated assessment, and explores the role of environmental auditing in relation to environmental management systems (EMSs).

This brief discussion on changing perspectives, on the theoretical context, on the socio-ecological context, and on associated tools and processes emphasizes the need to continually reassess the role and operation of EIA and the importance of an adaptive EIA.

1.7 Current issues in environmental impact assessment

EIA now has over 50 years of history in the USA; it is well established in many other countries, including the UK and the other EU Member

States, and has spread worldwide. There is much to welcome. Gibson (2002) noted some global trends in EIA, including: it is earlier in the process; more open and participative; more comprehensive (not just biophysical environment); more mandatory; more closely monitored; more widely applied (e.g. at various levels); more integrative; more ambitious (with regard to sustainability objectives); and more humble (recognizing uncertainties, applying precaution). Yet such progress is variable, and has not been without its problems. There have been many reviews of national and international EIA practice (see, for example, CEC 2009, IEMA 2011, 2017), which have highlighted some persistent issues. A number of the current issues in EIA are briefly introduced here and will be discussed more fully in later chapters.

1.7.1 The nature of methods of assessment

As already noted, some of the main steps in the EIA process (e.g. monitoring) may be missing from many assessments. There may also be problems with the steps that are included, including: varying approaches to screening, over-comprehensive scoping of issues, and limited consideration of alternatives. The prediction of impacts and the assessment of significance also raise conceptual and technical problems. The problem of establishing the environmental baseline position has already been noted. It may also be difficult to clearly establish the dimensions and development stages of a project, particularly for new technology projects. Further conceptual problems include establishing what would have happened in the relevant environment without a project; clarifying the complexity of interactions of phenomena; and especially making trade-offs in an integrated way. Other technical problems relate to data availability and the tendency to focus on the quantitative, and often single, indicators in some areas. There may also be delays and discontinuities between cause and effect, and between policies and projects. The lack of auditing of predictive techniques limits the feedback on the effectiveness of methods. However, on a more positive note there are also many innovative methods being developed in EIA, as will be discussed in Part 2.

1.7.2 The relative roles of participants in the process

The various 'actors' in the EIA process have differential access to the process, and their influence on the outcome varies. Some would argue that in many countries such as the UK, the process is too developer-oriented. The developer or the developer's consultant carries out the EIA and prepares the EIS, and is unlikely to predict that the project will be an environmental disaster. Government roles in the EIA process may be conditioned by caution at extending systems, by resource considerations and by limited experience and expertise for what in some domains is still a relatively new and developing area. However, the increasing recognition of behavioural theories, and collaborative approaches, is having an influence on public participation in EIA, reinforced in legislation such as the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (UNECE 2001). Evolving approaches to participation are examined in Chapter 6.

1.7.3 The quality and effectiveness of EIA

While EIA systems are now well established worldwide, there is considerable soul-searching about *how effective it all is, whether EIA is achieving its purposes* – as set out in Section 1.3. There is also considerable debate about *how we assess EIA quality and effectiveness*. Sadler (1996) defined three types of effectiveness: procedural, relating to the nature of the process; substantive, relating to the achievement of the goals of the process; and transactive, relating to efficiency of the EIA process. Cashmore et al. (2004) note a focus of research on the more measurable procedural effectiveness. The procedural/substantive distinction is useful and can be further developed

in terms of various (interrelated) dimensions. For example, a procedural/narrow approach would focus on how well EIA is being carried out according to its own procedural requirements in the country of concern; a procedural/wider approach might consider the extent to which EIA is contributing to increased environmental awareness and learning among the array of key stakeholders.

However, more fundamental, in relation to EIA core purposes, are substantive approaches. For example, a substantive/narrow approach would concentrate on whether EIA is having a direct impact on the quality of planning decisions and the nature of developments; a substantive/wider approach would focus on the fundamental question of whether EIA is maintaining, restoring and enhancing environmental quality; is it contributing towards more sustainable development?

There is no absolute and transferable measure of EIA effectiveness. EIA is context-responsive, and so is EIA effectiveness. As Cashmore et al. (2010) note, 'If EIA is political, then there will be a plurality of views about the way the process operates and what it achieves, and that must be recognized in evaluations of effectiveness'. Hence, some countries and stakeholders will focus on the procedural aspects, while for others the focus may be more on substantive and sustainable development objectives. These issues of EIA effectiveness are further examined in various sections of the book, and particularly in Chapter 11.

1.7.4 The quality, efficiency and proportionate nature of the EIA process

A consideration of the transactive assessment of quality focuses more on the efficiency of the EIA process and the costs involved. Details about costs are difficult to obtain, but an EU-commissioned study evaluating the EIA Directive indicated that, as a share of the project costs, EIAs tend to range from an upper limit of 1% for small projects to 0.1% for larger projects (CEC 2006). While costs must be set against the benefits of the process, there is a growing concern about cost inflation, partly reflected in the inflation in the size of the documentation produced. EISs can run the risk of being voluminous, unintegrated documents which can be difficult for most of the participants in the EIA process. Efficiency concerns are leading to calls for a more proportionate EIA (IEMA 2011, 2017). Of course, considerations of efficiency can run counter to considerations of fairness in the process, limiting stakeholder access. On the other hand, better documentation and more efficient processes can benefit all stakeholders (see particularly Chapters 6, 8 and 11 for further discussion of potential innovations).

1.7.5 Beyond the decision

Many EISs are for one-off projects, and there may be little incentive for developers to audit the quality of the assessment predictions and to monitor impacts as an input to a better assessment for the next project. Yet EIA up to and no further than the decision on a project is a very partial exercise. It is important to ensure that the required mitigation and enhancement measures are implemented in practice. In some parts of the world (e.g. the Netherlands, Hong Kong), the monitoring of impacts has been mandatory for some time. The latest EU EIA Directive (EU 2014a) has also finally caught up with the importance of monitoring. It is also important to take the opportunity for a cyclical learning process, auditing predicted outcomes as fully as possible in order to check the accuracy of predictions. The relationship with environmental management processes is another vital area of concern; EISs can effectively lead to Environmental Management Plans for project implementation, but again, good practice is patchy.

1.7.6 Managing the widening scope and complexity of IA activity

The IA family has grown apace, especially in recent years. How can this complexity be managed? For example, what should be the norm for the content of a contemporary EIS? Should the EIS include social, health and equality

elements as standard, or should these be separate activities and documents? In a similar vein, which projects should have EIAs? For example, project EIA may be mandatory only for a limited set of major projects, but in practice many others may be included.

The SEA/SA of PPPs (policies, plans and programmes) represents a logical extension of project assessment and can cope better with cumulative impacts, alternatives and mitigation measures than can project assessment. Strategic levels of assessment of plans and programmes should provide useful frameworks for the more site-specific project assessments, hopefully reducing workload and leading to more concise and effective EIAs. Yet the anticipated tiered relationship may be more in theory than practice, leading to unnecessary and wasteful duplication of activity.

1.8 An outline of subsequent parts and chapters

This book is in four parts. *Part 1 sets out EIA principles and procedures*. It establishes the context of EIA in the growth of concern about environmental issues and in relevant legislation; it is set in an international context, and includes particular reference to the EU and the UK. Following from the first chapter, which provides an introduction to EIA and an overview of principles, Chapter 2 focuses on the origins of EIA under the US NEPA of 1969, its worldwide spread, and the contemporary and important roles of international agencies. Chapter 3 sets out the evolution and current nature of the EU EIA Directive and, within the EU context, the development and details of the UK legislative framework for EIA.

Part 2 provides a rigorous step-by-step approach to the EIA process. This is the core of the text. Chapter 4 covers the early start-up stages, establishing a management framework, clarifying the type of developments for EIA, and outlining approaches to scoping, the consideration of alternatives, project description, establishing the baseline and identifying impacts. Chapter 5 explores the central issues of prediction, uncertainty, the assessment of significance and impact mitigation and enhancement. Chapter 6 provides coverage of an important issue identified above: participation in the EIA process. EIS presentation and review are also covered in this chapter. Chapter 7 takes the process beyond the decision on a project and examines the importance of, and approaches to, monitoring and auditing.

Part 3 exemplifies the process in practice. Chapter 8 provides an overview of UK practice to date, including steps in the EIA process and analyses of the EISs prepared. Chapter 9 draws on comparative international experience, scanning practice across the continents to highlight some of the strengths and weaknesses of other systems in practice. A feature of both chapters are case studies of recent and topical EIA studies, covering a range of development sectors and illustrating particular features of and issues in the EIA process.

Part 4 looks to future prospects for EIA; it illuminates many of the issues noted in Section 1.7. Chapter 10 very briefly discusses the main EIA topic areas in turn, before taking a more detailed look at emerging topics such as culture and language; climate change; risk, resilience and cumulative impacts. Chapter 11 focuses on the prospects for a more effective project EIA, starting with a more in-depth discussion of what we actually mean by EIA effectiveness. Other sections include an exploration of a more proportionate EIA; the impact of technological change on EIA; the changing interpretation of the project; links to project implementation, monitoring and adaptive management, via EMS and EMPs; and moves towards a more integrated impact assessment. Together, Chapters 10 and 11 act as a kind of action list for future improvements to project EIA. The final Chapter 12 considers the wider dimension of strategic environmental assessment, including its need, limitations and effectiveness, with examples drawn from several countries. A set of Appendices provide details of legislation and practice not considered appropriate to the main text.

SOME QUESTIONS

The following questions are intended to help the reader focus on the important issues of this chapter, and to start building some understanding of the principles of EIA.

1. Revisit the definitions of EIA given in this chapter. Which one do you prefer and why?
2. Some steps in the EIA process have proved to be more difficult to implement than others. From your initial reading, identify which these might be and consider why they might have proved to be problematic.
3. Taking a few recent examples of environmental impact statements for projects in your country, review their structure and content against the outline information in this chapter. Do they raise any issues on structure and content?
4. What are the differences between (i) project screening and project scoping, and (ii) impact mitigation and impact enhancement?
5. Review the purposes for EIA, and assess their importance from your own perspective.
6. Apply the characteristics of major projects set out in Table 1.2 to two major projects with which you are familiar. Are there any important variations between the applications? If so, can you explain why?
7. Similarly, for one of the projects identified in Q6, plot the likely stages in its life cycle – applying approximate timings as far as possible.
8. Again, for one of the projects identified in Q6, set out the key participants involved and comment on their relative influence in the EIA process. A diagram might help.
9. What do you understand by a multidimensional approach to the environment, in EIA?
10. What is an impact in EIA? Do you see any difference between impacts and effects?
11. What do you understand by (i) irreversible impacts, (ii) cumulative impacts, and (iii) distributional impacts, in EIA?
12. Why should it be important to adopt an adaptive approach to EIA?
13. We realize this is a bit deep at this stage of your reading, but will ask, all the same, whether you think it is reasonable to consider the EIA process as a rational, linear scientific process?
14. What are the main differences between EIA and SEA?
15. What might be some of the reasons for the widening scope of EIA?
16. What do you understand by 'beyond the decision' in EIA?
17. How might we measure (i) the efficiency, and (ii) the effectiveness of EIA?

Notes
Chapter2

1 For example, *Ely v. Velds*, 451 F.2d 1130, 4th Cir. 1971; *Carolina Action v. Simon*, 522 F.2d 295, 4th Cir. 1975.

2 *Calvert Cliff's Coordinating Committee, Inc. v. United States Atomic Energy Commission* 449 F.2d 1109, DC Cir. 1971.

3 *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, DC Cir. 1972.

4 California, Connecticut, Georgia, Hawaii, Indiana, Maryland, Massachusetts, Minnesota, Montana, New York, North Carolina, South Dakota, Virginia, Washington and Wisconsin, plus the District of Columbia and Puerto Rica.

5 Arizona, Arkansas, Delaware, Florida, Louisiana, Michigan, New Jersey, North Dakota, Oregon, Pennsylvania, Rhode Island and Utah.

Chapter 3

1 The EIS is referred to as the EIAR (Environmental Impact Assessment Report) in the EU Directive.

2 In October 2018, the British Government published statutory instruments in relation to environmental assessment and the planning regime, for when the UK leaves the EU. The Environmental Assessment and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018 (HMG 2018) provide for the continuity of regulations for: the Town and Country Planning (EIA) Regulations 2017, the Infrastructure Planning (EIA) Regulations 2017, and the SEA Regulations (Environmental Assessment of Plans and Programmes 2004).

The instruments make no substantive changes of policy to the way the EIA and SEA regimes operate. The aim of the changes is to ensure the continued smooth operation of the assessment regimes. They remove unnecessary references in the regulations, for example to the UK being an EU Member State; they also refer to retained EU law by the UK rather than the UK complying with EU obligations. The amendment emphasizes that 'the UK government is committed to maintaining the highest environmental standards after we leave the EU, and will continue to uphold international obligations through multilateral environmental agreements'.

Chapter 4

1 This refers both to the spatial extent that will be covered and to the scale at which it is covered. João (2002) suggests that the latter – which has been broadly ignored as an issue to date – could be crucial enough to lead to different decisions depending on the scale chosen.

Chapter 6

1 At the time of writing, a draft revised NPPF (MHCLG 2018) had been consulted on. Instead of the second bullet point, it states 'the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed'. The areas or assets it refers to are Special Protection Areas, Special Areas of Conservation, Sites of Special Scientific Interest, Green Belts, Local Green Spaces, Areas of Outstanding Natural Beauty, National Parks, Heritage Coasts, irreplaceable habitats including ancient woodland, aged or veteran trees, designated heritage assets, and areas at risk of flooding or coastal change. Both the policy and this list may well still change: the reader is referred to the final NPPF once it is published.

2 For instance, in the case of a Scottish appeal regarding a proposed quarry extension (Scottish Office, P/PPA/SQ/336, 6 January 1992), the Reporter noted that: 'The ES has been strongly criticised … [it] does not demonstrate that a proper analysis of environmental impacts has been made … Despite its shortcomings, the ES appears to me to comply broadly with the statutory requirements of the EA regulations.'

References

Chapter 1

ANZECC (Australia and New Zealand Environment and Conservation Council). 1991. *A national approach to EIA in Australia*. Canberra: ANZECC.

Australian Government, Department of Environment and Energy. 2016. *State of the Environment Report*. Canberra: Australian Government.

Bartlett, R.V. and Kurian, P.A. 1999. The theory of environmental impact assessment: implicit models of policy making. *Policy and Politics* 27(4), 415–433.

Beattie, R. 1995. Everything you already know about EIA, but don't often admit. *Environmental Impact Assessment Review* 15.

Beck, U. 2008. *World at risk*. Cambridge: Polity Press.

Birley, M. 2011. *Health impact assessment: principles and practice*. London: Routledge.

Blewitt, J. 2017. *Understanding sustainable development*. Abingdon: Routledge.

Boardman, A.E., Greenberg, D.H., Vining, A.R. and Weimer, D.L. 2017. *Cost benefit analysis: concepts and practice*, 4th Edition. Cambridge: Cambridge University Press.

Bond, A., Morrison-Saunders, A. and Howitt, R. 2013. *Sustainability assessment*. Abingdon: Routledge.

Boulding, K. 1966. The economics of the coming Spaceship Earth. In *Environmental quality to a growing economy*, H. Jarrett (ed.), 3–14. Baltimore: Johns Hopkins University Press.

Braybrooke, C. and Lindblom, D. 1963. *A strategy of decision*. New York: Free Press of Glencoe.

Breese, G. et al. 1965. *The impact of large installations on nearby urban areas*. Los Angeles: Sage.

Buckinghamshire and Milton Keynes. 2016. *State of the Environment Report.* Milton Keynes: Bucks and Milton Keynes Local Nature Partnership.

Caldwell, L. 1988. Environmental impact analysis: origins, evolution and future directions. *Review of Policy Research* 8(1), 75–83.

Calow, P. (ed.) 1997. *Handbook of environmental risk assessment and management*. Oxford: Blackwell Science.

Canter, L. and Ross, W. 2010. State of practice of cumulative effects assessment and management: the good, the bad and the ugly. *Impact Assessment and Project Appraisal* 28(4), 261–268.

Cashmore, M., Gwilliam, R., Morgan, R., Cobb, D. and Bond, A. 2004. The interminable issue of effectiveness: substantive purposes, outcomes and research challenges in the advancement of EIA theory. *Impact Assessment and Project Appraisal* 22(4), 295–310.

Cashmore, M., Richardson, T., Hilding-Ryedvik, T. and Emmelin, L. 2010. Evaluating the effectiveness of impact assessment instruments: theorising the nature and implications of their political constitution. *Environmental Impact Assessment Review* 30(6), 371–379.

Catlow, J. and Thirlwall, C.G. 1976. *Environmental impact analysis*. London: DoE.

CEC (Commission of the European Communities). 1982. *The contribution of infrastructure to regional development*. Brussels: CEC.

CEC. 1985. On the assessment of the effects of certain public and private projects on the environment. *Official Journal* L175, 5 July. Brussels: CEC.

CEC. 2003. *Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC – Statement by the Commission.* Brussels: CEC.

CEC. 2006. *Evaluation of EU legislation – Directive 85/337EEC and associated amendments.* Carried out by GHK-Technopolis. Brussels: DG Enterprise and Industry.

CEC. 2009. *Report to the Council, European Parliament, European Economic and Social Committee and the Committee of the Regions on the application and effectiveness of the EIA Directive*. Brussels: CEC.

CEPA (Commonwealth Environmental Protection Agency). 1994. *Assessment of cumulative impacts and strategic assessment in EIA*. Canberra: CEPA.

