1. Introduction

Bridget Durning, Lisa Palframan, and Anastássios Perdicoúlis

Environmental impacts of investment projects – for instance, petroleum drilling, mining, or highways – are currently studied and mitigated from two distinct perspectives: before and after the project implementation, with environmental impact assessment (EIA) and environmental management systems (EMS) being the main instruments on the respective sides. This double-perspective creates a discontinuity in the way environmental impacts are dealt with but there is no significant reason why this situation should remain sub-optimal as EIA and EMS are both environmental protection tools with complementary purposes: whilst the goal of EIA is to anticipate and mitigate the environmental impacts of proposed new projects at the planning and design stages, an EMS can help organisations to effectively manage the day-to-day environmental impacts arising during the construction, operation and decommissioning of such projects. By supporting a systematic approach to the identification and evaluation of impacts, both tools can ensure that resources are focused on those impacts deemed to be ‘significant’. Used effectively and in an integrated manner, they can ensure the main environmental issues are identified at an early stage in project planning and are systematically addressed throughout the project life cycle.

The issues with this double-perspective, but also the potential benefit of closer connection, have been perceived by both academics and practitioners at various points over the last forty years. There have been both theoretical and practical attempts to link EIA with environmental management (EM) almost from the point when EIA was first formally enacted. In this book we aim to drive forward the agenda of achieving an ‘impact continuum’ by gathering and presenting highlights of current theoretical thinking and practical efforts as expressed by those active in the field today in linking EIA and EMS.

We are aware that EIA is only one of a number of tools for assessing impact...
of both projects, plans and policies including Sustainability Appraisal (SA), Strategic Environmental Assessment (SEA), Health Impact Assessment (HIA), Territorial Impact Assessment (TIA), Regulatory Impact Assessment (RIA), Equality Impact Assessment (EqIA). In particular we aware that Social Impact Assessment (SIA) is often undertaken separately to EIA. In this book we are particularly focusing at project level continuum.

We start by setting the context for book: section 1.1 of this chapter provides a brief summary of the key elements of EIA and EMS and the perceived problems with their integration. Section 1.2 reflects on how the ‘impact continuum’ has been presented in academic literature over the last forty years. Finally, section 1.3 provides a brief summary of each of the chapters in the book, and an outline of the book’s readership.

1.1 Key Elements of EIA and EMS

1.1.1 EIA

EIA is a systematic process which has been practised for more than 40 years. It is now carried out in more than 100 countries around the world, as well as by many bilateral and multi-lateral funding agencies (Petts, 1999). Its purpose is to predict, assess and evaluate the environmental impacts of major development projects before a decision is made on whether they should be consented. Such projects may include airports, highways, pipelines, mines, power stations and large scale urban development projects. The main principles of EIA can be described as an aid to decision making (ensuring that the decision is better informed), an aid to the formulation of development actions (by anticipating environmental challenges at an early stage in the project design) and an instrument for sustainable development (through the avoidance of environmental damage) (Glasson et al., 2005).

Although EIA is practised internationally, there are a number of steps in the procedure which are commonly followed up to the consenting decision, including:

- screening, required to decide – rather technically – whether or not EIA is needed
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- scoping, required to establish the main issues requiring consideration, any alternatives that should be considered and the methods/techniques that should be employed to investigate the identified impacts
- prediction and assessment of impacts, drawing on baseline data to understand the likely changes in the environment that may arise from the project
- evaluation of impacts in terms of their likely significance
- development of mitigation and monitoring measures, to eliminate or reduce any negative impacts identified and establish whether the predicted impacts are accurate

One significant output of the EIA process is a document which communicates the process and findings of the EIA, variously called an Environmental Impact Statement (EIS), Environmental Statement or EIA Report. This document, together with the application for project consent, is submitted by the developer to the consenting authority to inform the decision about whether and if so, how, the project should proceed. An important element of EIA is public participation; individuals, communities and organisations likely to be affected by the development should have the opportunity to access the environmental information (for example through the widespread dissemination of a non-technical summary of the EIS) and have their views on the development taken into account in the decision making process. While many countries require public consultation only at the end of the EIA process, it is considered good practice to actively involve the public much earlier and at regular intervals during EIA, bringing benefits including increased opportunities for modification of the development and improved relationships between the parties (IAIA, 2006).

