

Contents

<i>Foreword</i>	xxi
<i>Preface and Acknowledgements to the Fourth Edition</i>	xxv
<i>Preface and Acknowledgements to the Third Edition</i>	xxvii
<i>Preface and Acknowledgements to the Second Edition</i>	xxix
<i>Preface and Acknowledgements to the First Edition</i>	xxxi
<i>Table of Cases</i>	xxxv
<i>Table of Treaties and Other International Instruments</i>	xxxix
<i>List of Abbreviations</i>	lxv

PART I THE LEGAL AND INSTITUTIONAL FRAMEWORK

1 The Environment and International Society: Issues, Concepts and Definitions	3
Chapter Outline	3
Introduction: The Environmental Challenge	3
The Basis for Decision-Making: Science, Economics and Other Values	6
Science	6
Economics	8
Other Social Objectives	9
Sustainable Development	9
The International Legal Order	10
The Functions of International Law	11
Sovereignty and Territory	12
International Actors	13
The Environment and International Law: Defining Terms	14
Challenges for International Environmental Law	16
Further Reading	17
International Environmental Law: Texts, Articles and History	17
Sources of International Environmental Law	19
Primary Materials	19
International Environmental Jurisprudence	20
Secondary Materials – Journals	20
Websites	20

2 History 21

Chapter Outline 21

Introduction 21

From Early Fisheries Conventions to the Creation of the United Nations 22

From the Creation of the United Nations to Stockholm: 1945–72 26

UNCCUR 26

Development of International Environmental Rules 27

The 1972 United Nations Conference on the Human Environment 29

Stockholm Follow-up 32

From Stockholm to Rio: 1972–92 33

Post-Stockholm: Treaties and Other International Acts 33

1978 UNEP Draft Principles 35

1981 Montevideo Programme 36

1982 World Charter for Nature 37

1980 World Conservation Strategy/1991 'Caring for the Earth' Strategy 38

The Brundtland Report and the Report of the Legal Experts Group 38

Lead-up to UNCED 39

UNCED 40

The Rio Declaration 41

Agenda 21 43

UNCED Follow-up 45

Beyond UNCED: Trends and Directions 46

World Summit on Sustainable Development 48

Rio+20 Summit 48

Post Rio+20 Follow-up: Institutional Reform and the Sustainable Development Goals 49

Conclusions 50

Further Reading 51

3 Governance: States, International Organisations and Non-State Actors 52

Chapter Outline 52

Introduction 52

States 53

International Organisations 55

History of International Organisational Arrangements 55

UNCED, WSSD and the Rio+20 Summit 56

The Function and Role of International Organisations 57

Global Organisations 59

United Nations (www.un.org) 59

Coordination 60

UN General Assembly 61

UN Environment Programme (www.unep.org) 63

UN Development Programme (www.undp.org) 65

International Law Commission (www.un.org/law/ilc) 66

High-Level Political Forum on Sustainable Development (sustainabledevelopment.un.org/hlpf) 67

