



INTRODUCTION TO ENVIRONMENTAL IMPACT ASSESSMENT

FOURTH EDITION

THE NATURAL AND BUILT ENVIRONMENT SERIES

JOHN GLASSON, RIKI THERIVEL
AND ANDREW CHADWICK

ROUTLEDGE

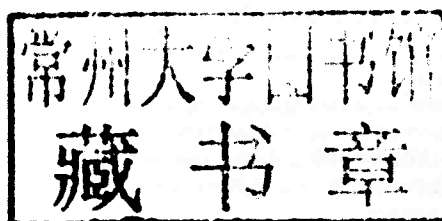


Introduction to Environmental Impact Assessment

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John Glasson, Riki Therivel
and Andrew Chadwick



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Preface to the first edition

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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 300 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 and Therivel, 1995, London, UCL Press).

John Glasson
Riki Therivel
Andrew Chadwick
Oxford Brookes University

Preface to the fourth edition

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The aims and scope of this fourth edition are unchanged from those of the first edition. 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. The worldwide spread of EIA is becoming even more comprehensive. In the European Union there is now over 25 years' experience of the implementation of the pioneering EIA Directive, including 10 years' experience of the important 1999 amendments. There has been considerable interest in the development of the EIA process, in strengthening perceived areas of weakness, in extending the scope of activity and also in assessing effectiveness. Reflecting such changes, this fully revised edition updates the commentary by introducing and developing a number of issues that are seen as of growing importance to both the student and the practitioner of EIA.

The structure of the first edition has been retained, plus much of the material from the third edition, but considerable variations and additions have been made to specific sections. In Part 1 (on principles and procedures), the importance of an adaptive EIA, plus the burgeoning range of EA activity, are addressed further. In the EU context, the implementation of the amended EIA Directive is discussed more fully, including the divergent practice across the widening range of Member States. The specific new 2011 regulations and procedures operational in the UK are set out in Chapter 3. In Part 2 (discussion of the EIA process), most elements have been updated, including screening and scoping, alternatives, impact identification, prediction, participation and presentation, mitigation and enhancement, and monitoring and auditing.

We have made major changes to Part 3 (overview of practice), drawing on the findings of important reviews of EIA effectiveness and

operation in practice. For example, Chapter 8 includes much new material on the implication of legal challenges in EIA. Chapter 9 includes some new practice case studies. Most of the case studies are UK-based and involve EIA at the individual project level, although two examples of SEA are also discussed, plus new topics such as health impact assessment. While it is not claimed that the selected case studies all represent best examples of EIA practice, they do include some novel and innovative approaches towards particular issues in EIA, such as new methods of public participation and the treatment of cumulative effects. They also draw attention to some of the limitations of the process in practice. Chapter 10 (Comparative practice) has also had a major revision, reflecting, for example, growing experience in African countries, China and countries in transition, and major reviews for some well-established EIA systems in, for example, Canada and Australia.

Part 4 of the book (Prospects) has also been substantially revised to reflect some of the changing prospects for EIA. Chapter 11 discusses the need for strategic environmental assessment (SEA) and some of its limitations. It reviews the status of SEA in the USA, European Union and UNECE, and China. It then discusses in more detail how the European SEA Directive is being implemented in the UK. It concludes with the results of recent research into the effectiveness of the SEA Directive. Chapter 12 has been extensively revised and extended. It includes, for example, more consideration of cumulative impacts, socio-economic impacts, health impact assessment, equalities impact assessment, appropriate assessment, the new area of resilience thinking, and the vitally important topic of planning for climate change in EIA, plus possible shifts towards more integrated assessment. The chapter concludes with a discussion of the parallel and complemen-

tary development of environmental management systems and audits. Together, these topics act as a kind of action list for future improvements to EIA. This chapter in particular, but also much else in the book, draws on some of the findings of recent reviews of EIA practice undertaken by, among others, the EC, the IAIA (International Association for Impact Assessment) and the IEMA (the Institute of Environmental Management and Assessment).

The Appendices include the full versions of the amended EIA Directive and the SEA Directive, a revised IAU EIS review package, and a guide to key EIA journals and websites worldwide.