The formal and mandated EIA procedure in some jurisdictions ends with the consideration of the EIS and the granting of consent. In many countries however it is common for there to be formal, regulated ‘follow-up’ required by EIA or other environmental protection laws which may encompass permits, standards, surveillance and enforcement of compliance (Morrison-Saunders and Arts, 2004a). These approaches enable the regulator to check that the development is proceeding in accordance with the EIA and/or planning documentation, predicted impacts are controlled and unanticipated impacts are avoided. Within countries where formal regulation exists and where the developer is left to
Furthering Environmental Impact Assessment

self-regulate, the implementation of an EMS as part of the follow-up strategy allows the risks identified during EIA to be managed during the construction and operation of the project.

1.1.2 EMS

An EMS is a voluntary measure which enables an organisation to systematically identify and manage its environmental impacts, to improve environmental performance. It is based on the ‘plan-do-check-act’ cyclical management model also described as Total Quality Management (Netherwood, 1994). It enables the environmental policy that many organisations adopt to be actively implemented through the ongoing identification of risks and impacts together with the achievement of actions to enable continual improvement. Organisations that choose to adopt this approach are motivated by the possibility of improved risk management, regulatory compliance and enhanced reputation. Some organisations operate a self-certified EMS, others choose to have their EMS externally assessed and certified against a recognised standard such as the international standard ISO 14001. An EMS usually includes the following components (based on ISO (2004)):

- an environmental policy statement, which sets out the organisation’s commitment to managing its environmental issues
- a register of significant environmental aspects (environmental interactions) and impacts (changes in the environment resulting from these interactions). These are often established through carrying out an environmental review, a strategic process identifying the main environmental impacts of the organisation’s operations, products and services.
- a register of the main laws and regulatory requirements applicable to the organisation
- an environmental improvement plan which includes objectives and targets to address the significant aspects
- documented, implemented procedures which ensure satisfactory provision is made in areas such as resourcing, communication, staff training and competence, emergencies and document control
- the monitoring and auditing of significant environmental aspects, compliance with the EMS and achievement of the objectives and targets. Actions
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are needed to address the issues found in an effective manner

- a regular, documented review of the EMS in which senior management establish the progress made and assess further action needed (e.g. changes to environmental aspects, addition of laws to the legal register, new targets) in light of any internal or external changes

In some cases an organisation will choose to report publicly on their environmental performance. This is a requirement of some standards such as EU EMAS (European Communities, 2011) but is only an option under other schemes. EMS standards specify what must be achieved in terms of management rather than performance; for example they do not specify limits on resource use. This means they can usually be followed by public or private sector organisations operating in any industry in a way that gives the organisation considerable discretion over the issues to be addressed and the rate at which progress is made. In theory, by putting in place mechanisms to integrate environmental concerns into day-to-day operations, an organisation can enable environmental performance improvements to be realised, but some researchers have argued that there is limited agreement on what is meant by ‘performance’ in an EMS context and why performance improvements should result (Nawrocka and Parker, 2009). However, it is clear that where organisations need to take a systematic approach to address the environmental impacts of their ongoing operations, EMS models provide an appropriate framework.