Other Subsidiary Bodies Established by the General Assembly 68

Economic and Social Council (ECOSOC) 69

Security Council 71

Trusteeship Council 72

International Court of Justice (www.icj-cij.org) 72

United Nations Specialised Agencies and Related Organisations 73

Food and Agriculture Organization (www.fao.org) 73

United Nations Educational, Scientific and Cultural Organization (www.unesco.org)	74
International Maritime Organization (www.imo.org)	75
International Labour Organization (www.ilo.org)	76
World Meteorological Organization (www.wmo.int)	76
International Civil Aviation Organization (www.icao.int)	77
UN Industrial Development Organization (www.unido.org)	77
World Health Organization (www.who.int)	77
International Atomic Energy Agency (www.iaea.org)	78
World Bank, International Monetary Fund, and World Trade Organization	79
Cooperative Arrangements	81
Other Global Institutions	81
Regional and Subregional Organisations	82
Europe and the OECD	82
Africa	86
Americas and the Caribbean	86
Asia Pacific	87
Organisations Established by Environmental Treaties	88
Non-State Actors	89
Scientific Community	90
Environmental, Health and Developmental Organisations	91
Legal Groups	92
Corporate Sector	92
Individuals and Indigenous Communities	94
The Media	95
Conclusions	96
Further Reading	97
 4 International Lawmaking and Regulation	 101
Chapter Outline	101
Introduction	101
Treaties	104
Environmental Treaties	106
The Treaty-Making Process	106
The 1969 Vienna Convention and Legal Issues Relating to Treaties	107
Interpretation	108
Entry into Force	110
Reservations and Interpretative Declarations	111
Relations between International Agreements	113
Amendment	115
Other International Acts	116
Acts of International Organisations	116
Conference Declarations and Other Acts	118
Customary International Law	119
State Practice	120
Opinio Juris	121
Treaties and Custom	122
Persistent Objector	124
Regional Custom	124
General Principles of International Law	125
Equity	126
Subsidiary Sources	127
Introduction to Regulatory Approaches	128

Direct Regulation	129
Environmental Quality Standards	129
Product Standards	130
Emissions Standards	131
Process Standards	131
Economic Instruments	132
Charges and Taxes	134
Tradeable Permit Schemes	135
Deposit-Refund Systems	136
Subsidies	136
Enforcement Incentives	136
Liability and Compensation for Damage	137
Trade Measures	137
Investment Incentives	137
Voluntary Approaches	138
Consumer Information Incentives	138
Integrated Environmental Management	139
Conclusions	141
Further Reading	142

5 Compliance: Implementation, Enforcement, Dispute Settlement 144

Chapter Outline	144
Introduction	144
Implementation	147
National Law	147
National Compliance	148
Reporting	152
International Enforcement	153
Enforcement by States	153
Damage to a State's Own Environment	154
Damage to the Environment of Another State	155
Damage to the Environment in Areas Beyond National Jurisdiction	155
Enforcement by International Organisations	160
Enforcement by Non-State Actors	163
Enforcement in the National Courts	164
International Enforcement	166
International Settlement of Disputes	167
Introduction	167
Diplomatic Means of Dispute Settlement	168
Negotiation and Consultation	168
Mediation, Conciliation, Fact-Finding and International Institutions	170
Non-Compliance Procedures	172
Inspection Procedures of Multilateral Development Banks	176
NAFTA Commission on Environmental Cooperation	177
Legal Means of Dispute Settlement	178
Arbitration	178
International Courts	180
International Court of Justice	180
UNCLOS and ITLOS	184
WTO Dispute Settlement Body	186
European Court of Justice and Court of First Instance	187
Human Rights Courts	189

Conclusions	190
Further Reading	192

PART II PRINCIPLES AND RULES ESTABLISHING STANDARDS

6 General Principles and Rules 197

Chapter Outline	197
-----------------	-----

Introduction	197
--------------	-----

Principles and Rules	199
----------------------	-----

Sovereignty Over Natural Resources and the Responsibility Not to Cause Damage to the Environment of Other States or to Areas Beyond National Jurisdiction	201
---	-----

Sovereign Rights Over Natural Resources	202
---	-----

Sovereignty and Extraterritoriality	203
-------------------------------------	-----

Responsibility Not to Cause Environmental Damage	206
--	-----

Conclusion	210
------------	-----

Principle of Preventive Action	211
--------------------------------	-----

Cooperation	213
-------------	-----

Sustainable Development	217
-------------------------	-----

Introduction	217
--------------	-----

Future Generations	221
--------------------	-----

Sustainable Use of Natural Resources	222
--------------------------------------	-----

Equitable Use of Natural Resources	225
------------------------------------	-----

Integration of Environment and Development	227
--	-----

Conclusion	229
------------	-----

Precautionary Principle	229
-------------------------	-----

Polluter Pays Principle	240
-------------------------	-----

OECD	241
------	-----

European Union	242
----------------	-----

Principle of Common But Differentiated Responsibility	244
---	-----

Common Responsibility	245
-----------------------	-----

Differentiated Responsibility	246
-------------------------------	-----

Conclusions	248
-------------	-----

Further Reading	249
-----------------	-----

7 Atmospheric Protection 252

Chapter Outline	252
-----------------	-----

Introduction	252
--------------	-----

Milestones in the Development of Atmospheric Regulation	254
---	-----

Trail Smelter Case	254
--------------------	-----

Nuclear Testing	255
-----------------	-----

Customary Law	257
---------------	-----

UN Environmental Summits	258
--------------------------	-----

Urban and Transboundary Air Pollution	259
---------------------------------------	-----