John Glasson
Riki Therivel
Andrew Chadwick
Oxford 2011

Acknowledgements

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British Association of Nature Conservationists
(cartoons: Parts 2 and 3)
RPS, Symonds/EDAW and Magnox Electric
(Plate 1.1)
EIA Review (Figure 1.9)
ENDS (Tables 3.1 and 3.2)
Scottish government (Figures 4.1 and 4.2)
Pattersons Quarries (Figure 4.3)
South Yorkshire Integrated Transport Authority
(Figure 4.6)
Scottish Power Systems (Figure 4.8)
IEMA (Figure 5.1 and 12.6, Tables 8.5, 12.4, 12.6
and 12.7)
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(Appendix 4)
Olympic Delivery Authority (Figure 7.7)
Highlands and Islands Enterprise (Figure 9.3)
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Government (Tables 3.5, 3.6 and 3.7;
Appendix 2)

Planning newspaper (cartoon: Part 4)
Beech Tree Publishing (Figure 7.8)
European Commission (Table 4.3, Box 11.1,
Table 12.5)
West Australian Environmental Protection
Agency (Table 10.2, Figure 10.5)

West Australian Department of Health
(Figure 12.2)
Scott Wilson (Table 12.3)
Dover District Council (Figure 11.3)
Office of the Deputy Prime Minister
(Box 11.2)

Abbreviations and acronyms

AA	Appropriate assessment	CEAA	Canadian Environmental Assessment Agency
ABI	UK Annual Business Inquiry	CEAM	Cumulative effects assessment and management
ADB	African Development Bank	CEARC	Canadian Environmental Assessment Research Council
ADB	Asian Development Bank	CEC	Commission of the European Communities
AEE	Assessment of environmental effects	CEGB	Central Electricity Generating Board
AEP	Association of Environmental Professionals	CEMP	Construction environmental management plan
ANZECC	Australia and New Zealand Environment and Conservation Council	CEPA	Commonwealth Environmental Protection Agency (Australia)
AONB	Area of Outstanding Natural Beauty	CEQ	US Council on Environmental Quality
APC	Air pollution control	CEQA	California Environmental Quality Act
API	Assessment on Proponent Information (WA)	CHP	Combined heat and power
AQMA	Air quality management area	CIA	Cultural impact assessment
BAA	BAA Airports Limited (previously British Airports Authority)	CIE	Community impact evaluation
BANANA	Build absolutely nothing anywhere near anything	CISDL	Centre for International Sustainable Development Law
BG	Bulgaria	CITES	Convention on Trade in Endangered Species
BIO	Bio Intelligence Service S.A.S.	CO ₂	Carbon dioxide
BME	Black and minority ethnic	COWI	COWI A/S
BP	BP (previously British Petroleum)	CPO	Compulsory purchase order
BPEO	Best practicable environmental option	CPRE	Campaign to Protect Rural England
BS	British Standard	CRM	Contingent ranking method
BWEA	British Wind Energy Association	CRS	US Congressional Research Service
CAREC	Regional Environmental Centre for Central Asia	CRTN	Calculation of road traffic noise
CBA	Cost-benefit analysis	CSR	Corporate social responsibility
CC	County Council	CVM	Contingent valuation method
CCGT	Combined-cycle gas turbine	CY	Cyprus
CCHP	Combined cooling heat and power	CZ	Czech Republic
CCS	Carbon capture and storage	dB	Decibels
CCW	Countryside Council for Wales	dBA	A-weighted decibels
CE	Categorical exclusion		
CEA	Cumulative effects assessment		