CEQ (Council on Environmental Quality). 2007. *Collaboration in NEPA: a handbook for NEPA practitioners.* Washington: US Government.

Crane, A.M., Matten, D., Moon, J. and Siegel, D.S. (eds). 2008. *The Oxford handbook of corporate social responsibility*. Oxford: Oxford University Press.

Dalal-Clayton, B. and Sadler, B. 2004. *Sustainability appraisal: a review of international experience and practice, first draft of work in progress.* International Institute for Environment and Development. www.iied.org/Gov/spa/docs.html#pilot.

DCLG (Department for Communities and Local Government). 2015. *Strategic environmental assessment and sustainability appraisal*. London: DCLG.

DEFRA (Department for Environment, Food and Rural Affairs). 2005. *Securing the future: delivering the UK sustainable development strategy*. London: HM Government.

DEFRA. 2011. *UK National Ecosystem Assessment.* London: DEFRA.

Downey, L. 2005. Assessing environmental inequality: how the conclusions we draw vary according to the definitions we employ. *Sociological Spectrum* 25, 349–369.

EEA (European Environment Agency). 2016. *European environment – state and outlook 2015.* Luxembourg: EEA.

EEA. 2017. *Environmental indicator report.* Luxembourg: EEA.

Esteves, A.-M., Franks, D. and Vanclay, F. 2011. Social impact assessment: the state of the art. *Impact Assessment and Project Appraisal* 30(1), 35–44.

Etzioni, A. 1967 Mixed scanning: a 'third' approach to decision making. *Public Administration Review* 27(5), 385–392.

EU (European Union). 2014a. Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. Brussels: *Official Journal of the European Union*, L124, 25 April 2014.

EU. 2014b. *General Union Environmental Action Programme to 2020*. Brussels: CEC.

EU. 2015. *Closing the loop: an EU action plan for the circular economy*. Brussels: EC.

Faber, N., Jorna, R. and van Engelen, J. 2005. A study into the conceptual foundations of the notion of 'sustainability.' *Journal of Environmental Assessment Policy and Management* 7(1).

Faludi, A. (ed.). 1973. *A reader in planning theory*. Oxford: Pergamon.

Finsterbusch, K. 1985. State of the art in social impact assessment. *Environment and Behaviour* 17, 192–221.

Flyberg, B. 2003. *Megaprojects and risk: on anatomy of risk*. Cambridge: Cambridge University Press.

Forester, J. 1989. *Planning in the face of power*. Berkeley, CA: University of California Press.

Friend, J. and Jessop, N. 1977. *Local government and strategic choice*, 2nd edition. Toronto: Pergamon Press.

Gibson, R. 2002. From Wreck Cove to Voisey's Bay: the evolution of federal environmental assessment in Canada. *Impact Assessment and Project Appraisal* 20(3), 151–160.

Glasson, J. 1999. EIA – impact on decisions. Chapter 7 in *Handbook of environmental impact assessment*, J. Petts (ed.), vol. 1. Oxford: Blackwell Science.

Habermas, J. 1984. *The theory of communicative action*, vol. 1, *Reason and the rationalisation of society*. London: Polity Press.

Hacking, T. and Guthrie, P. 2008. A framework for clarifying the meaning of Triple Bottom Line, Integrated and Sustainability Assessment. *Environmental Impact Assessment Review* 28, 73–89.

Hanley, N.D. and Splash, C. 1993. *Cost–benefit analysis and the environment*. Aldershot: Edward Elgar.

Hauschild, M., Rosenbaum, R.K. and Olsen, S.I. (eds). 2018. *Life cycle analysis: theory and practice.* Cham, Switzerland: Springer.

Healey, P. 1997. *Collaborative planning: shaping places in fragmented societies*. Basingstoke: Macmillan.

HMG, Secretary of State for the Environment. 1994. *Sustainable development: the UK strategy*. London: HMSO.

HMG. 2008. *Planning Act 2008.* London: Stationery Office.

Holling, C.S. (ed.). 1978. *Adaptive environmental assessment and management.* New York: Wiley.

IAIA (International Association for Impact Assessment). 1999. *Principles of environmental impact assessment best practice*. Fargo, ND: IAIA.

IAIA.2009. *What is impact assessment?* Fargo, ND: IAIA.

IAIA. 2015. *Social impact assessment*: *guidance for assessing and managing the social impacts of projects*. Fargo, ND: IAIA.

IEMA. 2011. *The state of environmental impact assessment in the UK*. Lincoln: IEMA.

IEMA. 2017. *Delivering proportionate EIA.* Lincoln: IEMA.

IFC (International Finance Corporation, World Bank Group). 2012. *Performance standards on environmental and social sustainability*. Washington: IFC.

IOCGP. 2003. Principles and guidelines for social impact assessment in the USA. *Impact Assessment and Project Appraisal* 21(3), 231–250.

IPHI (Institute of Public Health in Ireland). 2009. *Health impact assessment guidance.* Dublin and Belfast: IPHI.

Ishizaka, A. and Nemery, P. 2013. *Multi-criteria decision analysis: methods and software.* Chichester: Wiley.

ISO (International Organisation for Standardization). 2015. *ISO 14001: Environmental management systems – requirements with guidance for use*, 3rd edition. Geneva: ISO.

Jay, S., Jones, C., Slinn, P. and Wood, C. 2007. Environmental impact assessment: retrospect and prospect. *Environmental Impact Assessment Review* 27, 287–300.

Kaiser, E., Godshalk, D. and Chapin, S. 1995. *Urban land use planning*, 4th edition. Chicago: University of Illinois Press.

Kennedy, W.V. 1988. Environmental impact assessment in North America, Western Europe: what has worked where, how and why? *International Environmental Reporter* 11(4), 257–262.

Kolkoff, A., Driessen, P. and Runhaar, H. 2013. An analysis framework for characterizing and explaining development of EIA legislation in developing countries – illustrated for Georgia, Ghana and Yemen. *Environmental Impact Assessment Review* 38, 1–15.

Lawrence, D. 1997. The need for EIA theory building. *Environmental Impact Assessment Review* 17, 79–107.

Lawrence, D. 2000. Planning theories and environmental impact assessment. *Environmental Impact Assessment Review* 20, 607–625.

Lawrence, D. 2013. *Impact assessment: practical solutions to recurrent problems and contemporary challenges.* New Jersey: Wiley.

Lee, N. 2002. Integrated approaches to impact assessment: substance or make-believe? *Environmental Assessment Yearbook.* Lincoln: IEMA, 14–20.

Leknes, E. 2001. The role of EIA in the decision-making process. *Environmental Impact Assessment Review* 21, 309–334.

Lindblom, E.C.E. 1980. *The policy making process*, 2nd edition. Englewood Cliffs: Prentice Hall.

McLoughlin, J.B. 1969. *Urban and regional planning – a systems approach*. London: Faber & Faber.

Middle, G. and MacCallum , D. 2015. *Democracy and the risk society*. In J. Brunner and J. Glasson (eds), *Contemporary issues in Australian urban and regional planning*. New York: Routledge.

Morrison-Saunders, A., Pope, J., Gunn, J., Bond, A. and Retief, F. 2014. Strengthening impact assessment: a call for integration and focus. *Impact Assessment and Project Appraisal* 32, 2–8.

Munn, R.E. 1979. *Environmental impact assessment: principles and procedures*, 2nd edition. New York: Wiley.

NEPA (National Environmental Policy Act). 1970. 42 USC 4321–4347, 1 January, as amended.

O'Faircheallaigh C. 2010. Public participation and environmental impact assessment: purposes, implications and lessons for public policy making. *Environmental Impact Assessment Review* 30, 19–27.

O'Riordan, T. 1990. EIA from the environmentalist's perspective. *VIA* 4, March, 13.

Oxfam and FIDH (International Federation for Human Rights). 2016. *Community-based human rights impact assessment: the getting it right tool – training manual.* Boston, MA: Oxfam America.

Petts, J. 1999. Environmental impact assessment versus other environmental management decision tools. In *Handbook of environmental impact assessment*, J. Petts (ed.), vol. 1. Oxford: Blackwell Science.

Pope, J., Bond, A., Morrison-Saunders, A. and Retief, F., 2013. Advancing the theory and practice of impact assessment: setting the research agenda. *Environmental Impact Assessment Review* 41, 1–9.

Preston, D. and Bedford, B. 1988. Evaluating cumulative effects on wetland functions: a conceptual overview and generic framework. *Environmental Management* 12 (5).

Richardson, T. 2005. Collaborative planning: from theoretical foundations to practice forms. In P. Allmendinger and M. Tewdr-Jones (eds), *Planning futures: new directions for planning theory.* London: Routledge.

Sadler, B. 1996. *Environmental assessment in a changing world: evaluating practice to improve performance*. International study on the effectiveness of environmental assessment. Ottawa: Canadian Environmental Assessment Agency.

Sadler, B., Aschemann, R., Dusik, J., Fischer, T.B., Partidário, M.R. and Verheem, R. (eds). 2011. *Handbook of strategic environmental assessment.* London: Earthscan.

Scrase, J. and Sheate, W. 2002. Integration and integrated approaches to assessment: what do they mean for the environment? *Journal of Environmental Policy and Planning* 4(4), 276–294.

Stakhiv, E. 1988. An evaluation paradigm for cumulative impact analysis. *Environmental Management* 12 (5).

Therivel, R. 2010. S*trategic environmental assessment in action*, 2nd edition. London: Earthscan.

Therivel, R., Wilson, E., Thompson, S., Heaney, D. and Pritchard, D. 1992. *Strategic environmental assessment*. London: RSPB/Earthscan.

UNECE (United Nations Economic Commission for Europe). 1991. *Policies and systems of environmental impact assessment*. Geneva: United Nations.

UNECE. 2001. *Access to information, public participation and access to justice in environmental matters (Aarhus Convention)*. Geneva: United Nations.

UN World Commission on Environment and Development. 1987. *Our common future*. Oxford: Oxford University Press.

Vanclay, F. 2013. International principles for social impact assessment. Impact Assessment and Project Appraisal 21(1), 5–12.

Vanclay, F. 2015. Changes in the impact assessment family 2003–2014: implications for considering achievements, gaps and future directions. *Journal of Environmental Assessment, Policy and Management* 17 (1).

Vanclay, F. and Bronstein, D. (eds). 1995. *Environment and social impact assessments*. London: Wiley.

Weston, J. 2000. EIA, decision-making theory and screening and scoping in UK practice. *Journal of Environmental Planning and Management* 43(2), 185–203.

Weston, J 2003. Is there a future for EIA? Response to Benson. *Impact Assessment and Project Appraisal* 21(4), 278–280.

Weston, J. 2010. EIA theories: all Chinese whispers and no critical theory. *Journal of Environmental Assessment and Policy Management* 12(4), 357–374.

Wilson, E. and Piper, J. 2010. *Spatial planning and climate change.* Abingdon: Routledge.

Chapter 2

Acerbi, A., Sánchez-Triana E., Enríquez, S., et al. 2014. *Environmental Impact Assessment in Latin America and the Caribbean*, presentation at 34th annual conference of the International Association for Impact Assessment, Viña del Mar, Chile.

ADB (Asian Development Bank). 2003. *Integrated Environmental and Social Impact Assessment Guidelines*, www.adb.org.

ADB. 2012. *Environment safeguards: a good practice sourcebook (draft working document).* Manila: ADB.

AfDB (African Development Bank). 2015. *Guidance materials on integrated safeguard and sustainability systems: vol. 1. – ESA instruments and outputs; vol. 2 – ESA topics; vol. 3 – sector keysheets.* Abidjan, Cote D'Ivoire: AfDB.

Almalgi, D., Sondo, V.A. and Ertel, J. 2007. Constraints to EIA practice: a case study of Cameroon. *Journal of Environmental Assessment, Policy and Management* 9(3), 357–380.

Appiah-Opuku, S. 2005. *The need for indigenous knowledge in EIA: the case of Ghana*. New York: Edwin Mellen Press.

Association of Environmental Professionals (AEP). 2017. *California Environmental Quality Act: statute and guidelines.* California: AEP website.

Badr, E-S.A. 2009. Evaluation of the environmental impact assessment system in Egypt. *Impact Assessment and Project Appraisal* 27(3), 193–203.

Bear, D. 1990. EIA in the USA after twenty years of NEPA. *EIA newsletter* 4, EIA Centre, University of Manchester.

Bekhechi, M.A. and Mercier, J.-R. 2002. The legal and regulatory framework for environmental impact assessments, www.scribd.com/doc/16060372/The-Legal-and-Regulatory-Framework-for-Environmental-Impact-Assessments-A-Study-of-Selected-Countries-in-SubSaharan-Africa.

Bitondo, D., Post, R. and Van Boven, G. 2014. *Evolution of environmental impact assessment systems in Central Africa: the role of national professional associations*. Yaounde: Secretariat for Environmental Assessment in Central Africa.

Briffett, C. 1999. Environmental impact assessment in East Asia. In *Handbook of environmental impact assessment*, J. Petts (ed.), vol. 2, 143–167. Oxford: Blackwell Science Ltd.

Brito, E. and Verocai, I. 1999. Environmental impact assessment in South and Central America. In *Handbook of environmental impact assessment*, J. Petts (ed.), vol. 2, Chapter 10, 183–202. Oxford: Blackwell Science Ltd.

Canter, L.W. 1996. *Environmental impact assessment*, 2nd edition. London: McGraw-Hill.

Carson, R. 1962. *Silent spring.* Boston, MA: Houston Mifflin Company.

CEC. 1985. On the assessment of the effects of certain public and private projects on the environment. *Official Journal*, L175, 5 July.

CEC. 2009. *Report from the Commission on the application and effectiveness of the EIA Directive (Directive 85/337/EEC, as amended by Directives 97/11/EC and 2003/35/EC).* Brussels: CEC.

CEQ (Council on Environmental Quality). 1978. National Environmental Policy Act. Implementation of procedural provisions: final regulations. *Federal Register* 43(230), 55977–6007, 29 November.

CEQ. 1997a. *The National Environmental Policy Act: a study of its effectiveness after 25 years.* Washington, DC: US Government Printing Office.

CEQ. 1997b. *Considering cumulative effects – under the NEPA*. Washington, DC: US Government Printing Office.

CEQ. 2007a. *A citizens' guide to the NEPA*. Washington, DC: US Government Printing Office.

CEQ. 2007b. *Aligning NEPA processes with environmental management systems.* Washington, DC: US Government Printing Office.

CEQ. 2010. *Steps to modernise and re-invigorate NEPA*. Washington, DC: US Government Printing Office.

CEQ. 2016. *Final guidance on greenhouse gases and climate change.* Washington, DC: US Government Printing Office.

Chico, I. 1995. EIA in Latin America. *Environmental Assessment* 3(2), 69–71.

CISDL (Centre for International Sustainable Development Law). 2009. Eco-Health Americas Law Project, www.cisdl.org/ecohealth/impact_assessment001.htm.

CRS (Congressional Research Services). 2006. *The National Environmental Policy Act – streamlining NEPA.* Washington, DC: Library of Congress.

Danida. 2014. *Green growth guidance note.* Copenhagen: Danida.

Department of the Interior, et al. 2018. *Memorandum of understanding: implementing one federal decision under Executive Order 13807*. https://ceq.doe.gov/docs/ceq-regulations-and-guidance/One_Federal_Decision_MOU_(M-18-13-Part-2)_2018-04-09.pdf.

DFID (Department for International Development). 2003. *Environment guide.* London: DFID. www.eldis.org/vfile/upload/1/document/0708/DOC12943.pdf.

DFID. 2013. *Environment guide*. London: DFID. www.eldis.org/vfile/upload/1/document/0708/DOC12943.pdf.

EBRD (European Bank for Reconstruction and Development). 2010. *Environmental and social procedures.* London: EBRD.

EBRD. 2014. *Environmental and social policy*. London: EBRD.

Eccleston, C. 2014. *The EIS book: managing and preparing environmental impact statements*. Boca Raton: CRC Press.

Eccleston, C. 2017. *Preparing NEPA environmental assessments: a guide to best professional practices*. Boca Raton: CRC Press.

Economic Commission for Africa. 2005. *Review of the application of environmental impact assessment in selected African countries*. Addis Ababa: ECA. www.uneca.org/eca_programmes/sdd/documents/eia_book_final_sm.pdf.

Ehrlich, P. 1968. *The population bomb*. New York: Ballantine.

EIB (European Investment Bank). 2013. *Environmental and social handbook.* Luxembourg: EIB.

El-Fadl, K. and El-Fadel, M. 2004. Comparative assessment of EIA systems in MENA countries: challenges and prospects. *Environmental Impact Assessment Review* 24(6), 553–593.

Elliot, M. 2014. *EIA in Australia: theory and practice*. Annandale: NSW Federation Press.

EU. 2014. *Directive 2011/92/EU, as amended by Directive 2014/52/EU, on the assessment of the effects of certain public and private projects on the environment*. Brussels: CEC.

FIWGEJ (Federal Interagency Working Groupon Environmental Justice). 2016. *Promising practices for EJ methodologies in NEPA reviews.* Washington, DC: FIWGEJ.

Fonseca, A. and Rodrigues, S.A. 2017. The attractive concept of simplicity in EIA: perceptions of outcomes in SE Brazil. *Environmental Impact Assessment Review* 67, 101–108.

FPISC (Federal Permitting Improvement Steering Council). 2018. *Recommended best practices for environmental reviews and authorisations for infrastructure projects for fiscal year 2018*. Washington, DC: FPISC.