1979 UNECE Convention on Long-Range Transboundary Air Pollution and Its Protocols	261
---	-----

1979 LRTAP Convention	261
-----------------------	-----

1984 Monitoring and Evaluation Protocol	262
---	-----

1985 Sulphur Protocol	263
-----------------------	-----

1988 NO _x Protocol	263
-------------------------------	-----

1991 Volatile Organic Compounds Protocol	265
--	-----

1994 Sulphur Protocol	267
-----------------------	-----

1998 Aarhus Protocol on Heavy Metals	268
--------------------------------------	-----

1998 Aarhus Protocol on Persistent Organic Pollutants	269
1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone	270
1991 Canada-US Air Quality Agreement	271
Sulphur Dioxide	272
Nitrogen Oxides	272
Ozone	273
Assessment, Information and Institutions	273
2002 ASEAN Agreement on Transboundary Haze Pollution	274
Aircraft Emissions: ICAO Convention	275
2013 Minamata Mercury Convention	276
Ozone Depletion	277
1985 Vienna Convention	279
The 1987 Montreal Protocol: Adjustments and Amendments	280
Controlled Substances	282
Control Measures: Consumption and Production	282
Control Measures: Trade in Controlled Substances	286
Developing Countries	287
Technical, Financial and Other Assistance	288
Reporting and Compliance	289
Institutional Arrangements	289
Outer Space	290
1967 Outer Space Treaty	291
1979 Moon Treaty	291
Outer Space Principles	292
Conclusions	293
Further Reading	294

8 Climate Change 295

Chapter Outline	295
Introduction	295
The Climate Change Problem	297
Development of the Climate Change Regime	299
1992 Climate Change Convention	300
Preamble, Definition, Objective and Principles	301
General Commitments	302
Reporting	303
Specific Commitments: Sources and Sinks	304
Commitments: Financial Resources and Technology Transfer	305
Institutional Arrangements	306
Implementation and Dispute Settlement	307
The 1997 Kyoto Protocol	307
Emission Reduction Targets and Timetable	308
Policies and Measures	309
Flexibility Mechanisms: Emissions Trading, Joint Implementation and the CDM	310
Sinks	313
Developing Countries	315
Reporting and Compliance	315
Negotiations for a New Climate Treaty Agreement	316
Paris Agreement	318
Preamble and Objectives	319
Nationally Determined Contributions	321
Mitigation Commitments	322
Sinks	323

Voluntary Cooperation and Carbon Markets	324
Adaptation and Loss and Damage	325
Financial Resources, Technology Transfer and Capacity-Building	327
Implementation and Compliance	328
Institutional Arrangements	330
Post-Paris Developments	330
Intersectoral Linkages	331
Emissions from International Aviation	332
Emissions from International Shipping	333
Conclusions	334
Further Reading	335

9 Freshwater Resources 337

Chapter Outline	337
Introduction	337
Customary Law	339
<i>Lac Lanoux</i> Arbitration	341
ILA: 1966 Helsinki Rules	342
ILC 2008: Articles on Transboundary Aquifers	344
Case Concerning the Gabčíkovo–Nagymaros Project	345
The Case Concerning the Pulp Mills on the River Uruguay	351
Indus Waters Kishenganga Arbitration	355
Costa Rica v. Nicaragua Cases	359
Global Rules	360
1997 Watercourses Convention	361
1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes	363
Regional Rules	366
Europe	366
Rhine	367
Americas	370
1909 Boundary Waters Treaty	371
Gut Dam Arbitration	371
1978 Great Lakes Water Quality Agreement	372
Africa	374
Niger Basin	374
Southern Africa, Including the Zambezi River	375
Asia	377
Mekong River Basin	377
Subcontinental Asia	378
Middle East	379
Israel–Jordan Peace Treaty	380
Jordan–Saudi Arabia Al-Sag/Al-Disi Aquifer Agreement	380
Conclusions	381
Further Reading	382