DA	Devolved administration (in the UK)	EPA	West Australian Environmental Protection Authority
DBIS	UK Department for Business, Innovation and Skills	EPB	Environmental Protection Bureau (China)
DC	District Council	EPBCA	Environmental Protection and Biodiversity Conservation Act (Australia)
DCLG	UK Department for Communities and Local Government	EPD	Hong Kong Environmental Protection Department
DECC	UK Department of Energy and Climate Change	EqIA	Equality impact assessment
DEFRA	UK Department for Environment, Food and Rural Affairs	ERM	Environmental Resources Management Limited
DETR	UK Department of Environment, Transport and the Regions	ES	Environmental statement
DFID	UK Department for International Development	ESRC	Economic and Social Research Council
DfT	UK Department for Transport	ETSU	Energy Technology Support Unit
DG	Directorate General (CEC)	EU	European Union
DMRB	Design manual for roads and bridges	FEARO	Federal Environmental Assessment Review Office
DoE	UK Department of the Environment	FEIS	Final environmental impact statement
DOEn	UK Department of Energy	FHWA	US Federal Highway Administration
DoT	UK Department of Transport	FoE	Friends of the Earth
DTI	UK Department for Trade and Industry	FONSI	Finding of no significant impact
EA	Environmental assessment	G1; G2	Generation 1; Generation 2
EA	UK Environment Agency	GAM	Goals achievement matrix
EAGGF	European Agricultural Guidance and Guarantee Fund	GHG	Greenhouse gases
EAP	Environmental action plan	GHK	GHK Consulting Limited
EBRD	European Bank for Reconstruction and Development	GIS	Geographical information systems
EC	European Commission	GNP	Gross national product
EcIA	Ecological impact assessment	GP	General practitioner
ECJ	European Court of Justice	GPDO	General Permitted Development Order
EDF	Électricité de France	GW	Gigawatt
EE	Estonia	ha	Hectare
EEA	European Environment Agency	HEP	Hydro-electric power
EIA	Environmental impact assessment	HGV	Heavy goods vehicle
EIB	European Investment Bank	HIA	Health impact assessment
EID	Environmental impact design	HMG	Her Majesty's Government
EIR	Environmental impact report	HMIP	Her Majesty's Inspectorate of Pollution
EIR	Environmental impact review	HMSO	Her Majesty's Stationery Office
EIS	Environmental impact statement	HPF	Household production function
EM&A	Environmental monitoring and audit	HPM	Hedonic price methods
EMAS	Eco-Management and Audit Scheme	HRA	Habitats regulation assessment
EMP	Environmental management plan	HSE	Health and Safety Executive
EMS	Environmental management system	HU	Hungary
EN	English Nature	HWS	Hampshire Waste Services
ENDS	Environmental Data Services	IA	Impact assessment
EPA	UK Environmental Protection Act	IAIA	International Association for Impact Assessment
EPA	US Environmental Protection Act	IAU	Impacts Assessment Unit (Oxford Brookes)
EPA	US Environmental Protection Agency	IEA	Institute of Environmental Assessment

HEMA	Institute of Environmental Management and Assessment	NEPA	US National Environmental Policy Act
IFI	International Funding Institution	NGC	National Grid Company
IIA	Integrated impact assessment	NGO	Non-governmental organization
IMD	Index of Multiple Deprivation	NHS	National Health Service
INEM	International Network for Environmental Management	NIMBY	Not in my back yard
IOCGP	Inter-organizational Committee on Guidelines and Principles for Social Impact Assessment	NO _x	Nitrogen oxide
IPC	Infrastructure Planning Commission	NPDV	Net present day value
IPC	Integrated pollution control	NPS	National Policy Statement
IPCC	Intergovernmental Panel on Climate Change	NSIP	Nationally significant infrastructure project
IPHI	Institute of Public Health in Ireland	NTS	Non-technical summary
ISO	International Organization for Standardization	ODA	Olympic Delivery Authority
IWM	Institute of Waste Management	ODPM	UK Office of the Deputy Prime Minister
JEAPM	Journal of Environmental Assessment Policy and Management	OECD	Organisation for Economic Co-operation and Development
JNCC	Joint Nature Conservancy Council	OISD	Oxford Institute for Sustainable Development
KSEIA	Korean Society of Environmental Impact Assessment	OJ	Official Journal of the European Communities
kV	Kilovolt	OTP	Operational Transport Programme
L ₁₀	Noise level exceeded for no more than 10 per cent of a monitoring period	PADC	Project Appraisal for Development Control
LB	London Borough	PAS	Planning Advisory Service
LCA	Life cycle assessment	PBS	Planning balance sheet
LNG	Liquified natural gas	PEIR	Programme environmental impact report
LPA	Local planning authority	PEIS	Programmatic environmental impact statement
LT	Lithuania	PER	Public Environmental Review (WA)
LTP	Local transport plan	PIC	Partnerships in Care
LTP3	Third local transport plan	PL	Poland
LULU	Locally unacceptable land uses	PM ₁₀	Particulate matter of less than 10 microns in diameter
LV	Latvia	PPG	Planning Policy Guidance
MAFF	UK Ministry of Agriculture, Forestry and Fisheries	PPPs	Policies, plans and programmes
MAUT	Multi-attribute utility theory	PPPP	Policy, plan, programme or project
MBC	Metropolitan Borough Council	PPS	Planning policy statement
MCA	Multi-criteria assessment	PWR	Pressurized water reactor
MCDA	Multi-criteria decision analysis	QBL	Quadruple bottom line
MEA	Manual of Environmental Appraisal	QOLA	Quality of life assessment
MMO	Marine Management Organization (UK)	RA	Resilience Alliance
MoD	UK Ministry of Defence	RA	Risk assessment
MOEP	Ministry of Environmental Protection (China)	RMA	Resource Management Act (NZ)
MT	Malta	RO	Romania
MW	Megawatt	ROD	Record of decision
NE	Natural England	RSPB	Royal Society for the Protection of Birds
		RTPI	Royal Town Planning Institute
		S106	Section 106