1.1.3 Open Challenges of the EIA–EMS Interface

A comparison of EIA and EMS (see Table 1.1) demonstrates many differences between the origins, process and application of the two tools, although it is evident that their goals of environmental protection are similar. This suggests that both tools are approaching a similar problem from different perspectives and although there may be practical issues to overcome in applying them to the same project, closer linking of the tools where they are to be applied to the same development project would be beneficial. Some of the practical issues identified in previous studies are identified in Table 1.2.
Table 1.1 A comparison of EIA and EMS elements and requirements; structure based on Eccleston and Smythe (2002)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Typical EIA Process in the UK</th>
<th>ISO14000-consistent EMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>EIA Directive implemented in 1988, although many EIAs prepared voluntarily or at the request of local authorities before this time (Glasson et al., 2005)</td>
<td>First British Standard in 1994; ISO standard 14001 adopted in 1996</td>
</tr>
<tr>
<td>Goal</td>
<td>To provide environmental protection by ensuring environmental considerations are integrated into decision making for major developments</td>
<td>To provide environmental protection by identifying impacts; through systems for continuous improvements, to reduce these impacts</td>
</tr>
<tr>
<td>Scope</td>
<td>Proposed projects listed in Annex 1 or 2 of the EIA Directive deemed likely to have significant environmental effects</td>
<td>Defined in the ISO 14001 certificate as applying to all activities within the specified site or organisation</td>
</tr>
<tr>
<td>Organisations directly involved</td>
<td>Organisations intending to apply for permission to develop a project specified on the annexes of the EIA Directive must undertake EIA; majority private sector, occasionally public sector</td>
<td>Voluntary approach open to any organisation that wishes to manage its environmental impacts in accordance with a recognised standard</td>
</tr>
<tr>
<td>Personnel directly involved</td>
<td>Usually external consultants prepare the Environmental Statement; some are prepared in-house</td>
<td>Consultancy support may occasionally be sought in setting up the EMS but they are usually implemented by in-house personnel with day-to-day responsibility for environmental issues</td>
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<td>Public participation</td>
<td>Public consultation on the Environmental Statement is mandatory; public may also be involved at earlier stages</td>
<td>Organisation must ‘decide whether to communicate externally about its significant environmental aspects and shall document its decision’ (ISO, 2004)</td>
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<tr>
<td>Planning</td>
<td>An optional scoping stage allows for the EIA to be planned in terms of the issues to be assessed and the methods by which this will be achieved; a Scoping Report may be issued to aid consultation at this stage</td>
<td>‘Scoping’ achieved through carrying out an Initial Environmental Review which identifies and evaluates significant aspects and impacts; an Environmental Policy is produced based on the issues identified and the commitments the organisation wishes to make</td>
</tr>
<tr>
<td>Documentation</td>
<td>Environmental Statement summarising the findings of the EIA must accompany the planning application (information requirements set out in Schedule 4 of UK EIA regulations); a Non-Technical Summary is usually published separately to aid public consultation; neither are actively maintained, being produced for a set point in time (the consenting process)</td>
<td>Environmental Policy developed, maintained and communicated; evolves according to changing circumstances; various procedures required to be documented and maintained, e.g. on legal requirements and communication; documents are required to be controlled</td>
</tr>
<tr>
<td>Significance</td>
<td>For the purpose of screening, significance criteria are set out in Schedule 3 of the UK EIA regulations and are broadly classed as characteristics of the impact, characteristics of the development and location of the development</td>
<td>For the purpose of evaluating the significance of aspects associated with the organisation’s activities, suggested significance criteria are set out in ISO 14004 and broadly include environmental impact, legal requirements and stakeholder concern</td>
</tr>
<tr>
<td>Mitigation</td>
<td>UK EIA regulations require the Environmental Statement to provide ‘A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment’</td>
<td>EMS provides a system for ensuring that mitigation measures are implemented, for example the activity they relate to may be identified as a ‘significant aspect’; they may be formally monitored, audited and reviewed</td>
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<th>Characteristics</th>
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</thead>
<tbody>
<tr>
<td>Monitoring</td>
<td>No legal requirement to implement monitoring, nor to undertake related ‘follow-up’ activities, although individual proponents may be obliged to do so through the consenting authority making planning conditions</td>
<td>Requirement to maintain and implement a procedure to monitor and measure the significant impacts of the operation; in practice this includes monitoring of resource used and regular internal audits; a management review is required ‘at planned intervals’</td>
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</table>