GHK. 2010. *Collection of information and data to support the impact assessment study of the review of the EIA Directive.* ec.europa.eu/environment/eia/pdf/collection_data.pdf.

Gibson, R.B. 2012. In full retreat: the Canadian government's new environmental assessment law undoes decades of progress. *Impact Assessment and Project Appraisal* 30, 179–188.

Glasson, J. and Salvador, N.N.B. 2000. EIA in Brazil: a procedures–practice gap. A comparative study with reference to the EU, and especially the UK. *Environmental Impact Assessment Review* 20, 191–225.

Greenberg, M. 2012. *The environmental impact statement after two generations*. Abingdon: Routledge.

Horberry, J. 2014. *Environmental and social safeguards*. London: DfID.

International Finance Corporation (IFC). 2012. *Performance standards on environmental and social sustainability*. Washington: IFC, World Bank Group.

Kakonge, J.O. 1999. Environmental impact assessment in Africa. In *Handbook of environmental impact assessment*, J. Petts (ed.), vol. 2, 168–182. Oxford: Blackwell Science Ltd.

Kirchhoff, D. 2006. Capacity building for EIA in Brazil: preliminary considerations and problems to be overcome. *Journal of Environmental Assessment Policy and Management* 8(1), 1–18.

Kolkoff, A., Driessen, P. and Runhaar, H. 2013. An analysis framework for characterizing and explaining development of EIA legislation in developing countries – illustrated for Georgia, Ghana and Yemen. *Environmental Impact Assessment Review* 38, 1–15.

Kovalev, N., Köppel, J., Drozdov, A. and Dittrich, E. 2009. Democracy and the environment in Russia. *Journal of Environmental Assessment Policy and Management* 11(2), 161–173.

Lee, N. and George,2000. *Environmental assessment in developing and transitional countries: principles, methods and practice*. Chichester: Wiley.

Luisa, A., Lima, G., Sanchez-Triana, E., et al.2015. *Environmental impact assessment systems in South Asia*. Washington, DC: World Bank.

Mandelker, D.R. 2000. *NEPA law and litigation*. 2nd edition. St Paul, MN: West Publishing.

Marara, M., Okello, N., Kuhanwa, Z., Douven, W., Beevers, L. and Leentvaar, J. 2011. The importance of context in delivering effective EIA: case studies from East Africa. *Environmental Impact Assessment Review* 31(3), 286–296.

Mercier, J.R. 2003. Environmental assessment in a changing world at a changing World Bank, in IEMA/EIA Centre 2003. *Environmental Assessment Outlook*. Manchester: EIA Centre, University of Manchester.

Middle, G., Clarke, B., Franks, D., et al. 2013. Reducing green tape or rolling back IA in Australia: what are four jurisdiction up to? In 2013 Conference of the International Association for Impact Assessment. Calgary, Canada.

Moreira, I.V. 1988. EIA in Latin America. In *Environmental impact assessment: theory and practice*, P. Wathern (ed.), 239–253. London: Unwin Hyman.

NCEA (Netherlands Commission for Environmental Assessment). 2014. *Evolution of environmental impact assessment systems in Central Africa: the role of national professional associations.* Utrecht: NCEA.

NEPA (National Environmental Policy Act). 1970. 42 USC 4321–4347, 1 January, as amended.

Orloff, N. 1980. *The National Environmental Policy act: cases and materials*. Washington, DC: Bureau of National Affairs.

Rzeszot, U.A. 1999. Environmental impact assessment in Central and Eastern Europe. In *Handbook of environmental impact assessment*, J. Petts (ed.), vol. 2, Chapter 7, 123–142. Oxford: Blackwell Science Ltd.

Sadler, B. 1996. *Environmental assessment in a changing world: evaluating practice to improve performance*: *international study on the effectiveness of environmental assessment*.

Ottawa: Canadian Environmental Assessment Agency.
Sandham, L.A., van Heerden, A.J., Jones, C.E., Retief, F.P. and Morrison-Saunders, A.N. 2013. Does enhanced regulation improve EIA report quality? Lessons from South Africa. *Environmental Impact Assessment Review* 38, 155–162.
Southern African Institute for Environmental Assessment. 2003. *Environmental impact assessment in southern Africa*, www.saiea.com/saiea-book.
SPREP (Secretariat of the Pacific Region Environment Programme), UNEP. 2016. *Strengthening environmental impact assessment: guidelines for the Pacific Islands and Territories.* Samoa: SPREP.
State of California. 1992. *CEQA: California Environmental Quality Act – statutes and guidelines*. Sacramento: State of California Governor's Office of Planning and Research.
Turner, T. 1988. The legal eagles. Amicus Journal (winter), 25–37.
UNEP (United Nations Environment Programme). 1987. *Goals and principles of EIA.* UNEP.
UNEP. 1997. *Environmental impact assessment training resource manual*. Stevenage: SMI Distribution.
UNEP. 2002. Environmental *impact assessment training resource manual*. 2nd edition, www.unep.ch/etu/publications/EIAMan_2edition_toc.htm.
Vidyaratne, H. 2006. EIA theories and practice: balancing conservation and development in Sri Lanka. *Journal of Environmental Assessment Policy and Management* 8(2), 205–222.
White House. 1994. *Memorandum from President Clinton to all heads of departments and agencies on an executive order on federal actions to address environmental injustices in minority populations and low income populations.* Washington, DC: White House.
White House. 2015. *Fixing of America's Surface Transportation (FAST) Act*. Washington, DC: White House.
Wood, C. 2003. *Environmental impact assessment: a comparative review*. 2nd edition. Englewood Cliffs, NJ: Prentice Hall.
World Bank. 1992. *Environmental assessment sourcebook*. Washington, DC: World Bank.
World Bank. 1995. *Environmental assessment: challenges and good practice*. Washington, DC: World Bank.
World Bank. 1999. *Environmental assessment*, BP 4.01, Washington, DC: World Bank.
World Bank. 2002. *Environmental impact assessment systems in Europe and Central Asia countries*, www.worldbank.org/eca/environment.
World Bank. 2006. *Environmental impact assessment regulations and strategic environmental assessment requirements: practices and lessons learned in East and Southeast Asia, Environment and Social Development Safeguard Dissemination Note No. 2*. Washington, DC: World Bank.
World Bank. 2017.*Environmental and social framework.* Washington, DC: World Bank.

Chapter 3

Catlow, J. and Thirlwall, C.G. 1976. *Environmental impact analysis* (DoE Research Report 11). London: HMSO.
CEC (Commission of the European Communities). 1973. First action programme on the environment. *Official Journal* C112, 20 December.
CEC. 1980. Draft directive concerning the assessment of the environmental effects of certain public and private projects. COM (80), 313 final. *Official Journal* C169, 9 July.
CEC. 1982. Proposal to amend the proposal for a Council directive concerning the environmental effects of certain public and private projects. COM (82), 158 final. *Official Journal* C110, 1 May.
CEC. 1985. On the assessment of the effects of certain public and private projects on the environment. *Official Journal* L175, 5 July.
CEC. 1992. *Towards sustainability*. Brussels: CEC.
CEC. 1993. *Report from the Commission of the Implementation of Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment*. COM (93), 28 final. Brussels: CEC.
CEC. 1997a. Council Directive 97/11/EC of 3 March 1997 amending Directive 85/337/EEC on the assessment of certain public and private projects on the environment. *Official Journal* L73/5, 3 March.
CEC. 1997b. *Report from the Commission of the Implementation of Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment*. Brussels: CEC.
CEC. 2001. *Proposal for a Directive of the European Parliament and of the Council providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending Council Directives 85/337/EEC and 96/61/EC*. COM (2000), 839 final, 18 January 2001. Brussels: DG Environment, EC.
CEC. 2003. *Five years report to the European Parliament and the Council on the application and effectiveness of the EIA Directive*. (Impacts

Assessment Unit, Oxford Brookes University.) Website of DG Environment, EC: http://europa.eu.int/comm/environment/eia/home.htm.
CEC. 2009a. *Study concerning the report on the application and effectiveness of the EIA Directive: final report*. Brussels: DG Env.
CEC. 2009b. *Report from the Commission on the application and effectiveness of the EIA Directive (Directive 85/337/EEC, as amended by Directives 97/11/EC and 2003/35/EC).* Brussels: CEC.
Clark, B.D. 1976. *Assessment of major industrial applications: a manual* (DoE Research Report 13). London: HMSO.
Clark, B.D. et al. 1981. *A manual for the assessment of major industrial proposals*. London: HMSO.
CPRE (Council for the Protection of Rural England). 1991. *The environmental assessment directive: five years on*. London: Council for Protection of Rural England.
DCLG. 2011. *Guidance on the Environmental Impact Assessment (EIA) Regulations 2011 for England*. London: DCLG.
DfT (Department for Transport). 2007a. *Guidance on Transport Assessment (GTA)*. London: DfT.
DfT. 2007b. *WebTAG: transport analysis guidance* (www.webtag.org.uk). London: DfT.
DfT. 2011. *Design manual for roads and bridges (DMRB)*. London: DfT.
Dobry, G. 1975. Review of the development control system: final report. London: HMSO.
Environmental Analyst. 2017. *Press release: UK environmental consulting grows.* Shrewsbury: Environmental Analyst Ltd.
EU. 2011. *Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment*. Brussels: EU.
EU. 2012. *Commission Staff Working Paper: Impact Assessment – COM/2012/628 Final*. Brussels: EU.
EU. 2014. *Directive 2011/92/EU, as amended by Directive 2014/52/EU, on the assessment of the effects of certain public and private projects on the environment*. Brussels: EU.
EU. 2017. *EU Guidance on the preparation of the Environmental Impact Assessment Report (EIAR.)* Brussels: EU.
Fischer, T.B. et al. 2018. Implications of Brexit for environmental assessment in the UK –results from a workshop at the University of Liverpool. *Impact Assessment and Project Appraisal* 36(4), 371–377.
GHK. 2010. *Collection of information and data to support the Impact Assessment study of the review of the EIA Directive.* London: GHK.
Glasson, J. and Bellanger, C.2003. Divergent practice in a converging system? The case of EIA in France and the UK. *Environmental Impact Assessment Review* 23, 605–624.
HMG (Her Majesty's Government). 2008. *Planning Act 2008.* London: Stationery Office (SO).
HMG. 2017. *Infrastructure Planning (EIA) Regulations 2017.* London: SO.
HMSO (Her Majesty's Stationery Office) 1971. *Report of the Roskill Commission on the Third London Airport*. London: HMSO.
House of Lords. 1981a. *Environmental assessment of projects*. Select Committee on the European Communities, 11th Report, Session 1980–81. London: HMSO.
House of Lords. 1981b. *Parliamentary debates (Hansard) official report, session 1980–81*, 30 April, 1311–1347. London: HMSO.
IEMA. 2013. *Position Statement: revising EIA Directive 2011/92/EU.* Lincoln: IEMA.
MHCLG. 2017a. *Town and Country (T&CP) (EIA) Regulations 2017*. London: MHCLG.
MHCLG. 2017b. *Guidance on Town and Country (T&CP) (EIA) Regulations for England 2017*. London: MHCLG.
ODPM (Office of the Deputy Prime Minister). 2006. *Environmental impact assessment: guide to the procedures*. London: HMSO.
Planning Inspectorate. 2017. *Advice note 8: overview of the NSIP process for members of the public and others.* Bristol: PINS.
Scottish Government. 2017. *Planning circular 1/2017: the Town and Country Planning (EIA) (Scotland) Regulations 2017*. Edinburgh: Scottish Government.
SDD (Scottish Development Department). 1974. *Appraisal of the impact of oil-related development*, DP/TAN/16. Edinburgh: SDD.
Sheate, W.R. 1995. Electricity generation and transmission: a case study of problematic EIA implementation in the UK. *Environmental Policy and Practice* 5(1), 17–25.
Tomlinson, P. 1986. Environmental assessment in the UK: implementation of the EEC Directive. *Town Planning Review* 57(4), 458–486.
Williams, R.H. 1988.The EIA directive of the European Community. In *The role of environmental assessment in the planning process*, M. Clark and J. Herrington (eds), 74–87. London: Mansell.

Chapter 4

BIO. 2006. *Cost and benefits of the implementation of the EIA Directive in France*, unpublished document.

Borioni, R., Figueiredo Gallardo, A.L.C. and Sánchez, L.E. 2017. Advancing scoping practice in environmental impact assessment: an examination of the Brazilian federal system. *Impact Assessment and Project Appraisal* 35(3), 200–213.

Canter, L. and Ross, B. 2014. A basic need for integration – bringing focus to the scoping process. *Impact Assessment and Project Appraisal* 32(1), 21–22.

Carroll, B. and Turpin, T. 2009. *Environmental impact assessment handbook*. London: Thomas Telford.

CEC. 2014. Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of certain public and private projects on the environment. *Official Journal* L124/1, 25 April.

CEQ (Council on Environmental Quality). 1978. National Environmental Policy Act. Implementation of procedural provision: final regulations. *Federal Register* 43(230), 5977–6007, 29 November.

CLG (Communities and Local Government). 2006. *Evidence review of scoping in environmental impact assessment*. London: CLG.

COWI. 2009. *Study concerning the report on the application and effectiveness of the EIA Directive*. Final report to the European Commission, DG ENV. Kongens Lyngby, Denmark.

Dartmoor National Park Authority. 2010. Town and Country (Environmental Impact Assessment (England and Wales) Regulations 1999 (Part IV) Scoping Opinion (12 August 2010), www.dartmoor-npa.gov.uk/pl-2010-06-10_yennadon_eia_scoping_opinion.pdf.

DETR (Department of Environment, Transport and Regions). 2000. *Environmental impact assessment: a guide to the procedures*. London: HMSO.

EC. 2006. *Evaluation of EU legislation – Directive 85/337/EEC (Environmental Impact Assessment, EIA) and associated amendments*. Brussels: DG Enterprise and Industry.

Enriquez-de-Salamanca, A. 2016. Project splitting in environmental impact assessment. *Impact Assessment and Project Appraisal* 34(2), 152–159.

Environment Agency. 2002. *Environmental impact assessment: scoping guidelines on the environmental impact assessment of projects*. Reading: Environment Agency. www.gov.uk/government/publications/environmental-impact-assessment-eia-a-handbook-for-scoping-projects.

EU (European Union). 2017a. *Environmental impact assessment of projects: guidance on the preparation of the Environmental Impact Assessment Report*. Luxembourg: EU.

EU. 2017b. *Environmental impact assessment of projects: guidance on scoping*. Luxembourg: EU.

EU. 2017c. *Environmental impact assessment of projects: guidance on screening*. Luxembourg: EU.

EU. 2017d. *Environmental impact assessment of plans, programmes and projects: rulings of the Court of Justice of the European Union*. Luxembourg: EU.

Fortlage, C. 1990. *Environmental assessment: a practical guide*. Aldershot: Gower.

Hansen, E. and Wood, G. 2016. Understanding EIA scoping in practice: a pragmatist interpretation of effectiveness. *Environmental Impact Assessment Review* 58, 1–11.

IEMA (Institute of Environmental Management and Assessment). 2011. *The state of environmental impact assessment practice in the UK*. Grantham: IEMA.

João, E. 2002. How scale affects environmental impact assessment. *Environmental Impact Assessment Review* 22, 289–310.

Kørnøv, L. 2017. EIA screening – a new regulatory instrument? Presentation at Conference for the 25th anniversary of the EIA Directive, http://ec.europa.eu/environment/eia/conference_25years.htm.

Lawrence, D.P. 2003. *Environmental impact assessment: practical solutions to recurrent problems*. Hoboken, NJ: Wiley-Interscience.

Macintosh, A. and Waugh, L. 2014. Compensatory mitigation and screening rules in environmental impact assessment. *Environmental Impact Assessment Review* 49, 1–12.

McHarg, I. 1969. *A comprehensive route selection method*. Highway Research Record 246. Washington, DC: Highway Research Board.

Morgan, R.K., Hart, A., Freeman, C., Coutts, B., Colwill, D. and Hughes, A. 2012. Practitioners, professional cultures, and perceptions of impact assessment. *Environmental Impact Assessment Review* 32, 11–24.

Morrison-Saunders, A. and Bailey, M. 2009. Appraising the role of relationships between regulators and consultants for effective EIA. *Environmental Impact Assessment Review* 29, 284–294.

Oosterhuis, F. 2007. Costs and benefits of the EIA Directive: final report for DB Environment under specific agreement no. 07010401/2006/447175/FRA/G1. http://ec.europa.eu/environment/eia/pdf/Costs%20and%20benefits%20of%20the%20EIA%20Directive.pdf.

Retief, F. and Chabalala, B. 2009. The cost of environmental impact assessment in South Africa. *Journal of Environmental Assessment Policy and Management* 11(1), 51–68.

Rodriguez-Bachiller, A. 2000. Geographical information systems and expert systems for impact assessment, Parts I and II. *Journal of Environmental Assessment Policy and Management* 2(3), 369–448.

Rodriguez-Bachiller, A. with Glasson, J. 2004. *Expert systems and geographical information systems for impact assessment*. London: Taylor and Francis.

Smith, M.D. 2007. A review of recent NEPA alternatives analysis case law. *Environmental Impact Assessment Review* 27, 126–140.

South Yorkshire Integrated Transport Authority. 2001. South Yorkshire Local Transport Plan 2001–2006, www.southyorks.gov.uk/index.asp?id=3086.