SA	Sustainability appraisal	TBL	Triple bottom line
SAC	Special Area of Conservation	T&CP	Town and country planning
SAIEA	Southern African Institute for Environmental Assessment	TIA	Transport impact assessment
SAVE	SAVE Britain's Heritage	TRL	Transport Research Laboratory
SD	Sustainable development	UKNEA	UK National Ecosystem Assessment
SDD	Scottish Development Department	UN	United Nations
SEA	Strategic environmental assessment	UNCED	United Nations Conference on Environment and Development
SEERA	South East England Regional Assembly	UNECE	United Nations Economic Commission for Europe
S&EIA	Socio-economic and environmental impact assessment	UNEP	United Nations Environment Programme
SEPA	Scottish Environment Protection Agency	US	United States
SI	Slovenia	USAID	United States Agency for International Development
SIA	Social impact assessment	VEC	Valued ecosystem component
SK	Slovakia	VMP	Visitor management plan
SNH	Scottish Natural Heritage	VROM	Netherlands Ministry of Housing, Spatial Planning and the Environment
SNIFFER	Scotland and Northern Ireland Forum for Environmental Research	WA	Western Australia
SO ₂	Sulphur dioxide	WBCSD	World Business Council for Sustainable Development
SOER	State of the Environment Report	WHO	World Health Organization
SoS	Secretary of State	WID	USAID Women in Development
SPA	Special Protection Area	WTA	Willingness to accept
SSE	Stop Stansted Expansion	WTP	Willingness to pay
SSSI	Site of Special Scientific Interest		

Contents

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<i>Preface to the first edition</i>	x	3	UK agency and legislative context	57
<i>Preface to the fourth edition</i>	xi		3.1 Introduction	57
<i>Acknowledgements</i>	xiii		3.2 The principal actors	57
<i>Abbreviations and acronyms</i>	xv		3.3 EIA regulations: an overview	61
			3.4 The Town and Country Planning (EIA) Regulations 2011	64
			3.5 Other EIA regulations	72
			3.6 Summary and conclusions on changing legislation	76
			Some questions	77
			Notes	78
			References	78
PART 1			PART 2	
Principles and procedures	1		Process	81
1 Introduction and principles	3		4 Starting up: early stages	83
1.1 Introduction	3		4.1 Introduction	83
1.2 The nature of EIA	3		4.2 Managing the EIA process	83
1.3 The purposes of EIA	7		4.3 Project screening: is an EIA needed?	86
1.4 Projects, environment and impacts	12		4.4 Scoping: which impacts and issues to consider?	88
1.5 Changing perspectives on EIA	19		4.5 The consideration of alternatives	90
1.6 Current issues in EIA	23		4.6 Understanding the project/development action	95
1.7 An outline of subsequent parts and chapters	25		4.7 Establishing the environmental baseline	100
Some questions	27		4.8 Impact identification	101
Notes	27		4.9 Summary	110
References	28		Some questions	111
			Notes	111
			References	111
2 Origins and development	31		5 Impact prediction, evaluation, mitigation and enhancement	114
2.1 Introduction	31		5.1 Introduction	114
2.2 The National Environmental Policy Act and subsequent US systems	31		5.2 Prediction	114
2.3 The worldwide spread of EIA	40		5.3 Evaluation	126
2.4 Development in the UK	42		5.4 Mitigation and enhancement	136
2.5 EC Directive 85/337	43		5.5 Summary	140
2.6 EC Directive 85/337, as amended by Directive 97/11/EC	47			
2.7 An overview of EIA systems in the EU: divergent practice in a converging system?	48			
2.8 Continuing issues, review and refinement of the EIA Directive in EU-27	51			
2.9 Summary	53			
Some questions	54			
Notes	54			
References	54			