One particular issue is the motivation of organisations for using each of these tools. With EIA being a legal requirement for certain projects in many countries, organisations have no choice but to carry it out in order to obtain planning consent. In contrast, EMS is not usually legally required, although in some cases sectoral requirements make the implementation of an EMS compulsory for companies carrying out certain activities. For example, a recommendation by OSPAR (OSPAR Convention for the Protection of the Marine Environment of the North East Atlantic) requires Contracting Parties to ensure that all offshore oil and gas operators have an internationally recognised EMS (OSPAR Commission, 2003). Arguably, the voluntary nature of EMS limits its uptake amongst companies that have put their proposed projects through the EIA process, even where there may be efficiency and environmental protection benefits to using an EMS during construction and operation of the project. Furthermore, in many jurisdictions the system for the planning of new developments (in which EIA has a primary role) and the system for regulating pollution from industry (in which EMS has a primary role) are different. This often results in at least two separate consenting applications, sometimes to two different authorities, one for planning permission and one for an environmental permit. In the European Union for example, there are separate Directives on EIA (85/337 as amended) and on Integrated Pollution Prevention and Control (2008/1/EC). The separation of the consenting systems may widen the gap between the tools that support favourable environmental protection outcomes.

Relevant to many of the concerns highlighted in Table 1.2 are several concepts which present difficulties in translation from EIA to EMS and vice versa. The first of these is ‘environmental aspect’, defined by ISO (2004) as an ‘element of an action’s activities or products or services that can interact with the
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environment’. Sánchez and Hacking (2002, p. 28) describe an aspect as ‘the linkage between an activity, product or service and their environmental consequences, or impacts’. An organisation wishing to implement an EMS that meets the requirements of ISO 14001 must identify their aspects and evaluate their significance. The term ‘aspect’ is not routinely used in EIA, instead it is the case that impacts are usually classified according to the biophysical features they affect. Morris and Therivel (2009, p. 534) describe these features as ‘environmental components’, a term defined as ‘the aspects of the natural or man-made environment (e.g. people, landscape, heritage, air, soils, water, ecosystems) that may be significantly affected by a proposed project, and are individually assessed in an EIA. They are receptors, but can also include many of these, e.g. individual species or buildings’. Thus on the rare occasions that the term ‘aspect’ is used in an EIA context, it may be interpreted as an environmental feature which a business, through its proposed development, may affect. In contrast, the term ‘aspect’ in EMS refers to the connection between the business and the environment, rather than the environmental receptor specifically (ISO, 2004).

Table 1.2 Perceived barriers to linking EIA and EMS according to existing work; based on Palframan (2010)