10 Biological Diversity 384

Chapter Outline	384
Introduction	384
Convention on Biological Diversity and Its Protocols	388
1992 Convention on Biological Diversity	388
Objectives	389
Preamble and Jurisdictional Scope	389

Conservation and Sustainable Use	390
Access to Genetic Resources and Benefit Sharing	394
Biotechnology and Living Modified Organisms	396
Financial Resources	397
Institutions and Other Mechanisms	397
2000 Cartagena Protocol on Biosafety	397
2010 Nagoya Protocol	403
Evolution of the Biodiversity Convention	404
Other Global Biodiversity-Related Conventions	409
Convention on International Trade in Endangered Species	409
CITES Institutions	410
Preamble and Definitions	410
Appendices I-III and International Trade	411
Introduction from the Sea Under CITES	412
Amendments to Appendices	413
Reservations	414
Exemptions and Special Provisions	415
Compliance and Enforcement	416
1979 Bonn Convention on Migratory Species	417
Ramsar Convention	420
1972 World Heritage Convention	422
International Treaty on Plant Genetic Resources for Food and Agriculture	424
International Plant Protection Convention	427
Other Instruments Addressing Specific Ecosystems or Species	427
Forests	428
International Tropical Timber Agreement 2006	428
UN Forum on Forests	429
2007 UN Forest Instrument	430
Land and Soil Degradation, and Desertification	431
1994 Convention to Combat Desertification	433
Birds	434
1950 Birds Convention	435
1970 Benelux Convention	435
Other Animal Species	435
1973 Polar Bear Agreement	435
1979 Vicuna Convention	436
General Instruments of Regional and Subregional Application	436
Africa	437
1968 African Nature Convention	438
2003 Revised African Nature Convention	439
1994 Lusaka Agreement	440
The Americas and the Caribbean	441
1940 Western Hemisphere Convention	441
1978 Treaty for Amazonian Cooperation	442
Pacific Islands Region	443
Europe	444
1979 Berne Convention	444
1982 Benelux Convention	446
1991 Alpine Convention	446
2003 Carpathians Convention	447
Asia	447
Conclusions	449
Further Reading	451