State of California. 2017. Title 14 California Code of Regulations section 15000 et seq. Sacramento: State of California. http://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=PRC&division=13.&title=&part=&chapter=&article=.

Steinemann, A. 2001. Improving alternatives for environmental impact assessment. *Environmental Impact Assessment Review* 21, 3–21.

Therivel, R. and Wood. G. (eds). 2017. *Methods of environmental impact assessment*. 5th edition. London: Routledge.

Transport Scotland. 2009. *Forth Replacement Crossing Environmental Statement.*

UKNEA (National Ecosystem Assessment). 2017. Ecosystem services, http://uknea.unep-wcmc.org.

Weaver, A.B., Greyling, T., Van Wilyer, B.W. and Kruger, F.J. 1996. Managing the ETA process: logistics and team management of a large environmental impact assessment – proposed dune mine at St. Lucia, South Africa. *Environmental Impact Assessment Review* 16, 103–113.

Chapter 5

Aliyu, A.S., Ramli, A.T., Saleh, M.A., et al. 2014. *Environmental impact assessment (EIA) in nuclear power plant siting: using stochastic atmospheric dispersion modelling techniques.* Johor Bahru: Department of Physics, UTM Malaysia.

Australian Government. 2016. *Guidance note: cost–benefit analysis*. Canberra: Department of PM and Cabinet.

Bagli, S., Geneletti, D. and Orsi, F. 2011. Routeing of power lines through least-cost path analysis and multicriteria evaluation to minimise environmental impacts. *Environmental Impact Assessment Review* 31, 234–239.

Band, B. 2012. *Using a collision risk model to assess bird collision risks for offshore windfarms.* SOSS Report. The Crown Estate.

Band, W., Madders, M. and Whitfield, D.P. 2007. Developing field analytical methods to assess avian collision risk at wind farms. In *Developing field and analytical methods to assess avian collision risk at wind farms*, De Lucas, M., Janss, G.F.E. and Ferrer, M. (eds), 259–275. Madrid: Quercus.

Bannerjee, P. and Ghose, M.K. 2016. Spatial analysis of environmental impacts of highway projects with special emphasis on mountainous area: an overview. *Impact Assessment and Project Appraisal* 34(4), 279–293.

Barde, J.P. and Pearce, D.W. 1991. *Valuing the environment: six case studies*. London: Earthscan.

Barfod, M.B. and Leleur, S. (eds). (2014). Multi-criteria decision analysis for use in transport decision making. 2nd edition. Lyngby: DTU Lyngby, Technical University of Denmark.

Baxamusa, M. 2008. Empowering communities through deliberation: the model of community benefits agreements. *Journal of Planning Education and Research* 27, 261–276.

Beattie, R. 1995. Everything you already know about EIA, but don't often admit. *Environmental Impact Assessment Review* 15.

Boardman, A.E., Greenberg, D., Vining, A. and Weimer, D. 2006. *Cost–benefit analysis: concepts and practice*. 3rd edition. Upper Saddle River, NJ: Pearson Prentice Hall.

Bond, A., Morrison-Saunders, A., Gunn, J.A.E., Pope, J. and Retief, F. 2015. Managing uncertainty, ambiguity and ignorance in impact assessment by embedding evolutionary resilience, participatory modelling and adaptive management. *Journal of Environmental Management* 151, 97–104.

Bowers, J. 1990. *Economics of the environment: the conservationists' response to the Pearce Report*. Wellington, Telford: British Association of Nature Conservationists.

Bracken, I. 2008. *Urban planning methods: research and policy analysis.* London: Routledge.

Bregman, J.I. and Mackenthun, K.M. 1992. *Environmental impact statements*. Boca Raton, FL: Lewis.

Briedenhann, J. and Butts, S. (2006). Application of the Delphi technique to rural tourism project evaluation. *Current Issues in Tourism* 9(2), 171–190.

BSI. 2014. *British Standard 5228-1:2009+A1:2014. Code of practice for noise and vibration control on construction and open sites – noise.*

Business and Biodiversity Offsets Programme (BBOP). 2012. *Biodiversity offset design handbook.* Washington, DC: BBOP.

BBOP. 2013. *To no net loss and beyond – an overview of the Business and Biodiversity Offsets Programme*. Washington, DC: BBOP.

Canter, L. 1996. *Environmental impact assessment.* Boston, MA: McGraw-Hill International Editions.

Cardenas, I.C and Halman, J.I.M. 2016. Coping with uncertainty in EIA: open techniques. *Environmental Impact Assessment Review* 60, 24–39.

Cass, N., Walker, G. and Devine-Wright, P. 2010. Good neighbours, public relations and bribes: the politics and perceptions of community benefits provision in renewable energy development in the UK. *Journal of Environmental Policy and Planning* 12(3), 255–275.

CEC. 1993. *Environmental manual: sectoral environmental assessment sourcebook*. Brussels: CEC, DG VIII.

CEC. 1999. *Guidelines for the assessment of indirect and cumulative impacts as well as impact interactions.* Luxembourg: Office for Official Publications of the CEC.

CEQ (Council on Environmental Quality). 1978. *National Environmental Policy Act*, Code of Federal Regulations, Title 40, Section 1508.20.

DCLG. 2009. *Multi-criteria analysis: a manual.* London: DCLG.

Defra (Department for Environment, Food and Rural Affairs). 2007. *An introductory guide to valuing ecosystem services*. London: Defra.

DETR (Department of the Environment, Transport and the Regions). 1997. *Mitigation measures in environmental statements*. London: DETR.

DoE (Department of Environment). 1991. *Policy appraisal and the environment*. London: HMSO.

EDF. 2011. *Environmental statement for Hinkley Point Two new nuclear power station.* See Planning Inspectorate (PINS) National Infrastructure website.

Ehrlich, A. and Ross, W. 2015. The significance spectrum and EIA significance determinations. *Impact Assessment and Project Appraisal* 33, 87–97.

Emberton, R., Wenning, R.J. and Treweek, J. 2017. Ecology. In *Methods of environmental and social impact assessment*, R. Therivel and G. Wood (eds). 4th edition. Abingdon: Routledge.

EU. 2014a. *Directive 2011/92/EU, as amended by Directive 2014/52/EU, on the assessment of the effects of certain public and private projects on the environment*. Brussels: CEC.

EU. 2014b. *Guide to cost–benefit analysis of investment projects*. Brussels: CEC.

EU. 2017. *Guidance on the preparation of the Environmental Impact Assessment Report (EIAR).* Brussels: CEC.

Farcas, A., Thompson, P.M. and Merchant, N.D. 2016. Underwater noise modelling for EIA. *Environmental Impact Assessment Review* 57, 114–122.

Figueira, J., Greco, S. and Ehrgott, M. 2005. *Multi-criteria decision analysis: state of the art surveys.* New York: Springer.

Fortlage, C. 1990. *Environmental assessment: a practical guide.* Aldershot: Gower.

Friend, J.K. and Hickling, A. 1987. *Planning under pressure: the strategic choice approach*. Oxford: Pergamon.

Gibson, R.B. 2013. Avoiding sustainability trade-offs in environmental assessment. *Impact Assessment and Project Appraisal* 31, 2–12.

Gibson, R.B., Hassan, S., Holtz, S., Tansey, J. and Whitelaw, G. 2005. *Sustainability assessment: criteria and processes.* London: Earthscan.

Glasson, J. 2017a. Socio-economic impacts 1: overview and economic impacts. In *Methods of environmental and social impact assessment*, R. Therivel and G. Wood (eds). 4th edition. Abingdon: Routledge.

Glasson, J. 2017b. Large energy projects and community benefits agreements – some experience from the UK. *Environmental Impact Assessment Review* 65, 12–20.

Glasson, J., Van der Wee, M. and Barrett, B. 1988. A local income and employment multiplier analysis of a proposed nuclear power station development at Hinkley Point in Somerset. *Urban Studies* 25, 248–261.

Goldvarg, E. and Johnson-Laird, P.N. 2001. Naïve causality: a mental model theory of causal meaning and reasoning. *Cognitive Science* 25, 565–610.

Government of Western Australia. 2014. *WA environmental offsets guidelines*. Perth: WA Government.

Green, H., Hunter, C. and Moore, B. 1989. Assessing the environmental impact of tourism development – the use of the Delphi technique. *International Journal of Environmental Studies* 35, 51–62.

Hanley, N. and Splash, C. 2003. *Cost–benefit analysis and the environment.* Cheltenham: Edward Elgar.

Herath, G. and Prato, T. 2006. *Using multi-criteria decision analysis in natural resource management.* Aldershot: Ashgate.

HM Treasury. 2018. *Green Book: central government guidance on appraisal and evaluation*. London: HM Treasury.

HMSO. 1971. *Report of the Roskill Commission on the third London airport*. London: HMSO.

Holling, C.S. (ed.). 1978. *Adaptive environmental assessment and management*. New York: Wiley.

IAIA. 2015. *Social impact assessment: guidance for assessing and managing the social impacts of projects*. Fargo, ND: IAIA.

IEMA (Institute of Environmental Management and Assessment). 2011. *The state of environmental impact assessment practice in the UK.* Lincoln: IEMA.

IEMA. 2016. *EIA guide to: delivering quality development.* Lincoln: IEMA.

Jacob, C., Pioch, S. and Thorin, S. 2016. The effectiveness of the mitigation hierarchy in environmental impact studies on marine ecosystems. *Environmental Impact Assessment Review* 60, 83–98.

Jaoa, E., Vanclay, F. and den Broeder, L. 2011. Emphasising enhancement in all forms of impact assessment: introduction to special issue. *Impact Assessment and Project Appraisal* 29(3), 170–180.

Jones, M. and Morrison-Saunders, A. 2016. Making sense of significance in EIA. *Impact Assessment and Project Appraisal* 34(1), 87–93.

Knight, R. and Therivel, R. 2017. Landscape and visual. In *Methods of environmental and social impact assessment*, R. Therivel and G. Wood (eds). 4th edition. Abingdon: Routledge.

Kurniawan, J.S. and Khardi, S. 2011. Comparison of methodologies estimating emissions of aircraft pollutants, EIA around airports. *Environmental Impact Assessment Review* 31, 240–252.

Landeta, J. 2006. Current validity of the Delphi method in social sciences. *Technological Forecasting and Social Change* 73, 467–482.

Lee, N. 1987. *Environmental impact assessment: a training guide*. Occasional Paper 18, Department of Town and Country Planning, University of Manchester.

Leung, W., Noble, B.F., Jaeger, J.A.G. and Gunn, J.A.E. 2016. Disparate perceptions about uncertainty consideration and disclosure practices in environmental assessment and opportunities for improvement. *Environmental Impact Assessment Review* 57, 89–100.

Lewis, J.A. 1988. Economic impact analysis: a UK literature survey and bibliography. *Progress in Planning* 30(3), 161–209.

Lichfield, N. 1996. *Community impact evaluation*. London: UCL Press.

Lichfield, N., Kettle, P. and Whitbread, M. 1975. *Evaluation in the planning process*. Oxford: Pergamon.

Maclaren, V.W. and Whitney, J.B. (eds). 1985. *New directions in environmental impact assessment in Canada*. London: Methuen.

Madsen, E.A. and Cook, A.S.C.P. 2016. Avian collision risk models for wind energy impact assessments. *Environmental Impact Assessment Review* 56, 43–49.

MHCLG. 2017. *Guidance on Town and Country (T&CP) (EIA) regulations for England 2017*. London: MHCLG.

Munn, R.E. 1979. *Environmental impact assessment: principles and procedures*. New York: Wiley.

Mustajoki, J., Mattunen, M., Karjalainen, T.P. and Hokkanen, J. 2015. *IMPERIA: improving environmental assessment by adopting good practices and tools of multi-criteria decision analysis (MCDA).* Presentation at IAIA Conference, Florence.

Nijkamp, P. 2004. *Environmental economics and evaluation.* Cheltenham: Edward Elgar.

Parkin, J. 1992. *Judging plans and projects*. Aldershot: Avebury.

Pearce, D. and Markandya, A. 1990. *Environmental policy benefits: monetary valuation*. Paris: OECD.

Perdicoulis, A. and Glasson, J. 2006. Causal networks in EIA. *Environmental Impact Assessment Review* 26, 553–569.

Perdicoulis, A. and Glasson, J. 2009. The causality premise of EIA in practice. *Impact Assessment and Project Appraisal* 27(3), 247–250.

Perdicoulis, A. and Glasson, J. 2012. How clearly is causality communicated in EIA? *Journal of Environmental Assessment and Management* 14.

Peste, F., Paula, A., da Silva, L.P., et al. 2015. How to mitigate impacts of windfarms on bats? A review of potential conservation measures in the European context. *Environmental Impact Assessment Review* 51, 10–22.

PINS (Planning Inspectorate). 2014. *Hornsea project one: examining authority's report of findings and conclusions.* Bristol: PINS website.

Rau, J.G. and Wooten. D. C. 1980. *Environmental impact analysis handbook*. New York: McGraw-Hill.

Rodriguez-Bachiller, A. with Glasson, J. 2004. *Expert systems and geographical information systems*. London: Taylor and Francis.

RPS Group. 2015. *Hornsea offshore wind farm: project 2 – chapter 5: EIA methodology*. London: Smartwind Ltd.

Sippe, R. 1994. Policy and environmental assessment in Western Australia. Paper for International Workshop, DG for Environmental Protection. The Hague: Ministry of Housing, Spatial Planning and the Environment.

Sippe, R. 1999. Criteria and standards for assessing significant impact. In *Handbook of EIA: volume 1 (chapter 5)*, J. Petts (ed.). Oxford: Blackwell Science.

Tennoy, A., Kvaerner, J. and Gjerstad, K.I. 2006. Uncertainty in EIA predictions: the need for better communication and more transparency. *Impact Assessment and Project Appraisal* 24(1), 45–56.

Therivel, R. and Wood, G. 2017. *Methods of environmental and social impact assessment*. 4th edition. Abingdon: Routledge.

VROM. 1984. *Prediction in environmental impact assessment*. The Hague: Netherlands Ministry of Public Housing, Physical Planning and Environmental Affairs.
Walker, W.E., Harremoës, P., Rotmans, J., et al. 2003. Defining uncertainty: a conceptual basis for uncertainty management in model-based decision support. *Integrated Assessment* 4(1), 5–17.
Walker, D.P., Dalton, H., Harker, G. and Heal, K. 2017. Air. In *Methods of environmental and social impact assessment*, R. Therivel and G. Wood (eds). 4th Edition. Abingdon: Routledge.
West Somerset Council (WSC). 2016. *Hinkley Point C: community impacts mitigation strategy.* Wiliton: WSC.
Western Australian Environmental Protection Authority (EPA). 2010. *Environmental impact assessment: administrative procedures 2010*. Perth: EPA.
Western Australia EPA. 2015. *Environmental assessment guideline 8 – environmental principles, factors and objectives.* Perth: EPA.
Winpenny, J.T. 1991. *Values for the environment: a guide to economic appraisal. Overseas Development Institute*. London: HMSO.
Wood, G. 2000. Is what you see what you get? Post development auditing of methods used for predicting the zone of visual influence in EIA. *Environmental Impact Assessment Review* 20(5), 537–556.
Wood, G. and Becker, J. 2004. Evaluating and communicating impact significance in EIA: a fuzzy set approach to articulating stakeholder perspectives. Presentation to the IAIA Conference; Vancouver, Canada; pp. 26–29 (abstracts volume, pp. 73–74).

Chapter 6

ADB (NGO Forum on ADB). 2006. The Advocacy Guide to ADB EIA Requirement, Philippines, www.scribd.com/document/79066244/EIA-Guidebook.
Arnstein, S.R. 1971. A ladder of public participation in the USA. *Journal of the Royal Town Planning Institute*, April, 216–224.
Atkinson, N. and Ainsworth, R. 1992. Environmental assessment and the local authority: facing the European imperative. *Environmental Policy and Practice* 2(2), 111–128.
Booth, A. and Skelton, N.W. 2011. 'We are fighting for ourselves' – First Nations' evaluation of British Columbia and Canadian environmental assessment processes. *Journal of Environmental Assessment Policy and Management* 13(3), 367–404.
Buxton, R. 1992. Scope for legal challenge. In *Environmental assessment and audit: a user's guide*, Ambit (ed.), 43–44. Gloucester: Ambit.
CEC (European Commission of Communities). 2009. On the application and effectiveness of the EIA Directive (Directive 85/337/EEC, as amended by Directives 97/11/EC and 2003/35/EC), http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0378:FIN:EN:PDF.
CEQ (Council on Environmental Quality). 1978. National Environmental Policy Act. Implementation of procedural provisions: final regulations. Federal Register 43(230), 55977-60076, 29 November.
Clark, B. 1994. Improving public participation in environmental impact assessment. *Built Environment* 20(4), 294–308.
CLG. 2012. *National planning policy framework*. London: CLG.
COWI. 2009. *Study concerning the report on the application and effectiveness of the EIA Directive*, Final report to European Commission DG ENV. Kongens Lyngby, Denmark: COWI.
Des Rosiers, N. 2000. From telling to listening: a therapeutic analysis of the role of courts in minority–majority conflicts. *Court Review*, Spring.
DoE (Department of the Environment). 1995. *Preparation of environmental statements for planning projects that require environmental assessment*. London: HMSO.
EC (European Commission). 2010. Environment: Commission warns UK about unfair cost of challenging decisions, http://europa.eu/rapid/pressReleasesAction.do?reference=IP/10/312&type=HTML.
EC. 2017. Statistics on environmental infringements, http://ec.europa.eu/environment/legal/law/statistics.htm.
Enríquez-de-Salamanca, Á. 2018. Stakeholders' manipulation of environmental impact assessment. *Environmental Impact Assessment Review* 68, 10–18.
EU. 2014. *Directive 2011/92/EU, as amended by Directive 2014/52/EU, on the assessment of the effects of certain public and private projects on the environment*. Brussels: EU.
EU. 2017. *EU Guidance on the preparation of the Environmental Impact Assessment Report (EIAR.)* Brussels: EU.
Glucker, A.N., Driessen, P.P.J., Kolhoff, A. and Runhaar, H.A.C. 2013. Public participation in environmental impact assessment: why, who and how? *Environmental Impact Assessment Review* 43, 104–111.