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<tr>
<th>Type of Barrier</th>
<th>Example</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Legal and policy framework</td>
<td>Different consenting regimes for planning and environmental protection (implied)</td>
<td>(Environmental Resources Management, 2004)</td>
</tr>
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<td></td>
<td>Potential overlap in requirements leading to inefficiencies</td>
<td>(Eccleston and Smythe, 2002)</td>
</tr>
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<td></td>
<td>Voluntary basis of EMS providing little incentive for uptake</td>
<td>(Slinn et al., 2007)</td>
</tr>
<tr>
<td>Process/technical issues</td>
<td>Complexities of site ownership and occupation</td>
<td>(Slinn et al., 2007)</td>
</tr>
<tr>
<td></td>
<td>Time lag between EIA being carried out and detailed design of the project</td>
<td>(Ridgway, 2005)</td>
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<td></td>
<td>EMS orientated towards day-to-day activities, environmental implications of new development not considered</td>
<td>(Marshall, 2004)</td>
</tr>
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<td></td>
<td>Limited number of practitioners specialising in both tools</td>
<td>(Sánchez and Hacking, 2002; Marshall, 2004)</td>
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<tr>
<th>Type of Barrier</th>
<th>Example</th>
<th>Reference</th>
</tr>
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<tbody>
<tr>
<td>Practitioner issues</td>
<td>Different personnel undertaking EIA and EMS for any given project</td>
<td>(Ridgway, 2005; Sánchez and Hacking, 2002)</td>
</tr>
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<td></td>
<td>Public debate around new developments centred on whether or not to grant consent, not on mitigation</td>
<td>(Sánchez and Hacking, 2002)</td>
</tr>
<tr>
<td></td>
<td>Companies consider EMS to be outside the normal scope of operational activities</td>
<td>(Marshall, 2004)</td>
</tr>
<tr>
<td>Proponent and stakeholder attitudes</td>
<td>EIA viewed by proponents as a bureaucratic step rather than a useful process to aid the delivery of the project</td>
<td>(Sánchez and Hacking, 2002)</td>
</tr>
<tr>
<td></td>
<td>Reluctance of proponent to put resources into operational management before the outcome of the application is known</td>
<td>(Slinn et al., 2007)</td>
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The concept of ‘significance’ is another which presents difficulties in the relationship between EIA and EMS because it is used differently with each of the two tools, rather than being unfamiliar to one. ISO 14001 (ISO, 2004) explains that a significant aspect (of the activity, services or products of the organisation) is one which has significant impacts on the environment (although the organisation itself makes the judgement on the threshold above which the impact is deemed significant) and that the EMS should be structured around addressing those significant aspects. The guidance (ISO, 2004) makes clear that the organisation itself must establish a documented method and criteria for evaluating significant aspects, perhaps taking into account environmental matters, legal issues and stakeholder concerns. An organisation operating an ISO 14001 EMS usually creates and maintains a register of significant environmental aspects and associated legal requirements. The identified aspects should be used in determining the programme of objectives and targets with resources prioritised towards the most significant aspects. This programme is central to the achievement of continual improvement in environmental performance especially in companies which set ambitious goals (Brouwer and van Koppen, 2008).

The concept of significance with regards to EIA has been described as ‘one of the most complex, contentious, and least-understood aspects of EIA systems across the globe’, particularly due to its dynamism through the project cycle (Wood, 2008, p. 23). Significance is often used during the screening process as a way of determining which projects should be subject to EIA (those
that are determined, on the basis of limited information at this early stage, as likely to have significant effects). Assessment should result in identification and confirmation of impact significance, with mitigation measures being put forward to reduce significance where possible. As with EMS, the determination of significance helps to ensure that limited resources are prioritised so that the greatest environmental impacts are identified more fully during assessment and that they are then avoided or reduced during implementation of the project. There is no universal agreement on how a ‘significant’ impact is defined in EIA, although it is common to see terms such as ‘slight’, ‘moderate’ etc. used to describe impact significance within EIA reports (Wood et al., 2007). As with EMS, significance can be seen as a value judgement, open to interpretation. However, it should be underpinned by rigorous evidence which substantiates the judgement. For some issues such as air quality and noise, evaluation of significance can be carried out against recognised and agreed environmental quality standards which should make judgements more consistent. Arguably EIA is better positioned than EMS to present a more robust judgement on significance where such standards do not exist because of the requirement to involve a wider range of stakeholders – although ISO (2004) advises that a company take account of stakeholder views in determining significance, it is acceptable for companies to show very limited evidence of external stakeholder involvement. However, since most EIA systems only require consultation once the EIA report is completed, the significance judgement may still be developed without reference to stakeholder views.

1.2 Impact Continuum Over the Last Forty Years

The two processes, which we are proposing should be a continuum rather than separate entities had their origins in initiatives to address pollution and environmental degradation, originally brought to the fore through the environmental movement of the 1960s.