Some questions	141		Some questions	220
References	141		Notes	220
			References	221
6 Participation, presentation and review	144		9 Case studies of EIA in practice	224
6.1 Introduction	144		9.1 Introduction	224
6.2 Public consultation and participation	145		9.2 Wilton power station case study: project definition in EIA	225
6.3 Consultation with statutory consultees and other countries	152		9.3 N21 link road, Republic of Ireland: EIA and European protected habitats	230
6.4 EIA presentation	153		9.4 Portsmouth incinerator: public participation in EIA	236
6.5 Review of EISs	157		9.5 Humber Estuary development: cumulative effects assessment	241
6.6 Decisions on projects	159		9.6 Stansted airport second runway: health impact assessment	245
6.7 Summary	163		9.7 Cairngorm mountain railway: mitigation in EIA	252
Some questions	164		9.8 SEA of UK offshore wind energy development	255
Notes	164		9.9 SEA of Tyne and Wear local transport plan	261
References	165		9.10 Summary	268
			Some questions	269
			References	269
7 Monitoring and auditing: after the decision	167		10 Comparative practice	271
7.1 Introduction	167		10.1 Introduction	271
7.2 The importance of monitoring and auditing in the EIA process	168		10.2 EIA status worldwide	272
7.3 Monitoring in practice	169		10.3 Benin	276
7.4 Auditing in practice	173		10.4 Peru	278
7.5 A UK case study: monitoring and auditing the local socio-economic impacts of the Sizewell B PWR construction project	176		10.5 China	279
7.6 A UK case study: monitoring the local impacts of the London 2012 Olympics project	183		10.6 Poland	282
7.7 Summary	185		10.7 Canada	283
Some questions	187		10.8 Australia and Western Australia	285
Note	188		10.9 International bodies	289
References	188		10.10 Summary	291
			Some questions	291
			References	292
PART 3			PART 4	
Practice	191		Prospects	297
8 An overview of UK practice to date	193		11 Widening the scope: strategic environmental assessment	299
8.1 Introduction	193		11.1 Introduction	299
8.2 Number and type of EISs and projects	194		11.2 Strategic environmental assessment (SEA)	299
8.3 The pre-submission EIA process	198		11.3 SEA worldwide	302
8.4 EIS quality	202			
8.5 The post-submission EIA process	204			
8.6 Legal challenges	208			
8.7 Costs and benefits of EIA	217			
8.8 Summary	219			

11.4 SEA in the UK 306

11.5 Summary 313

Some questions 313

Note 313

References 313

**12 Improving the effectiveness of
project assessment 315**

12.1 Introduction 315

12.2 Perspectives on change 315

12.3 Possible changes in the EIA process:
overviews of the future agenda 317

12.4 Possible changes in the EIA process:
more specific examples 319

12.5 Extending EIA to project implementation:
environmental management systems,
audits and plans 335

12.6 Summary 339

Some questions 340

Notes 341

References 341

Appendices

1 Full text of EC EIA Directive 345

2 Town and Country Planning (EIA)
Regulations 2011 – Schedule 2 359

3 Full text of EC's SEA Directive 366

4 The Lee and Colley review package 374

5 Environmental impact statement
review package (IAU, Oxford Brookes
University) 375

6 Selected EIA journals and websites 384

Index 387

Part 1

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Principles and procedures