Hancock, T. 1992. Statement as an aid to consent. In *Environmental assessment and audit: a user's guide*, Ambit (ed.), 34–35. Gloucester: Ambit.

Hartley, N. and Wood, C. 2005. Public participation in environmental impact assessment – implementing the Aarhus Convention. *Environmental Impact Assessment Review* 25, 319–340.

Hourdequin, M., Landres, P., Hanson, M.J. and Craig, D.R. 2012. Ethical implications of democratic theory for U.S. public participation in environmental impact assessment. *Environmental Impact Assessment Review* 35, 37–44.

International Association for Public Participation. 2001. IAP2's Public Participation Toolbox, http://iap2.affiniscape.com/associations/4748/files/06Dec_Toolbox.pdf.

Jones, C.E. and Wood, C. 1995. The impact of environmental assessment in public inquiry decisions. Journal of Planning and Environment Law October, 890–904.

Kabir, S.M.Z. and Momtaz, S. 2012. The quality of environmental impact statements and environmental impact assessment practice in Bangladesh. *Impact Assessment and Project Appraisal* 30(2), 94–99.

Kamijo, T. and Huang, G. 2016. Improving the quality of environmental impact assessment reports: effectiveness of alternatives analysis and public involvement in JICA supported projects. *Impact Assessment and Project Appraisal* 34(2), 143–151.

Lee, N. and Colley, R. 1990. Reviewing the quality of environmental statements, Occasional Paper No. 24. Manchester: University of Manchester, EIA Centre.

McNab, A. 1997. Scoping and public participation. In *Planning and EIA in practice*, J. Weston (ed.), 60–77. Harlow: Longman.

MHCLG (Ministry of Housing, Communities and Local Government). 2018. *National Planning Policy Framework: Draft text for consultation*. London: MHCLG.

Mounir, Z.M. 2015. Evaluation of the quality of environmental impact assessment reports using Lee and Colley package in Niger Republic. *Modern Applied Science* 9(1).

Nadeem, O. and Fischer, T.B. 2011. An evaluation framework for effective public participation in EIA in Pakistan. *Environmental Impact Assessment Review* 31, 36–47.

O'Faircheallaigh, C. 2010. Public participation and environmental impact assessment: purposes, implications and lessons for public policy making. *Environmental Impact Assessment Review* 30, 19–27.

Olsen, A-S.H. and Hansen, A.M. 2014. Perceptions of public participation in impact assessment: a study of offshore oil exploration in Greenland. *Impact Assessment and Project Appraisal* 32(1), 72–80.

Partidário, M.R. 1996. 16th Annual Meeting, International Association for Impact Assessment: Synthesis of Workshop Conclusions. Estoril: IAIA.

Planning Portal. 2018. Appeals. www.planningportal.co.uk/info/200207/appeals.

Rodriguez-Bachiller, A. with Glasson, J. 2004. *Expert systems and geographical information systems for impact assessment*. London: Taylor and Francis.

Ross, W.A. 2000. Reflections of an environmental assessment panel member. *Impact Assessment and Project Appraisal* 18(2), 91–98.

Salomons, G.H. and Hoberg, G. 2014. Setting boundaries of participation in environmental impact assessment. *Environmental Impact Assessment Review* 45, 69–75.

Salter, J.R. 1992a. Environmental assessment: the challenge from Brussels. *Journal of Planning and Environment Law*, January, 14–20.

Salter, J.R. 1992b. Environmental assessment – the need for transparency. *Journal of Planning and Environment Law*, March, 214–221.

Salter, J.R. 1992c. Environmental assessment – the question of implementation. *Journal of Planning and Environment Law*, April, 313–318.

Sinclair, A.J., Peirson-Smith, T.J. and Boercers, M. 2017. Environmental assessments in the Internet age: the role of e-governance and social media in creating platforms for meaningful participation. *Impact Assessment and Project Appraisal* 35(2), 148–157.

The Independent. 2016. Protest against Rampal power station mounts. Dhaka, Bangladesh: *The Independent*, 21 August, www.theindependentbd.com/printversion/details/56808.

Turner, T. 1988. The legal eagles. Amicus Journal, Winter, 25–37.

UNECE (United Nations Economic Commission for Europe). 2017. Report of the Compliance Committee: Compliance by the United Kingdom of Great Britain and Northern Ireland with its obligations under the convention. www.unece.org/fileadmin/DAM/env/pp/mop6/English/ECE_MP.PP_2017_46_E.pdf.

UNITAR (United Nations Institute for Training and Research). 2013. *Principle 10 of the Rio Declaration*. Geneva: United Nations.

Weiss, E.H. 1989. An unreadable EIS is an environmental hazard. *Environmental Professional* 11, 236–40.

Wende, W. 2002. Evaluation of the effectiveness and quality of environmental impact assessment in the Federal Republic of Germany. *Impact Assessment and Project Appraisal* 20(2), 93–99.

Westman, W.E. 1985. *Ecology, impact assessment and environmental planning*. New York: Wiley.

Weston, J. (ed.). 1997. *Planning and EIA in practice*. Harlow: Longman.

Williams, G. and Hill, A. 1996. Are we failing at environment justice? How minority and low income populations are kept out of the public involvement process. *Proceedings of the 16th Annual Meeting of the International Association for Impact Assessment*. Estoril: IAIA.

Wood, C.M. and Jones, C. 1997. The effect of environmental assessment on UK local authority planning decisions. *Urban Studies* 34(8), 1237–1257.

Chapter 7

AAHK (Airport Authority Hong Kong). 2014. *Expansion of Hong Kong International Airport into a three-runway system.* Hong Kong: AAHK.

AEP (Association of Environmental Professionals). 2016. *California Environmental Quality Act (CEQA): statute and guidelines.* Palm Desert, CA: AEP.

Ahammed, A.K.M.R. and Nixon, B.M. 2006. Environmental impact monitoring in the EIA process of South Australia. *Environmental Impact Assessment and Review* 26, 426–447.

Appiah-Opoku, S. and Bryan, H. 2013. EIA follow-up in the Ghanaian mining sector: challenges and opportunities. *Environmental Impact Assessment Review* 41, 38–44.

Arts, J. 1998. *EIA follow-up: on the role of ex-post evaluation in environmental impact assessment*. Groningen: Geo Press.

Arts, J., Caldwell, P. and Morrison-Saunders, A. 2001. EIA follow-up: good practice and future directions – findings from a workshop at the IAIA 2000 Conference. *Impact Assessment and Project Appraisal* 19(3), 175–185.

Au, E. and Sanvícens, G. 1996. EIA follow up monitoring and management. In *EIA process strengthening*. Canberra: Environmental Protection Agency.

Baseline Environmental Consulting. 1989. *Mitigation monitoring and reporting plan for a woodwaste conversion facility, West Berkeley, California*. Emeryville, CA: Baseline Environmental Consulting.

Beanlands, G.E. and Duinker, P. 1983. *An ecological framework for environmental impact assessment*. Halifax, Nova Scotia: Dalhousie University, Institute for Resource and Environmental Studies.

Bear, D. 2003. Some modest suggestions for improving the implementation of NEPA. *Natural Resources Journal* 43 (4).

Berkes, F. 1988. The intrinsic difficulty of predicting impacts: lessons from the James Bay hydro project. *Environmental Impact Assessment Review* 8, 201–220.

Bisset, R. 1984. Post development audits to investigate the accuracy of environmental impact predictions. *Zeitschrift für Umweltpolitik* 7, 463–484.

Bisset, R. and Tomlinson, P. 1988. Monitoring and auditing of impacts. In *Environmental impact assessment*, P. Wathern (ed.). London: Unwin Hyman.

Bjorkland, R. 2013. Monitoring: the missing piece. A critique of NEPA monitoring. *Environmental Impact Assessment Review* 43, 129–134.

Blandford, C. Associates. 1994. *Wind turbine power station construction monitoring study*. Gwynedd: Countryside for Wales.

Buckley, R. 1991. Auditing the precision and accuracy of environmental impact predictions in Australia. *Environmental Monitoring Assessment* 18, 1–23.

CEC (Commission of the European Communities). 1980. Proposal for a council directive concerning the assessment of the environmental effects of certain public and private projects on the environment, 9 July 1980. *Official Journal of the EC* L175, 40–49.

CEC. 2003. *Monitoring under the Water Framework Directive: Guidance Document No. 7*. Luxembourg: CEC.

CEQ (Council on Environmental Quality). 2011. *Appropriate use of mitigation and monitoring*. Washington, DC: US Government Printing Office.

Chadwick, A. and Glasson, J. 1999. Auditing the socio-economic impacts of a major construction project: the case of Sizewell B nuclear power station. *Journal of Environmental Planning and Management* 42(6), 811–836.

Chadwick, A. and Glasson, J. 2017. Social impacts. In *Method of environmental and social impact assessment*, R. Therivel and G. Wood (eds). Abingdon: Routledge.

Culhane, P.J. 1993. Post-EIS environmental auditing: a first step to making rational environmental assessment a reality. *Environmental Professional* 5.

Dickman, M. 1991. Failure of environmental impact assessment to predict the impact of mine tailings on Canada's most northerly hypersaline lake. *Environmental Impact Assessment Review* 11, 171–180.

Dipper, B., Jones, C. and Wood, C. 1998. Monitoring and post-auditing in environmental impact assessment: a review. *Journal of Environmental Planning and Management* 41(6), 731–47.

Economic Commission for Africa. 2005. *Review of the application of EIA in selected African countries.* Addis Ababa: ECA Printshop.

Ecotech Research and Consulting Ltd. 1994. Toyota impact study summary. unpublished.

EPD (Environmental Protection Department) website. *Environmental impact assessment ordinance and technical memorandum on environmental impact assessment*. Hong Kong: EPD Hong Kong Government (as at April 2018).

EU. 2017. *EU guidance on the preparation of the Environmental Impact Assessment Report (EIAR).* Brussels: EU.

Frost, R. 1997. EIA monitoring and audit. In *Planning and EIA in practice*, J. Weston (ed.), 141–164. Harlow: Longman.

Glasson, J. 2005. Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station. Impact Assessment and Project Appraisal 23(3), 215–226.

Glasson, J., Chadwick, A. and Therivel, R. 1989–1997. *Local socio-economic impacts of the Sizewell B PWR Construction Project*. Oxford: Oxford Polytechnic/Oxford Brookes University, Impacts Assessment Unit.

Highways England. (2015). *Post Opening Project Evaluation (POPE): M1 junction 6a to 10 widening.* Guildford: Highways England.

Highways England. (2016). *Post Opening Project Evaluation (POPE) of ajor schemes: meta analysis 2015.* Guildford: Highways England.

Hui, S.Y.M. and Ho, M.W. 2002. EIA follow-up: internet-based reporting. In *Conference proceedings of 22nd Annual Meeting IAIA*, June 15–21. The Hague: IAIA.

IAPA (Impact Assessment and Project Appraisal). 2005. Special issue on EIA follow-up. *Impact Assessment and Project Appraisal* 23 (3).

Impel. 2012. *The implementation of EIA on the basis of precise examples: final report*. Brussels: Impel, European Union Network for the Implementation and Enforcement of Environmental Law.

IOCGP (Inter-Organisational Committee on Principles and Guidelines). 2003. Principles and guidelines for social impact assessment in the USA. *Impact Assessment and Project Appraisal* 21(3), 231–250.

Jha-Thakur, U. 2011. EIA follow-up in India: exploring regional variation. *Journal of Environmental Assessment Policy and Management* 13(3), 435–458.

Jones, R. and Fischer, T. 2016. EIA follow-up in the UK –a 2015 update. *Journal of Environmental Assessment Policy and Management* 18(1), 1–22.

King, E. and O'Malley, V. 2011. Lessons learnt from post EIS evaluations of national road schemes in Ireland. *Environmental Impact Assessment Review* 32, 123–132.

Lee, N. and Wood, C. 1980. Methods of environmental impact assessment for use in project appraisal and physical planning, Occasional Paper no. 7. University of Manchester, Department of Town and Country Planning.

Marshall, R. 2001. Mitigation linkage: EIA follow-up through the application of EMPS in transmission construction projects. In *Conference Proceedings of 21st Annual Meeting of IAIA*. Cartagena, Columbia: IAIA.

Marshall, R. 2005. EIA follow-up and its benefits for industry. *Impact Assessment and Project Appraisal* 23(3) 191–196.

McKay, A. and Johnson, C. 2017. Confronting barriers and recognising opportunities: developing effective community-based environmental monitoring programs to meet the needs of Aboriginal communities. *Environmental Impact Assessment Review* 64, 16–25.

Morrison-Saunders, A., Arts, J., Baker, J. and Caldwell, P. 2001. Roles and stakes in EIA follow-up. *Impact Assessment and Project Appraisal* 19(4), 289–296.

Morrison-Saunders, A., Baker, J. and Arts, J. 2003. Lessons from practice: towards successful follow-up. *Impact Assessment and Project Appraisal* 21(1), 43–56.

Morrison-Saunders, A. and Arts, J. (eds). (2004) *Assessing impact: handbook of EIA and SEA follow-up.* London: Earthscan.

Nadeem, O. and Hameed, R. 2010. Exploring the potential and constraints to implementing the international best practice principles of EIA follow-up: the case of Pakistan. *Journal of American Science* 6(12), 108–121.

Nuclear Electric. 1993. *Proposed Sizewell C PWR Power Station – environmental statement*. Gloucester: Nuclear Electric.

Olympics Delivery Authority. 2010. *Dust and noise monitoring*. London: Olympics Delivery Authority.

Olympics Delivery Authority. 2011. *Employment and skills update: Jan 2011*. London: Olympics Delivery Authority.

Strangway, R., Dunn, M. and Erless, R. 2016. Monitoring *Nutimesanan* following the diversion of our river: a community led registry in Eeyou Istchee, Northern Quebec. *Journal of Environmental Assessment Policy and Management* 18 (1).

Symonds/EDAW. 2004. *ES for Lower Lea Valley: Olympics and legacy planning application.* Symonds/EDAW for London Development Agency.
Therivel, R. and Wood, G. (eds). 2017. *Method of environmental and social impact assessment.* Abingdon: Routledge.
Tiffer-Sotomayor, R., et al. 2015. Legal framework of environmental impact assessment in Latin America. Retrieved from http://conferences.iaia.org/2015/FinalPapers.
Tomlinson, E. and Atkinson, S.F. 1987. Environmental audits: proposed terminology. *Environmental Monitoring and Assessment* 8, 187–198.
WA EPA (Western Australian Environmental Protection Authority). 2017. *Environmental impact assessment administrative procedures manual (part IV divisions 1 and 2)*. Perth: EPA.
Wessels, J.-A. 2013. Factors that influence the independence of EIA verifiers: a developing country perspective. *Impact Assessment and Project Appraisal* 31(3), 169–179.
Wessels, J.-A., Retief, F. and Morrison-Saunders, A. 2015. Appraising the value of independent EIA verifiers. *Environmental Impact Assessment Review* 50, 178–189.
Wood, G. 1999a. Assessing techniques of assessment: post-development auditing of noise predictive schemes in environmental impact assessment. *Impact Assessment and Project Appraisal* 17(3), 217–226.
Wood, G. 1999b. Post-development auditing of EIA predictive techniques: a spatial analysis approach. *Journal of Environmental Planning and Management* 42(5), 671–689.
Wood, G. 2000. Is what you see what you get? Post-development auditing of methods used for predicting the zone of visual influence in EIA. *Environmental Impact Assessment Review* 20(5), 537–556.