EIA in a formal sense first appeared in the USA in 1969 through the National Environmental Protection Act (NEPA) (Wood, 2003). Legislation requiring the implementation of EIA gradually spread across the developed world over the next 20 years. E(S)IA (recognising that in some legislation social impact assessment is integrated and others it is separate) is now a mature process
is most developed countries. EMS had a slightly later birth, with formalised systems not appearing until much later in 1992 through the publication of the British Standard (BS7750) and subsequently of the ISO 14001 in 1996. This was followed by the European Union’s Eco Management and Audit (EU-EMAS) scheme in 1995. Since then various sectoral and national level schemes have also been introduced, for example the Acorn Scheme in the UK for small and medium sized enterprises (IEMA, 2010) and the National Framework for Environmental Management for the Australian agricultural sector (Australian Government Department of Agriculture Fisheries and Forestry, 2009).

Holling (1978) is notable for being a very early piece of work that proposed the environmental assessment and management should be a continuum:

If assessment continues into the future, then prediction loses its status as a goal and assessment merges into environmental management. Prediction and traditional ‘environmental impact assessment’ suppose that there is a ‘before and after’ whereas environmental management in an ongoing process (Holling, 1978, p. 133).

More innovative work continued through the 1980s with exploration of the need for follow-up and monitoring in EIA to extend it into EM – see Bailey (1997) and references therein.

Subsequent to the arrival of formalised systems for environmental management in the 1990s, work looking specifically at EIA–EMS began to appear in the academic literature, notably Eccleston (1998) and an innovative special edition of the Journal of Environmental Assessment, Policy and Management (JEAPM) in 1999. Eccleston’s work offered a conceptual framework which showed the potential for synergy between EMS and the EIA process (within NEPA) and proposed that integrating the two could ‘lead to more effective planning and enhanced environmental protection, while streamlining compliance’ (Eccleston, 1998, p. 10). The theoretical benefits from a combination of EIA and EMS are also presented by Ridgway (1999).

Some practical examples also start to appear in the literature with Barnes and Lemon (1999) providing an example of the use of an Environmental Management Plan within a Canadian road development. However, others also began to identify that in some industries EIA is not enough to identify and mitigate significant impact and more is needed, like EMS – for instance, McKillop and
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Brown (1999) who considered an example from the extractive industries. This period also saw other actors entering the arena and Rees (1999) charts the rise of IFC World Bank Equator Principles.

Sheate (1999) in his editorial to JAEPM special edition, observed that the abundance of academic articles on the integration of EIA with other tools which appeared at this time showed an expanding area of academic interest and this appears to have continued over the last decade with a number of papers that have appeared in the academic literature at various points – for instance, Eccleston and Smythe (2002), Sánchez and Hacking (2002), Vanclay (2004), Marshall (2004), Ridgway (2005), Broderick and Durning (2006), Slinn et al. (2007), Perdicoúlis and Durning (2007), Cherp (2008), Varnäs et al. (2009), and Lundberg (2011).

The published academic work contains both considerations on theoretical integration and a few examples of actual integration, such as Marshall (2004) and Broderick and Durning (2006). There was also (and continues to be) focus in the literature on the need for and role of ‘follow-up’ to EIA. According to Arts et al. (2001), environmental management is one of the four key activities of EIA follow-up (which also include monitoring, evaluation and communication). Morrison-Saunders and Arts (2004a, p. 4) describe management as: ‘making decisions and taking appropriate action in response to issues arising from monitoring and evaluation activities’ and as such can be considered a key to co-ordinating other follow-up activities.

Examples of the use of environmental management plans have appeared at various points in the literature – for instance, Barnes and Lemon (1999), Broderick and Durning (2006) – and in 2008 IEMA in the UK published good practice guidance on their use (IEMA, 2008). There is some variation in the extent of use of EMPs depending on their sector and the driving force, which is explored further in Chapter 4 of this book.