Chapter 8

Airports Commission 2015. *Airports Commission: final report.* London: Airports Commission.
Ball, M., Allmendinger, P. and Hughes, C. 2008. *Housing supply and planning delay in the South of England*. Research funded by Economic and Social Research Council, grant RES-000-22-2115. Reading: University of Reading.
Barker, A. and Wood, C. 1999. An evaluation of EIA system performance in eight EU countries. *Environmental Impact Assessment Review* 19, 387–404.
CEC (DG ENV). 2009. *Study concerning the report on the application and effectiveness of the EIA Directive*. Brussels: EC. http://ec.europa.eu/environment/eia/pdf/eia_study_june_09.pdf.
DCLG (Communities and Local Government). 2008. The Killian Pretty Review: planning applications – a faster and more responsive system: Final report, www.communities.gov.uk/publications/planningandbuilding/killianprettyfinal.
DCLG. 2011a. *Guidance on the Environmental Impact Assessment (EIA) Regulations 2011 for England*. London: DCLG.
DCLG. 2011b. Personal communication with Environmental Assessment Division on throughput of UK EISs.
DETR. 1997. *Consultation paper: implementation of the EC Directive (97/11/EC) – determining the need for environmental assessment*. London: DETR.
DoE. 1996. *Changes in the quality of environmental impact statements*. London: HMSO.
EDF. 2011. *Environmental statement for Hinkley Point C new nuclear power station.* See Planning Inspectorate (PINS) National Infrastructure website.
ENDS. 2007. *Directory of environmental consultants 2006/7*. London: Environmental Data Services.
EU. 2015. *EIA – a study on costs and benefits*. Brussels: CEC.
EWEA (European Wind Energy Association). (2016). *The European offshore wind industry – key trends and statistics 2015*. Brussels: EWEA.
Fischer, T.B., Glasson, J., Jha-Thakar, U., et al. 2018. Implications of Brexit for environmental assessment in the UK – results from a workshop at the University of Liverpool. *Impact Assessment and Project Appraisal* 36(4), 371–377.
GHK. 2010. *Collection of information and data to support the impact assessment study of the review of the EIA Directive*. London: GHK.
Glasson, J. 1999a. The first 10 years of the UK EIA system: strengths, weaknesses, opportunities and threats. *Planning Practice and Research* 14, 363–375.
Glasson, J. 1999b. Environment impact assessment – impact on decisions. In *Handbook of environmental impact assessment*, J. Petts (ed.), vol. 1. Oxford: Blackwell Science.
Gosling, J. 1990. *The Town and Country (Assessment of Environmental Effects) Regulations 1988: the first year of application*. Proposal for a working paper, Department of Land Management and Development, University of Reading.
IAU (Impacts Assessment Unit). 2003. Screening decision making under the Town and Country Planning (EIA)

(England and Wales) Regulations 1999. Oxford: IAU, Oxford Brookes University.
IEMA (Institute of Environmental Management and Assessment). 2011. *The state of environmental impact assessment practice in the UK.* Grantham: IEMA.
Jha-Thakur, U. and Fischer, T. 2016. 25 years of the UK EIA system: strengths, weaknesses, opportunities and threats. *Environmental Impact Assessment Review* 61, 19–26.
Jones, C.E. 1995. The effect of environmental assessment on planning decisions. Report, special edition (October), 5–7.
Jones, C., C. Wood, B. Dipper 1998. Environmental assessment in the UK planning process. *Town Planning Review* 69, 315–19.
Kreuser, P. & R. Hammersley 1999. Assessing the assessments: British planning authorities and the review of environmental statements. *Journal of Environmental Assessment Policy and Management* 1, 369–388.
Lee, N. and Colley, R. 1990 (updated 1992). *Reviewing the quality of environmental statements*. Occasional Paper no. 24. University of Manchester.
McCracken, R., QC. 2010. EIA, SEA and AA, present position: where are we now? *Journal of Planning Law* 12, 1515–1532.
MHCLG. 2017. *Guidance on Town and Country (T&CP) (EIA) regulations for England 2017*. London: MHCLG.
MHCLG. 2018. *Guidance: before submitting a planning application*. London: MHCLG.
Mustow, S. 2017. The new EIA Directive (2014/52/EU) and UK water impact assessment. *Impact Assessment and Project Appraisal* 35(3), 240–247.
National Audit Office. 2008. Planning for homes: speeding up planning applications for major housing development in England, www.nao.org.uk/publications/0809/planning_for_homes_speeding.aspx.
O'Riordan, T. 1990. EIA from the environmentalist's perspective. *VIA* 4, March, 13.
Paliwal, R. 2006. EIA practice in India and its evaluation using SWOT analysis. *Environmental Impact Assessment Review* 26(5), 492–510.
Petts, J. 2003. Barriers to deliberative participation in EIA: learning from waste policies, plans and projects. *Journal of Environmental Assessment Policy & Management* 5(3), 269–293.
Petts, J. and Hills, P. 1982. *Environmental assessment in the UK.* Nottingham: Nottingham University, Institute of Planning Studies.
PINS (Planning Inspectorate). 2017a. *National infrastructure planning: planning advice note 8.4 – examination*. Bristol: PINS.
PINS.2017b. *National infrastructure planning: planning advice note 8.1 – responding to the developer's pre-application consultation*. Bristol: PINS.
RenewableUK. 2017. *Offshore wind industry investment in the UK: 2017 report on offshore wind UK content*. London: RenewableUK.
Sadler, B. 1996. *Environmental assessment in a changing world: evaluating practice to improve performance*. Final report of the international study on the effectiveness of environmental assessment. Canadian Environmental Assessment Agency.
Sadler, B. 2010. Seminar presentation: IAIA update on International EIA Effectiveness study. Bath: IAIA.
Scottish Government. 2007. Environmental impact assessment directive: questions and answers, www.scotland.gov.uk/Publications/2007/11/26103828/1.
Sippe, R. 1994. Policy and environmental assessment in Western Australia. Paper for International Workshop, DG for Environmental Protection. The Hague: Ministry of Housing, Spatial Planning and the Environment.
Smartwind. 2015. Hornsea Project 2: ornithological assessment (see PINS National Infrastructure website for this and further details of project EIS and examination).
Snary, C. 2002. Risk communication and the waste-to-energy incinerator environmental impact assessment process: a UK case study of public involvement. *Journal of Environmental Planning & Management* 45(2), 267–283.
Weston, J. 1995. Consultants in the EIA process. *Environmental Policy and Practice* 5(3), 131–134.
Weston, J. 2000. EIA, decision-making theory, screening and scoping in UK practice. *Journal of Environmental Planning and Management* 43(2), 185–203.
Weston, J. 2002. From Poole to Fulham: a changing culture in UK environmental impact decision making? *Journal of Environmental Planning and Management* 45(3), 425–443.
Weston, J. 2003. Is there a future for EIA? Response to Benson. *Impact Assessment and Project Appraisal* 21(4), 278–280.
Weston, J. 2011. Screening for EIA projects in England: what screening? *Impact Assessment and Project Appraisal* 29(2), 90–98.
Wood, C. 1991. *Environmental impact assessment in the United Kingdom*. Paper presented at the ACSP–AESOP Joint International Planning Congress, Oxford Polytechnic, Oxford.
Wood, C. 1996. Progress on ESA since 1985 – a UK overview. In the *Proceedings of the IBC Conference on Advances in Environmental Impact Assessment*, 9 July. London: IBC UK Conferences.

Wood, C. 2003. *Environmental impact assessment: a comparative review*. 2nd edition. Harlow: Prentice Hall.

Wood, G. and Bellanger, C. 1998. *Directory of environmental impact statements July 1988–April 1998*. Oxford: IAU, Oxford Brookes University.

Wood, G. and Jones, C. 1997. The effect of environmental assessment on local planning authorities. *Urban Studies* 34(8), 1237–1257.

Chapter 9

Acerbi, A., Sánchez-Triana, E., Enríquez, S., et al. 2014. Environmental Impact Assessment in Latin America and the Caribbean, presentation at 34th annual conference of the International Association for Impact Assessment, Viña del Mar, Chile.

Appiah-Opoku, S. 2005. *The need for indigenous knowledge in environmental impact assessment: the case of Ghana*. New York: Edwin Mellen Press.

ATS (Secretariat of the Antarctic Treaty). 2005. *Guidelines for environmental impact assessment in the Antarctic*, www.ats.aq/e/ep_eia.htm.

Australian Government Department of Environment. 2009. *Independent review of the EPBC (1999) Act*. Canberra: Government of Australia.

Baglo, M.A. 2016. *Élément nouveaux des processus nationaux et internationaux d'évaluation de l'impact sur l'environnement: l'expérience du Béin en évaluation environnementale*. Gouvernement du Canada. www.canada.ca/fr/agence-evaluation-environnementale/services/publications/element-nouveaux-processus-nationaux-et-internationaux-evaluation-impact-environnement-experience-benin-evaluation-environnementale.html.

Banktrack. 2016. Minas Conga mining project, www.banktrack.org/project/minas_conga_mining_project.

Bastmeijer, K. and Roura, R. 2008. Environmental impact assessment in Antarctica. In *Theory and practice of transboundary environmental impact assessment*, K. Bastmeijer and T. Koivurova (eds). Boston: Leiden.

Bekhechi, M.A. and Mercier, J.-R. 2002. *The legal and regulatory framework for environmental impact assessments: a study of selected countries in sub-Saharan Africa*, http://documents.worldbank.org/curated/en/573451468002164226/pdf/multi0page.pdf.

Benfield Hazard Research Centre, University College London and CARE International. 2005. *Guidelines for rapid environmental impact assessment in disasters*. London: CARE.

Bitondo, D., Post, R. and Van Boven, G. 2014. *Evolution of environmental impact assessment systems in Central Africa: the role of national professional associations*. Yaounde: Secretariat for Environmental Assessment in Central Africa.

Caraïbes Environnement. 2011. *Geothermal project in the Roseau Valley Phase 1: Exploratory drilling, environmental impact study*. Roseau: Geothermal Project Management Unit.

Caraïbes Environnement. 2013. *Dominica geothermal energy development Phase 2: environmental survey and impact assessment of geothermal drilling in the Roseau Valley, environmental impact assessment*. Roseau: Caribbean Geothermal Interreg Programme.

CSO (Coalition of social organizations from the Provinces of Celendín and Hualgayoc in the Region of Cajamarca, Peru). 2015. *Conga no va: an assessment of the Conga mining project in light of World Bank standards*, www.conganova.com.

d'Almeida, K. 2001. *Cadre institutional législatif et réglementaire de l'évaluation environnementale dans les pays francophones d'Afrique et de l'Océan Indien*. Montréal, Canada: EIPF et Secrétariat francophone de l'AiEi/IAIA.

Department of the Environment and Energy (Australia). 2012. *EPBC Act 1999: Environmental Assessment Manual – implementing chapter 4, EPBC Act*. Canberra: Department of Environment and Energy.

Department of the Environment and Energy (Australia). 2018. *EPBC Act 1999: Referrals list*. Canberra: Department of Environment and Energy.

Dominican News Online. 2013. UPDATE: Make geothermal EIA a public document – protesters. http://dominicanewsonline.com/news/homepage/news/general/update-make-geothermal-eia-a-public-document-protesters.

Dominican News Online. 2014. Martin alleges outdated EIA in geothermal project, http://dominicanewsonline.com/news/homepage/news/environment/martin-alleges-outdated-eia-geothermal-project.

Druel, E. 2013. *Environmental impact assessment in areas beyond national jurisdiction*. Paris: Institut du développement durable et des relations internationales.

ECA (Economic Commission for Africa). 2005. *Review of the application of environmental impact assessment in selected African countries*. Addis Ababa: ECA. www.uneca.org/eca_programmes/sdd/documents/eia_book_final_sm.pdf.

EDZL. 2016. *Rail Baltica implementation in Latvia*. www.edzl.lv/assets/upload/prezentacijas/Rail%20Baltica_RIX_26052016.pdf.

Enserink, B., Alberton, M., Radojčić, D. and Lerman, P. (eds). 2015. Public participation in China: weaknesses, strengths and lessons learned. Proceedings of the 35th annual conference of the International Association for Impact Assessment, Florence.

Environment Australia. 2000. *EPBC Act: various documents, including environmental assessment processes; administrative guidelines on significance; and frequently asked questions*. Canberra: Department of Environment and Heritage.

ERR.ee. 2016. Current Rail Baltic route through Latvia publicly approved, 30 Nov., https://news.err.ee/119874/current-rail-baltic-route-through-latvia-publicly-approved.

Financial Times. 2018. The fight to own Antarctica. 24 May 2018, www.ft.com/content/2fab8e58-59b4-11e8-b8b2-d6ceb45fa9d0.

Finnish Ministry of the Environment. 1997. *Guidelines for environmental impact assessment in the Arctic*. Helsinki: Ministry of the Environment.

Gałaš, S., Gałaš, A., Zeleňáková, M., Zvijáková, L., Fialová, J. and Kubičková, H. 2015. Environmental impact assessment in the Visegrad Group countries. *Environmental Impact Assessment Review* 55, 11–20.

GHK. 2010. Collection of information and data to support the impact assessment study of the review of the EIA Directive, ec.europa.eu/environment/eia/pdf/collection_data.pdf.

Global Shelter Cluster. 2008. *Environmental impact assessment and action checklist: identifying critical environmental considerations in shelter site selection, construction, management and decommissioning*, revision 3. www.sheltercluster.org.

Government of Nepal. 2015. *Nepal earthquake 2015 rapid environmental assessment*. Kathmandu: Ministry of Science, Technology and Environment.

Guerra, F., Grilo, C., Pedroso, N.M. and Cabral, H. 2015. Environmental impact assessment in the marine environment: a comparison of legal frameworks. *Environmental Impact Assessment Review* 55, 182–194.

Hands Off Point Peron. 2018. Under threat. http://handsoffpointperon.com/hands-off-point-peron.

Iglesias, S. 1996. The role of EIA in mining activities: the Peruvian case. MSc dissertation. Oxford: Oxford Brookes University.

Jha-Thakur, U. 2016. Editorial: environmental assessment in South Asia: underrepresented in the international academic literature? *Journal of Environmental Assessment Policy and Management* 18(2), 1–10.

Kahangirwe, P. 2011. Evaluation of environmental impact assessment (EIA) practice in Western Uganda. *Impact Assessment and Project Appraisal* 29(1), 79–83.

Kakonge, J.O. 1999. Environmental impact assessment in Africa. In *Handbook of environmental impact assessment*, J. Petts (ed.), vol. 2, 168–182. Oxford: Blackwell Science Ltd.

Knight Piésold and Co. 2010. *Yanacocha S.R.L. Mining Company: Conga Project: environmental impact assessment report*. Lima: Knight Piésold and Co.

La Nation. 2016. Construction du port de Sèmè-Podji: Le rapport d'étude d'impacts sur l'environnement en passe d'être validé. 23 November. https://lanationbenin.info/index.php/actus/159-actualites/12630-construction-du-port-de-seme-podji-le-rapport-d-etude-d-impacts-sur-l-environnement-en-passe-d-etre-valide.

Latvian MEPRD (Ministry of Environmental Protection and Regional Development). 2016. *Environmental impact assessment of the Rail Baltica project*. Riga: MEPRD. www.unece.org/fileadmin/DAM/env/documents/2017/EIA/tc_4_LV_transboundary_cases.pdf.

Latvian MOT (Ministry of Transport). 2013. *Detailed technical study and environmental impact assessment of the Latvian section of the European gauge railway line Rail Baltica*. Riga: MOT.

Le Matinal. 2016. Projet de construction du port en eu profonde de Sèmè-Podji: La population sensitilisée par l'ABE. 13 November. http://quotidien-lematinal.info/projet-de-construction-du-port-en-eau-profonde-de-seme-podji-la-population-sensibilisee-par-labe.

Li, S. and Duan, B. 2016. The highest dam in the world under construction: the Shuangjiangkou core-wall rockfill dam. *Engineering* 2, 274–275.

Lindhjem, H., Hu, T., Ma, Z., et al. 2007. Environmental economic impact assessment in China: problems and prospects. *Environmental Impact Assessment Review* 27(1), 1–25.

Luisa, A., Lima, G., Sanchez-Triana, E., et al. 2015. *Environmental impact assessment systems in South Asia*. Washington, DC: World Bank.

Ma, D., Fang, Q. and Guan, S. 2016. Current legal regime for environmental impact assessment in areas beyond national jurisdiction and its future approaches. *Environmental Impact Assessment Review* 56, 23–30.

Macintosh, A. 2010. The Australian Government's environmental impact assessment (EIA) regime: using surveys to identify proponent views on cost-effectiveness. *Impact Assessment and Project Appraisal* 28(3), 175–188.

Mangles Bay Marina. 2018. Environment, www.manglesbaymarina.com.au/environment.

Mao, W. and Hills, P. 2002. Impacts of the economic-political reform on environmental impact assessment implementation in China. *Impact Assessment and Project Appraisal* 29(2), 101–111.

Marara, M., Okello, N., Kuhanwa, Z., Douven, W., Beevers, L. and Leentvaar, J. 2011. The importance of context in delivering effective EIA: case studies from East Africa. *Environmental Impact Assessment Review* 31(3), 286–296.

Matin Libre. 2015. 2èmè consultation publique sur le project de port pétrolier à Sèmè-Podji: Les populations informées sur l'évaluation de l'impact environnemental, https://matinlibre.com/index.php/societe/item/4551-port-petrolier-a-seme-podji-les-populations-informees-sur-levaluation-de-limpact-environnemental.

Moorman, J.L. and Ge, Z. 2007. Promoting and strengthening public participation in China's environmental impact assessment process: comparing China's EIA Law and U.S. NEPA. *Vermont Journal of Environmental Law* 8, 281–335.

Moran, R.E. 2012. The Conga Mine, Peru: Comments on the Environmental Impact Assessment (EIA) and related issues, prepared for the Environmental Defence Law center.

NCEA (Netherlands Commission for Environmental Assessment). 2016. 7188. Review EIA deep Sea Port Seme Podji, www.eia.nl/en/our-work/advisory-reports/7188.

Norda Stelo. 2016. Étude d'impact environnemental pour la construction d'un port pétrolier, minéralier at commercial en eau profonde. www.norda.com/projet/etude-dimpact-environnemental-pour-la-construction-dune-nouvelle-plateforme-petroliere-situee-dans-un-port-en-eau-profonde.

Ortolano, L. 1996. Influence of institutional arrangements on eia effectiveness in China. *Proceedings of the 16th Annual Conference of the International Association for Impact Assessment*, 901–905. Estoril: IAIA.