As mentioned previously, ongoing development has expanded the range of impact assessment tools beyond those purely focused on the project delivery aspect. Strategic environmental assessment (SEA) has developed as a tool which complements EIA. It enables environmental considerations to be integrated into the preparation of strategic actions such as policies, plans and programmes. These actions often set the planning framework for the types of capital projects that are likely to require EIA at a later stage. The advantages of this tool include...
its early application in the planning cycle (meaning that it can influence the
types of projects, not just the details of the projects), its ability to deal with
cumulative impacts and the possibility for more meaningful consideration of
strategic alternatives (Thérivel, 2004).

On the EMS side, researchers have developed approaches to expand the scope
of EMS towards other issues of sustainability (Azapagic, 2003; Esquer-Peralta
et al., 2009). A Sustainability Management System (SMS) may be viewed as a
mature standard EMS that takes a broader sustainability perspective (Emilsson
and Hjelm, 2009). Depending on the characteristics of the organisation, such
issues may include workplace conditions, the influence on the local community
and support for the local economy. There is currently no ISO 14001 equivalent
for SMS, although draft standard ISO 20021 setting out a specification for SMS
in events management is in preparation and due to be published in 2012 (ISO,
2010b). Nonetheless, practitioners are beginning to report on their experiences
of SMS – for instance, MacDonald (2005), Suff (2011). Chapter 11 explains
SMS and provides guidance on developing SMS in the context of projects that
may be subject to EIA, whilst Chapter 12 examines sustainability issues within
the context of two case study projects.

1.3 About the Book

1.3.1 Content

As is the nature of a subject which is firmly rooted in practice, many of those
‘pioneers’ in the early consideration of EIA–EMS, have now moved on into
other areas of EIA practice and new practitioners have moved in. It is probably a
reasonable assumption that there is a lot of experience of the impact continuum
in practice as many companies have EMS (more than 223,000 companies have
ISO 14001 according to latest figures from ISO (2010b)) and because EIA also
affects those same companies when undertaking major development. However,
it is difficult to know whether and if so, how, companies actually integrate EIA
beyond the limited literature to date. The time is now right for a book which
sets the current picture and explores how EIA–EMS integration has evolved and
continues to evolve. This book therefore contains a number of case studies from
a range of sectors to provide examples of current practice. A summary of each
1. Introduction

Chapter 2 explores the relationship between project environmental planning and management and the contribution of information and knowledge management (I&KM) to the achievement of environmental protection outcomes. It outlines the basis for I&KM in the EIA process and describes the typical contents of the contemporary environmental manager’s toolbox. It goes on to review the integrative use of selected tools to achieve better integration between project planning and management and discusses how environmental information generated during project implementation and management can be transformed into knowledge to improve the assessment of future projects.

Chapter 3 presents an analysis of the EIA and EMS processes, featuring documents and tasks as the main elements. Considered in a document-only, task-only, or an integrated view, the analysis provides two alternative perspectives of the processes. The ‘action perspective’ of the integrated view provides the most complete and conservative framework for the EIA–EMS link. On the contrary, the ‘milestone perspective’ of the integrated view provides a more tangible core sequence, and hence an opportunity for a more flexible (re-)definition of tasks – a deviation from current standards which may be revolutionary for either process, with the advantages and disadvantages of any revolution.

Chapter 4 There is no formal requirement for an environmental management plan (EMP) within EIA legislation in the UK, but they are increasingly being used as a way of ensuring that mitigation measures proposed in the environmental statement (ES) are implemented on the ground. This chapter considers the global origins of the concept of EMP. It describes their current usage and briefly considers their effectiveness in delivering environmental protection through reference to a case study. It concludes by reflecting on how EMPs can form the key link between EIA and EMS and how this link can be further enhanced.