Payet, R. 2011. A review of environmental impact assessment and sustainable development in small island states. In *Tools for mainstreaming sustainable development in small states*, C. Vigilance and J.L. Roberts (eds), pp. 205–224. London: Commonwealth Secretariat.

Polar Research Institute of China and TongJi University. 2018. *Proposed construction and operation of a new Chinese research station in Victoria Land, Antarctica: draft comprehensive environmental evaluation*, www.antarctica.gov.au/__data/assets/pdf_file/0005/213764/CEE2018L.pdf.

Ren, X. 2013. Implementation of environmental impact assessment in China. *Journal of Environmental Assessment Policy and Management* 15(3), 1–20.

République du Benin. 2004. *Guide sectoriel d'étude d'impact sur l'environnement des projets de construction de stations service et de depots d'hydrocarbures en Republique du Benin*. Cotonou: République du Benin.

Reuters. 2013. China gives environmental approval to country's biggest hydro dam. Reuters 15 May.

Reuter. 2017. Peru Supreme Court rules against Newmont in dispute over gold mine, 3 May. www.reuters.com/article/peru-mining-newmont/peru-supreme-court-rules-against-newmont-in-dispute-over-gold-mine-idUSL1N1I51GN.

Sanchez-Triana, E. and Enriquez, S. 2007. A comparative analysis of environmental impact analysis systems in Latin America. Presentation at annual conference of the International Association for Impact Assessment.

SPREP (Secretariat of the Pacific Regional Environment Programme). 2016. Strengthening environmental impact assessment: Guidelines for Pacific Island Countries and Territories, www.sprep.org/attachments/Publications/EMG/regional-eia-guidelines.pdf.

Stratagen. 2012. *Mangles Bay marina based tourist precinct: public environmental review*. Subiaco, WA: Stratagen.

Toro, J. Requena, I. and Zamorano, M. 2010. Environmental impact assessment in Colombia: critical analysis and proposals for improvement. *Environmental Impact Assessment Review* 30, 247–261.

UNEP. 2014. *Emerging issues for small island developing states*. Nairobi: UNEP.

UNEP/OCHA Environment Unit. 2016. *Environment and humanitarian action country study: Nepal*. Geneva: UNEP/OCHA.

Waldeck, S., Morrison-Saunders, A. and Annadale, D. 2003. Effectiveness of non-legal EIA guidance from the perspective of consultants in Western Australia. *Impact Assessment and Project Appraisal* 21(3), 251–256.

Wang, Y., Morgan, R. and Cashmore, M. 2003. Environmental impact assessment of projects in the People's Republic of China: new law, old problem. *Environmental Impact Assessment Review* 23, 543–579.

WA EPA (Western Australian Environmental Protection Authority). 2010. *Environmental impact assessment administrative procedures*. Perth: EPA.

WA EPA (Western Australian Environmental Protection Authority). 2016 and 2018. *Environmental impact assessment (Part IV Divisions 1 and 2) administrative procedures (2016) and procedures manual (2018)*. Perth: EPA.

World Bank. 2006. Environmental impact assessment regulations and strategic environmental assessment requirements: practices and lessons learned in East and Southeast Asia. Environment and Social Development Safeguard Dissemination Note No. 2, http://documents.worldbank.org/curated/en/949001468167952773/pdf/408730PAPER0EI1onal1review01PUBLIC1.pdf.

World Bank. 2017. Dominica geothermal risk mitigation project, http://documents.worldbank.org/curated/en/339461494441374896/pdf/ITM00184-P162149-05-10-2017-1494441372160.pdf.

Worldwatch Institute. 2018. China to strengthen public participation in environmental impact assessment. Washington, DC: Worldwatch Institute.

Wright, N. 2013. *Small island development states, disaster risk management, disaster reduction, climate change adaptation and tourism*. Geneva: GUNISDR/GAR.

Xinhuanet. 2018. China's 5th Antarctic research station to begin construction, www.xinhuanet.com/english/2018-01/17/c_136902144.htm.

Yaha, P.Z. 2007. Benin: experience with results based management. In *Managing for development results, sourcebook*. 2nd edition, 131–142, www.mfdr.org/sourcebook/2ndEdition/4-5BeninRBM.pdf.

Yang, S. 2008. Public participation in the Chinese environmental impact assessment (EIA) system. *Journal of Environmental Assessment Policy and Management*, 10(1), 91–113.

Yao, Y. 2013. Ministry approves environmental impact report. *China Daily*, 15 May.

Chapter 10

AEA. 2012. *Support to the identification of potential risks for the environment and human health arising from hydrocarbons operations involving hydraulic fracturing in Europe*. Report for the European Commission DC Environment. Didcot: AEA.

Ahmad, B. 2004. Integrating health into impact assessment: challenges and opportunities. *Impact Assessment and Project Appraisal* 22(1), 2–4.

Baker, J., Sheate, W.R., Phillips, P. and Eales, R. 2013. Ecosystem services in environmental assessment – help or hindrance? *Environmental Impact Assessment Review* 40, 3–13.

Beckwith, J.A. 2012. A social impact perspective on the Browse LNG Precinct strategic assessment in Western Australia. *Impact Assessment and Project Appraisal* 30(3),189–194.

Birley, M. 2011. *Health impact assessment: principles and practice.* London: Earthscan.

Boardman, J. and Vandaele, K. 2010. Soil erosion, muddy floods and the need for institutional memory. *Area* 42(2), 502–513.

Burgman, M. 2005. *Risks and decisions for conservation and environmental management*. Oxford: Oxford University Press.

CEC (Commission of the European Communities). 2009. *On the application and effectiveness of the EIA Directive (Directive 85/337/EEC, as amended by Directives 97/11/EC and 2003/35/EC)*. Brussels: CEC.

DECC (Department of Energy and Climate Change). 2014. Guidance on the preparation of an environmental risk assessment of shale gas operations in Great Britain involving the use of hydraulic fracturing, www.gov.uk/government/uploads/system/uploads/attachment_data/file/305884/Guidance_on_the_preparation_of_an_environmental_risk_assessment_of_shale_gas_operations_in_Great_Britain_involving_the_use_of_hydraulic_fracturing.pdf.

EC (European Commission). 1999. *Guidelines for the assessment of indirect and cumulative impacts as well as impact interactions*. Luxembourg: European Communities.

Eftec. 2010. *Flood and coastal erosion risk management: economic valuation of environmental effects*. London: Eftec.

EIB (European Investment Bank). 2013. *Environmental and social handbook: chapter 6 on involuntary resettlement.* Luxembourg: EIB.

EU (European Union). 2013. *Guidance on integrating climate change and biodiversity into EIA*. Luxembourg: EU.

EU. 2014. *Directive 2014/52/EU amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.* Brussels: EU.

Gadreau, K. and Gibson, R. 2010. Illustrating integrated sustainability and resilience based assessments: a small-scale biodiesel project in Barbados. *Impact Assessment and Project Appraisal* 28(3), 233–243.

Gibson, G., MacDonald, A. and O'Faircheallaigh, C. 2011. Cultural considerations associated with mining and indigenous communities. In: *SME mining engineering handbook*. P. Darling (ed.), 3rd edition. Littleton, CO: Society for Mining, Metallurgy and Exploration, pp. 1797–1816.

Hands, S. and Hudson, M.D. 2016. Incorporating climate change mitigation and adaptation into environmental

impact assessment: a review of current practice with transport projects in England. *Impact Assessment and Project Appraisal* 34(4), 330–345.

HM Treasury. 2013. *The Green Book: appraisal and evaluation in central government*. London: The Stationary Office.

Horizon Nuclear Power. 2014. *Wylfa Newydd project: language impact assessment, scoping report.* Gloucester: Horizon Nuclear Power.

IAIA (International Association for Impact Assessment). 2015. *Social impact assessment: guidance for assessing and managing the social impacts of projects.* Fargo, ND: IAIA.

IEMA (Institute of Environmental Management and Assessment). 2015. *IEMA environmental impact assessment guide to climate change resilience and adaptation*. Lincoln: IEMA.

IFC (International Finance Corporation). 2002. *Handbook for preparing a resettlement action plan*. Washington, DC: IFC.

IFC. 2012. *IFC performance standards on environmental and social sustainability*. Washington, DC: IFC.

IFC. 2013. *Cumulative impact assessment and management: guidance for the private sector in emerging markets.* Washington, DC: IFC.

IMD (Index of Multiple Deprivation). 2015. *The English indices of multiple deprivation 2015.* London: DCLG.

Isle of Anglesey County Council. 2017. *Welsh language impact assessment for Wylfa Newydd: supplementary planning guidance.* Isle of Anglesey CC.

Kimberley Land Council. 2010. *Browse liquefied natural gas precinct strategic assessment report December 2010*. Broome: Kimberley Land Council.

Mackenzie Valley Review Board. 2009. *Status report and information circular: developing cultural impact assessment guidelines.* Yellowknife: Mackenzie Valley Review Board.

MCA (Minerals Council of Australia). 2015. *Cumulative environmental impact assessment industry guide*. Forrest, ACT: MCA.

Middle, G. 2018. Risk and risk assessment. In: *Methods of environmental and social impact assessment*, R. Therivel and G. Wood (eds). Abingdon: Routledge.

Millennium Ecosystem Assessment. 2003. Ecosystems and human well-being: a framework for assessment, www.milleniumassessment.org/en/Framework.html.

New Zealand Ministry for the Environment. 2013. *Consent support: FAQs about cultural impact assessments.* Wellington, NZ: Ministry for the Environment.

On Common Ground Consultants Inc. 2010. *Human rights assessment of Goldcorp's Marlin Mine.* Vancouver: On Common Ground Consultants Inc.

Oxfam and FIDH (International Federation for Human Rights). 2016. *Community-based human rights impact assessment: the getting it right tool – training manual.* Boston, MA: Oxfam America.

Partal, A. and Dunphy, K. 2016. Cultural impact assessment: a systematic literature review of current methods and practice around the world. *Impact Assessment and Project Appraisal* 34(1), 1–13.

Phillips, D., Burdick, C., Merja, B. and Brown, N. 2013. Urban forest ecosystem services: a case study. Presentation at the Ecological Society of America, August 2013, https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=259172.

Piper, J. 2001. Barriers to implementation of cumulative effects assessment. *Journal of Environmental Assessment Policy and Management* 3(4), 465–481.

Reddy, G., Smyth, E. and Steyn, M. 2015. *Land access and resettlement: a guide to best practice.* Sheffield: Greenleaf.

RA (Resilience Alliance). 2010. *Assessing resilience in social–ecological systems. Workbook for Practitioners*. Version 2.0., www.resalliance.org/index.php/resilience_assessment.

RenewableUK. 2013. *Cumulative impact assessment guidelines: guiding principles for cumulative impacts assessment in offshore wind farms.* London: RenewableUK.

Sagnia, K.B. 2004. *Framework for cultural impact assessment project*. Dakar: International Network for Cultural Diversity (INCD).

SASPR. 2014. Poverty may have declined, but deprivation and poverty are still worst in the former homelands, www.econ3x3.org.

Shiferaw, B., Tesfaye, K., Kassie, M., Abate, T., Prasanna, B.M. and Benkir, A. 2014. Managing vulnerability to drought and enhancing livelihood resilience in sub-Saharan Africa: technological, institutional and policy options. *Weather and Climate Extremes* 3, 67–79.

Sinclair, A.J., Doelle, M. and Duinker, P.N. 2017. Looking up, down, and sideways: reconceiving cumulative effects assessment as a mindset. *Environmental Impact Assessment Review* 62, 183–194.

Sok, V., Boruff, B.J. and Morrison-Saunders, A. 2011. Addressing climate change through environmental impact assessment: international perspectives from a survey of IAIA members. *Impact Assessment and Project Appraisal* 29(4), 317–326.

Terminski, B. 2015. *Development-induced displacement and resettlement: causes, consequences and socio-legal context*. Stuttgart: Ibidem Press.
Therivel, R. and Ross, B. 2007. Cumulative effects assessment: does scale matter? *Environmental Impact Assessment Review* 27, 365–385.
Therivel, R. and Wood, G. (eds). 2018. *Methods of environmental and social impact assessment*. Abingdon: Routledge.
Total/Tullow. 2018. *Tilenga Project: resettlement action plan for the industrial area*. Total/Tullow.
Treweek, J. and Landsberg, F. 2018. Ecosystem services. In *Methods of environmental and social impact assessment*, R. Therivel and G. Wood (eds). Abingdon: Routledge.
TxDOT (Texas Department of Transportation). 2016. *Cumulative impacts analysis guidelines*. Austin: TxDOT.
UN. 2011. *Guiding principles on business and human rights: implementing the 'protect, respect and remedy' framework*. New York: UN.
UNESCO. 1982. *Mexico City declaration on cultural policies*. UNESCO.
Upton, C., T. Ballatore, E. Adgo, D., et al. 2013. Ecosystem services and livelihoods for the African Great Lakes: overview and case studies, East African Great Lakes Observatory, www2.le.ac.uk/departments/geography/people/cu5/docs/upton-et-al-eaglo-final-report-2013.
US EPA (Environmental Protection Agency). 1999. *Consideration of cumulative impact in EPA review of NEPA documents*. Washington, DC: US EPA.
US EPA. 2015. *Conducting a human health risk assessment*, www.epa.gov/risk/conducting-human-health-risk-assessment.
Walker, B. and Salt, D. 2006. *Resilience thinking*. Washington, DC: Island Press.
WEF (World Economic Forum). 2018. *The Global Risks Report 2018*. 13th edition, www.weforum.org/reports/the-global-risks-report-2018.
Welsh Government. 2014. *Planning Policy Wales (PPW) (Edition 9 2016)*. Cardiff: Welsh Government.
WHO (World Health Organisation). 2017. *Air pollution*, www.who.int/airpollution/en/.
Wilson, E. and Piper, J. 2010. *Spatial planning and climate change*. Abingdon: Routledge.
World Bank. 2004. *Involuntary resettlement sourcebook*. Washington, DC: World Bank.

Chapter 11

Aly, S. and Vrana, I. 2008. *An intelligent DSS for EIA of industrial projects*. Provo, UT: Brigham Young University, Scholars Archive.
Aung, T.S. 2017. Evaluation of the environmental impact assessment system and implementation in Myanmar: its significance in oil and gas industry. *Environmental Impact Assessment Review* 66, 24–32.
Bond, A., Morrison-Saunders, A. and Howitt, R. 2013. Framework for comparing and evaluating sustainability assessment practice. In *Sustainability Assessment Pluralism, Practice and Progress*, A. Bond, A. Morrison-Saunders and R. Howitt (eds), pp. 117–131. Milton Park: Routledge.
Bussell, M.J., Haigh, C.P., O'Sullivan, P.J., et al 2002. *Environmental impact for the decommissioning of nuclear installations – final report*. EC Contract B4-3040/99/136035/MAR/C2.
Cashmore, M., Richardson, T., Hilding-Ryedvik, T. and Emmelin, L. 2010. Evaluating the effectiveness of impact assessment instruments: theorising the nature and implications of their political constitution, *Environmental Impact Assessment Review* 30, 371–379.
CEC (Commission of the European Communities). 2001. *EMAS and ISO/EN ESO 14001: differences and complementarities*, www.europa.eu.int/comm/environment/emas/pdf/factsheets.
CEC. 2009. *Study concerning the report on the application and effectiveness of the EIA Directive: final report*. Brussels: DG Env.
CEC. 2010. *Eco-management and audit scheme* (EMAS). Brussels: CEC.
Centrica Energy. 2015. *Rose Field decommissioning EIA*. UK: Centrica Energy.
Chanchitpricha, C. and Bond, A. 2013. Conceptualising the effectiveness of impact assessment. *Environmental Impact Assessment Review* 43, 65–72.
Chen, Y., Parkins, J.R. and Sherren, K. 2018. Using geo-tagged Instagram posts to reveal landscape values around current and proposed hydroelectric dams and their reservoirs. *Landscape and Urban Planning* 170, 283–292.
Cho, G. 2014. Some legal concerns with the use of crowd-sourced geospatial information. 7th IGRSM International Remote Sensing & GIS Conference and Exhibition, http://iopscience.iop.org/article/10.1088/1755-1315/20/1/012040/meta.
CNSC (Canadian Nuclear Safety Commission). 2016. *Regulatory document REGDOC-2.9.1 on environmental protection: environmental policy, assessments and protection measures*. Ottawa: CNSC.
DBEIS (Department for Business, Energy and Industrial Strategy). 2017. *Guidance notes (draft) on decommissioning of offshore oil and gas installations and pipelines*. London: DBEIS.

DEFRA (Department of Environment, Food and Rural Affairs). 2003. *An introductory guide to EMAS.* London: DEFRA.

Duarte, C.G., Dibo, A.P.A., Siqueira-Gay, J. and Sanchez, L.E. 2017. Practitioners' perceptions of the Brazilian environmental impact assessment system: results from a survey. *Impact Assessment and Project Appraisal* 35(4), 293–309.

Durning, B. and Broderick, M. 2017. Environmental and social management plans. In *Methods of Environmental and Social Impact Assessment*, R. Therivel and G. Wood (eds). Abingdon: Routledge.

EBRD (European Bank for Reconstruction and Development). 2014. *Environmental and social policy.* London: EBRD.

Enríquez-de-Salamanca, Á. 2016. Project splitting in environmental impact assessment. *Impact Assessment and Project Appraisal* 34(2), 152–159.

Fonseca, A. and Rodrigues, S.A. 2017. The attractive concept of simplicity in EIA: perceptions of outcomes in SE Brazil. *Environmental Impact Assessment Review* 67, 101–108.