Chapter 5 Appropriately employed, environmental and social impact assessment (ESIA) is a key integrative element in environmental protection, but is only one element of that policy toolbox. Other elements include the
monitoring and evaluation of the impacts of a project (which has been subject to ESIA) and the subsequent management of the environmental performance of that project. It has been suggested by some authors that ESIA has little value unless follow-up is carried out: without it the process remains incomplete and the consequences of ESIA planning and decision making are unknown. Through an exploration of the many drivers for ESIA development and differing methodological approaches, this chapter proposes that the most effective ESIA systems are those that use follow-up processes to tangibly link ESIA and EMS.

Chapter 6 Using the industrial sector within Vietnam as a case study, this chapter explores the potential of utilising Environmental Management System (EMS) in association with Environmental Impact Assessment (EIA) to develop a framework to guide the environmental law and regulation compliance behaviour of the sector. It first presents the background to the empirical study on which the chapter is based. It presents a country overview followed by outlining current EIA and EMS practice in Vietnam, the determining factors in compliance with environmental laws and regulations and concludes with a discussion of the role of EMS.

Chapter 7 Raissiyan and Pope discuss two case studies from the oil sector in Iran, in which practical steps were taken to enhance the linkages between EIA and EMS, drawing on one of the author’s experiences both as an EIA consultant and EMS practitioner. They discuss the barriers and challenges which exist in linking these tools, particularly in developing countries, and propose solutions which would enable project teams to work more effectively towards integrated solutions.

Chapter 8 An industry EMS practitioner discusses how EIA and EMS have been applied together through the life cycle of a wind farm located in Scotland. Practical examples are given showing how links have been made through staff working together to apply the two tools during the development, construction and operational stages. The role of the regulator in providing an additional knowledge feedback loop is emphasised.

Chapter 9 focuses on the planning and pollution control of waste management infrastructure and discusses the use of EIA and EMS with reference to
an extension to a landfill site located in the UK. The company which runs the site have developed both a corporate and site-based approach to ensuring that EIA and the Business Management System (incorporating an EMS) are linked and that information is effectively shared to meet environmental requirements. The chapter discusses how this approach could be applied by companies in other sectors.

Chapter 10 discusses how the Environment Agency in England and Wales uses an Environmental Action Plan to link EIA and the EMS during flood risk management projects. The chapter describes the involvement of contractors in risk management and discusses how monitoring from existing projects informs good practice elsewhere.

Chapter 11 Scanlon and Pope introduce the concept of a Sustainability Management System (SMS), which can allow for social and environmental impacts and opportunities to be addressed more holistically than a traditional EMS. They propose that SMS be used to integrate consideration of environmental and societal issues at all stages of project planning and delivery – including in design, procurement and construction. They also provide guidance on how to develop and implement a SMS.

Chapter 12 builds on the discussion of SMS presented in Chapter 11 by exploring case studies in the transport sector; one the Sydney Metro Authority (SMA) in Australia and the other the UK Olympic Delivery Authority Transport Division (ODAT) in the UK. The chapter discusses how SMS has been used to embed sustainability during the planning and delivery of major infrastructure projects and how such an approach can overcome some of the inhibitors to project sustainability.

1.3.2 Readership

The book should appeal primarily to academics related to departments and/or courses such as environmental planning, environmental engineering, or environmental management, and to three groups in particular: (a) researchers who study and develop methods and applications of EIA–EMS integration; (b) lecturers who teach in any of the two ‘components’ (EIA or EMS) or the full ‘continuum’; and (c) undergraduate and post-graduate students – the former as a first exposure
to the concepts in an integrating perspective, and the latter facing practical or theoretical problems to solve.

The book should also appeal to ‘avant-garde’ project proponents and practitioners (for instance, consultants), who often work together. The book aims to provide a stimulus and practical examples for them to also experiment with the various aspects of EIA–EMS integration, so that soon we can evidence a wave of efforts in the same direction – perhaps reinforcing the trend of the ‘impact continuum’.