Gartner Analytics. 2013. *Gartner Analytics maturity model*, www.gartner.com/en/conferences/emea/data-analytics-uk.

Gibson, R. 2010. Simplicity. Sounds good, if you don't mind a dollop of ignorance with your bliss. *Alternatives Journal* 36, 40.

Gibson, R.B. 2012. In full retreat: the Canadian government's new environmental assessment law undoes decades of progress. *Impact Assessment and Project Appraisal* 30, 179–188.

Gibson, R. 2013. Avoiding sustainability trade-offs in environmental assessment. *Impact Assessment and Project Appraisal* 31, 2–12.

Government of Canada. 2016. *Better rules for major project reviews: a handbook.* Ottawa: Government of Canada.

Green Budget Coalition. 2010. *Budget 2010: environmental impact summary and analysis – 28 July 2010*, www.ifs.org.uk/green-budget.

Hanna, K. and Noble, B.F. 2016. Using a Delphi study to identify effectiveness criteria for environmental assessment. *Impact Assessment and Project Appraisal* 33(2), 116–125.

Highways Agency. 2011. *Design manual for roads and bridges.* London: Stationery Office.

Holling, C.S. (ed.) 1978. *Adaptive environmental assessment and management.* New York: Wiley.

Holm, D., Ritchie, L., Synman, K. and Sunderland, C. 2013. Social impact management: a review of current practice in Queensland, Australia. *Impact Assessment and Project Appraisal* 31(3), 214–219.

Howard, R. 2013. *'The Bullet-Proof Consent Application' presentation.* Manchester: RenewableUK Offshore Wind Conference.

IAIA (International Association for Impact Assessment). 2015. *Social impact assessment*: *guidance for assessing and managing the social impacts of projects.* Fargo, ND: IAIA.

IAIA. 2018. *Member snapshot: 2017 membership feedback survey.* Fargo, ND: IAIA.

IEMA (Institute for Environmental Management and Assessment). 2008. *Practitioner volume 12: environmental management plans.* Lincoln: IEMA.

IEMA. 2011. *The state of environmental impact assessment in the UK.* Lincoln: IEMA.

IEMA. 2016. *Delivering quality development.* Lincoln: IEMA.

IEMA. 2017. *Delivering proportionate EIA: a collaborative strategy for enhancing UK EIA practice.* Lincoln: IEMA.

ISO (International Organisation for Standardisation). 2015. *Introduction to ISO 14001:2015.* Geneva: ISO.

Jalava, K., Pasanen, S., Saalasti, M. and Kuitunen, M. 2010. Quality of environmental impact assessment: Finnish EISs and the opinions of EIA professionals. *Impact Assessment and Project Appraisal* 28(1), 15–27.

Jones, M. and Morrison-Saunders, A. 2017. Understanding the long-term influence of EIA on organisational learning and transformation. *Environmental Impact Assessment Review* 64, 131–138.

Kwasniak, A. 2010. Use and abuse of adaptive management in environmental assessment law and practice: a Canadian example and general lessons. *Journal of Environmental Assessment, Policy and Management* 4, 425–468.

Laney, D. 2001. *3D data management: controlling data volume, velocity and variety*. Stamford, CT: META Group.

Latteman, S. 2010. *Development of an EIA and DSS for seawater desalination plants.* Boca Raton, FL: CRC Press.

Lawrence, D. 2013. *Impact assessment: practical solutions to recurrent problems and contemporary challenges.* Hoboken, NJ: Wiley.

Lei, L. and Hilton, B. 2013. A spatially intelligent public participation system for the environmental impact assessment process. *International Journal of Geo-Information* 2, 480–506.

Liu, K. 2009. A qualitative decision support for EIA using fuzzy logic. *Journal of Environmental Informatics* 13 (2).

Loomis, J.J. and Dziedzic, M. 2018. Evaluating EIA systems' effectiveness: a state of the art.

Environmental Impact Assessment Review 68, 29–37.

Lyhne, I., van Laerhoven, F., Cashmore, M. and Runhaar, H. 2017. Theorising EIA effectiveness: a contribution based on the Danish system. *Environmental Impact Assessment Review* 62, 240–249.

Macintosh, A. 2010. The Australian Government's environmental impact assessment (EIA) regime: using surveys to identify proponent views on cost-effectiveness. *Impact Assessment and Project Appraisal* 28(3), 175–188.

Marshall, R. 2004. Can industry benefit from participation in EIA follow-up? In *Assessing impact: handbook of EIA and SEA follow-up.* A. Morrison-Saunders and J. Arts (eds). London: Earthscan.

Martin, S.F., Howard, D.A., Smith, L., Yossinger, N.S., Kinne, L. and Giordano, M. (n.d.) *Environmental resource management in refugee camps and surrounding areas: lessons learned and best practices*. Washington, DC: Georgetown University.

McDonald, G.T. and Brown, L. 1995. Going beyond EIA: environmental input to planning and design. *Environmental Impact Assessment Review* 15, 483–495.

Middle, G. and Middle, I. 2010. The inefficiency of environmental impact assessment: reality or myth? *Impact Assessment and Project Appraisal* 28(2), 159–168.

Middle, G., Clarke, B., Franks, D., et al. 2013. Reducing green tape or rolling back IA in Australia: what are four jurisdiction up to? In: 2013 Conference of the International Association for Impact Assessment. Calgary, Canada.

Morrison-Saunders, A. and Retief, F. 2012. Walking the sustainability assessment talk – progressing the practice of environmental impact assessment (EIA). *Environmental Impact Assessment Review* 36, 34–41.

Morrison-Saunders, A., Pope, J., Gunn, J.E., Bond, A. and Retief, F. 2014. Strengthening impact assessment: a call for integration and focus. *Impact Assessment and Project Appraisal* 32, 2–8.

Morrison-Saunders, A., Bond, A., Pope, J. and Retief, F. 2015. Demonstrating the benefits of impact assessment for proponents. *Impact Assessment and Project Appraisal* 33(2), 108–115.

National Grid. 2011. *Methodological guidance for options appraisal.* Warwick: National Grid.

Orenstein, M. 2017. *Impact assessment and emerging technology.* IAIA website, January 2017.

Oteros-Rozas, E., Martín-López, B., Fagerholm, N., Bieling, C. and Plieninger, T. 2017. Using social media photos to explore the relation between cultural ecosystem services and landscape features across five European sites. *Ecological Indicators*.

Palframan, L. 2010.*The integration of EIA and EMS systems: experiences from the UK.* 30th Annual Conference of IAIA Proceedings.

PINS (Planning Inspectorate). 2012. *Advice note 9: Rochdale Envelope – version 2*. Bristol: IPC, https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2011/02/Advice-note-9.-Rochdale-envelope-web.pdf.

Queensland Government. 2012. *Social impact assessment: guideline to preparing a social impact assessment management plan*. Brisbane: Queensland Department of State Development.

Retief, F., Bond, A., Gunn, J.E., Pope, J. and Morrison-Saunders, A. 2014. International perspectives on strengthening impact assessment through integration and focus. *Impact Assessment and Project Appraisal* 32, 27–30.

Rodriguez-Bachiller, A. with Glasson, J. 2004. *Expert systems and geographic information systems for impact assessment.* London: Taylor and Francis.

Sadler, B. 1996. *International study in the effectiveness of environmental assessment*. Ottawa: Canadian Environmental Assessment Agency.

Sánchez, L.E. and Mitchell, R. 2017. Conceptualizing impact assessment as a learning process. *Environmental Impact Assessment Review* 62, 195–204.

Sandham, L.A., van Heerden, A.J., Jones, C.E., Retief, F.P. and Morrison-Saunders, A.N. 2013. Does enhanced regulation improve EIA report quality? Lessons from South Africa*. Environmental Impact Assessment Review* 38, 155–162.

Schnapf, L. 2013. Environmental management in the era of big data, www.environmental-law.net/wp-content/uploads/2011/05/2013-Schnapf-ENFOS-.pdf.

Schumacher, K. 2017. Large-scale renewable energy project barriers: EIA streamlining efforts in the Japan and the EU. *Environmental Impact Assessment Review* 65, 100–110.

Sherren, K., Parkins, J.R., Smit, M., Holmlund, M. and Chen, Y. 2017. Digital archives, big data and image-based culturomics for social impact assessment: opportunities and challenges. *Environmental Impact Assessment Review* 67, 23–30.

Sinclair, A.J., Peirson-Smith, T.J. and Boerchers, M. 2017. Environmental assessments in the Internet age: the role of e-governance and social media in creating platforms for meaningful participation. *Impact Assessment and Project Appraisal* 35(2), 148–157.

Suzan, L., Mohd, G.I., Imwangana, F.M., et al. 2010. *Impact evaluation tools and DSS for EIA*. Cairo: Nile Basin Capacity Building Network.

Toro, J., Requena, I. and Zamorano, M. 2010. Environmental impact assessment in Colombia: critical analysis and proposals for improvement. *Environmental Impact Assessment Review* 30, 247–261.

Turban, E. and Watkins, P.R. 1986. Integrating expert systems and decision support systems. In *Decision support systems: putting theory into practice.* R. Spague and R.Watson (eds). Englewood Cliffs, NJ: Prentice Hall.

Turner, T. 1998. *Landscape planning and environmental impact design.* London: UCL Press.

Uitto, J. 2016. Use of big data in environmental evaluation, presentation at 19th meeting of the DAC Network on development evaluation. Independent Evaluation Office, Global Environment facility.

Victoria State Government, Australia. 2016. *Decommissioning dams: a guide for dam owners.* Melbourne: Department of Environment, Water, Land and Planning.

Vorovencii, I. 2011. Satellite remote sensing in environmental impact assessment: an overview. *Bulletin of the Transilvania University of Braşov* 4(53), 1.

Western Australia Government. 2017. *Petroleum decommissioning guideline.* Perth: WA Government, Department of Mines, Industry Regulations and Safety.

Zvijáková, L., Zeleňáková, M. and Purcz, P. 2014. Evaluation of EIA effectiveness in Slovakia. *Impact Assessment and Project Appraisal* 32, 150–161.

Chapter 12

Acharibasam, J.B. and Noble, B.F. 2014. Assessing the impact of strategic environmental assessment. *Impact Assessment and Project Appraisal* 32(3), 177–187.

Bailii. 2009. St. Albans City & District Council v. Secretary of State for Communities and Local Government [2009] EWHC 1280 (Admin), www.bailii.org.

Bailii. 2011. Save Historic Newmarket [2011] EWHC 606 (Admin), www.bailii.org.

Bailii. 2012. Heard v. Broadland District Council and others [2012] EWHC 344 (Admin), www.bailii.org.

BOEM (Bureau of Ocean Energy Management). 2017. *Gulf of Mexico OCS proposed geological and geophysical activities: western, central, and eastern planning areas: final programmatic environmental impact statement*. New Orleans: US Department of the Interior.

Bond, A., Retief, F., Cave, B., et al. 2018. A contribution to the conceptualisation of quality in impact assessment. *Environmental Impact Assessment Review* 68, 49–58.

Cashmore, M., Richardson, T., Hilding-Ryedvik, T. and Emmelin, L. 2010. Evaluating the effectiveness of impact assessment instruments: theorising the nature and implications of their political constitution. *Environmental Impact Assessment Review* 30, 371–379.

CEQ (Council on Environmental Quality). 1978. *Regulations for implementing the procedural provisions of the National Environmental Policy Act*, 40 Code of Federal Regulations 1500–1508.

CEQ. 2011. Appropriate use of mitigation and monitoring and clarifying the appropriate use of mitigated findings of no significant impact, ceq.doe.gov/docs/ceq-regulations-and-guidance/Mitigation_and_Monitoring_Guidance_14Jan2011.pdf.

CEQ. 2014. Effective Use of Programmatic NEPA Reviews, ceq.doe.gov/docs/ceq-regulations-and-guidance/Effective_Use_of_Programmatic_NEPA_Reviews_Final_Dec2014_searchable.pdf.

CEQ. 2016. Final guidance for federal departments and agencies on consideration of greenhouse gas emissions and the effects of climate change in National Environmental Policy Act reviews, ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa_final_ghg_guidance.pdf.

Che, X., English, A., Lu, J. and Chen, Y.D. 2011. Improving the effectiveness of planning EIA (PEIA) in China: integrating planning and assessment during the preparation of Shenzhen's Master Urban Plan. *Environmental Impact Assessment Review* 31, 561–571.

Department of the Interior, et al. 2018. Memorandum of Understanding: Implementing One Federal Decision under Executive Order 13807, ceq.doe.gov/docs/ceq-regulations-and-guidance/One_Federal_Decision_MOU_(M-18-13-Part-2)_2018-04-09.pdf.

EC (European Commission). 2001. *Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment.* Brussels: European Commission, http://europa.eu.int/comm/environment/eia/full-legal-text/0142_en.pdf.

EC. 2003. *Implementation of Directive 2001/42 on the assessment of the effects of certain plans and programmes on the environment.* Brussels: European Commission. europa.eu.int/comm/environment/eia/030923_sea_guidance.pdf.

EC. 2017. *Environmental assessments of plans, programmes and projects: rulings of the Court of Justice of the European Union*. Luxembourg: European Union.

EU (European Union). 2016. *Study concerning the preparation of the report on the application and effectiveness of the SEA Directive (Directive 2001/42/EC)*. Luxembourg: Publication Office of the European Union.

Ezzet, O. 2016. The costs and benefits of strategic environmental assessment in local planning. MSc dissertation, Oxford Brookes University.

Gov.uk. 2018. Guidance: Strategic environmental assessment and sustainability appraisal, www.gov.uk/guidance/strategic-environmental-assessment-and-sustainability-appraisal.

Jha-Thakur, U., Gazzola, P., Peel, D., Fischer, T.B. and Kidd, S. 2009. Effectiveness of strategic environmental assessment – the significance of learning. *Impact Assessment and Project Appraisal* 27(2), 133–144.

LPEG (Local Plans Expert Group). 2016. Local plans: report to the Communities Secretary and to the Minister of Housing and Planning, www.gov.uk/government/uploads/system/uploads/attachment_data/file/508345/Local-plans-report-to-governement.pdf.

MEPC/NCEA (Ministry of Environmental Protection of China and Netherlands Commission for Environmental Assessment), et al. 2014. Strategic environmental assessment effectiveness: learning from experience in China and the Netherlands. api.commissiemer.nl/docs/mer/diversen/sea-effectiveness-china-nl2014.pdf.

Morrison-Saunders, A., Bond, A., Pope, J. and Retief, F. 2015. Demonstrating the benefits of impact assessment for proponents. *Impact Assessment and Project Appraisal* 33(2), 108–115.

OCC (Oxford City Council). 2016. Sustainability appraisal scoping report: local plan 2016–2036, www.oxford.gov.uk/downloads/download/726/sustainability_appraisal_scoping_report_local_plan_2036.

OCC. 2017. Sustainability appraisal of the Oxford Local Plan 2036 Preferred Options Document. www.oxford.gov.uk/download/downloads/id/3752/draft_sustainability_appraisal-_preferred_options.pdf.

ODPM (Office of the Deputy Prime Minister), Scottish Executive, Welsh Assembly Government, and Department of the Environment, Northern Ireland. 2006. A practical guide to the Strategic Environmental Assessment Directive, www.communities.gov.uk/documents/planningandbuilding/pdf/practicalguidesea.pdf.

Partidário, M.R. 2003. Strategic environmental assessment (SEA) IAIA'03 pre-meeting training course.

RTPI (Royal Town Planning Institute). 2018. Strategic environmental assessment: improving the effectiveness and efficiency of SEA/SA for land use plans, www.rtpi.org.uk/knowledge/practice/sea/.

Runhaar, H. and Driessen, P.J. 2007. What makes strategic environmental assessment successful environmental assessment? The role of context in the contribution of SEA to decision-making. *Impact Assessment and Project Appraisal* 25(1), 2–14.

Sadler, B., Aschemann, R., Dusik, J., Fischer, T. and Partidário, M. (eds). 2010. *Handbook of strategic environmental assessment*. London: Earthscan.

State of California. 1986. *The California Environmental Quality Act*. Sacramento, CA: Office of Planning and Research.

Therivel, R. 2010. *Strategic environmental assessment in action*. 2nd edition. London: Earthscan.

Therivel, R. & Minas, P. 2002. Ensuring effective sustainability appraisal. *Impact Assessment and Project Appraisal* 19(2), 81–91.

Therivel, R., Wilson, E., Thompson, S., Heaney, D. and Prichard, D. 1992. *Strategic environmental assessment*. London: RSPB/Earthscan.

Therivel, R., Christian, G., Craig, C., et al. 2009. Sustainability-focused impact assessment: English experiences. *Impact Assessment and Project Appraisal* 27(2), 155–168.

Wood, C. 1991. EIA of policies, plans and programmes. *EIA Newsletter* 5, 2–3.

Wu, J., Chang, I-S., Bina, O., Lam, K-C. and Xu, H. 2011. Strategic environmental assessment implementation in China: five-year review and prospects. *Environmental Impact Assessment Review* 31, 77–84.

Yang, S. 2012. Reasons for the slow establishment of provincial SEA systems in mainland China. *Journal of Environmental Assessment Policy and Management* 14(3).

Zhou, K-Y. and Sheate, W.R. 2011. Case studies: application of SEA in provincial level expressway infrastructure network planning in China – current existing problems. *Environmental Impact Assessment Review* 31, 521–537.