11 Oceans, Seas and Marine Living Resources 455

Chapter Outline 455

Introduction 455

Protection of the Marine Environment 459

Introduction 459

Development of International Law Rules 460

Global Rules: UNCLOS 462

Regional Arrangements 464

UNEP Regional Seas Programme 465

North-East Atlantic: 1992 OSPAR Convention 472

Baltic Sea: the 1992 Helsinki Convention 474

Pollution from Land-Based Sources 476

Pollution by Dumping 479

1972 London Convention and 1996 Protocol 480

Regional Agreements 483

Pollution from Vessels 486

UNCLOS Rules 487

MARPOL 73/78 488

Polar Code 493

Other Agreements on Pollution from Ships 494

Safety Agreements 495

Pollution from Seabed Activities 496

UNCLOS and the International Seabed Authority 497

Regional Agreements 499

Environmental Emergencies 500

1969 Intervention Convention and 1973 Intervention Protocol 501

1989 Salvage Convention 502

1990 OPRC Convention and 2000 HNS Protocol 503

Regional Agreements 504

Liability and Compensation 505

Conservation of Marine Living Resources 506

Introduction 506

Development of International Law Rules 509

Pacific Fur Seal Arbitration 509

Food and Agriculture Organization 510

The First UN Conference on the Law of the Sea (1958) 511

Fisheries Jurisdiction Cases 512

1972 Stockholm Conference on the Human Environment 513

UNCLOS 513

Territorial Waters, Archipelagic Waters and the Continental Shelf 514

Exclusive Economic Zone 514

High Seas 516

1995 Fish Stocks Agreement and Other Global Arrangements 516

1995 Fish Stocks Agreement 517

1993 Compliance Agreement 519

1995 Code of Conduct for Responsible Fisheries 520

Regional Fishery Arrangements 520

Fisheries Case Law 526

Estai Case (Canada v. Spain) 527

Southern Bluefin Tuna Cases (*New Zealand v. Japan, Australia v. Japan*) 528

Swordfish Case (*Chile v. EU*) 529

South China Sea Arbitration (*Philippines v. China*) 531

Prompt Release Cases	532
Marine Mammals	533
International Whaling Commission	534
Regional Agreements	538
Marine Birds	540
Destructive Fishing Practices	540
Driftnet Fishing	541
Bottom Trawling	542
Illegal, Unreported and Unregulated (IUU) Fishing	543
2009 Agreement on Port State Measures	545
Voluntary Guidelines for Flag State Performance	546
ITLOS Jurisprudence	546
Conservation of Marine Biodiversity	548
Introduction	548
From Agenda 21 to the Sustainable Development Goals	549
Resolutions of the United Nations General Assembly	550
The International Legal Framework	551
UNCLOS and the 1995 Fish Stocks Agreement	551
Convention on Biological Diversity	552
Regional Arrangements	553
Protection of Deep-Sea Ecosystems	555
Resolutions of the UN General Assembly	556
Food and Agriculture Organization	558
Marine Protected Areas	558
Marine Protected Areas Under National Jurisdiction	560
MPAs in Areas Beyond National Jurisdiction	562
Conclusions	564
Further Reading	566
12 Hazardous Substances and Activities, and Waste	569
Chapter Outline	569
Introduction	569
Hazardous Substances	572
Definition of Hazardous Substances	572
Accident Prevention, Preparedness and Response	573
Eu Seveso Directive	575
1992 Industrial Accidents Convention	576
Chemicals, Pesticides and Other Dangerous Substances	578
Registration and Classification (Including Labelling and Packaging)	578
Production and Use	580
International Trade	585
Transport	589
Exposure in the Work Environment	590
Hazardous Activities	593
Nuclear Activities and Radioactive Substances	593
Nuclear Safety	595
Transport	597
Protection of Workers and the Public	598
Border Area Cooperation	599
Emergencies	599
Nuclear Weapons and Testing, and Nuclear-Free Zones	601

Other Hazardous Activities	603
Energy	604
Mining	606
Agriculture	608
Transportation	609
Tourism	609
Wastes	609
Defining Wastes	610
Municipal Waste	610
Hazardous and Toxic Wastes (Industrial, Agricultural and Mining Waste and Sewage Sludge)	611
Radioactive Waste	613
Prevention and Treatment	613
Disposal	615
Disposal at Sea	615
Disposal into Rivers and Lakes by Other Land-Based Sources	616
Incineration	616
Landfill and Other Land Disposal and Storage	617
Recycling and Reuse	618
International Movement (Including Trade) In Waste	619
The 1989 Basel Convention	620
1991 Bamako Convention	623
1995 Waigani Convention	624
North America	625
1990 IAEA Code of Conduct on Radioactive Waste and 1997 Joint Convention on Spent Fuel and Radioactive Waste Management	625
Conclusions	627
Further Reading	629

13 The Polar Regions: Antarctica and the Arctic 632

Chapter Outline	632
Introduction	632
The Antarctic	633
The Antarctic Treaty Regime	634
1959 Antarctic Treaty	634
1972 Antarctic Seals Convention	635
1980 CCAMLR	635
1988 CRAMRA	637
1991 Environment Protocol	639
Other Treaty Provisions	644
The Arctic	644
The Arctic Council	645
Arctic Monitoring and Assessment Programme	646
Arctic Contaminants Action Program	647
Protection of the Arctic Marine Environment Working Group	647
Conservation of Arctic Flora and Fauna Working Group	648
Emergency Prevention, Preparedness, and Response Working Group	648
Sustainable Development Working Group	648
Arctic Treaties	649
Conclusions	650
Further Reading	651

PART III TECHNIQUES FOR IMPLEMENTING INTERNATIONAL PRINCIPLES AND RULES

14 Environmental Impact Assessment 657

Chapter Outline 657

Introduction 657

Non-Binding Instruments 658

Developments from Stockholm to Rio 658

UN Environmental Summits 660

ILC Draft Articles on Prevention of Transboundary Harm 661

Treaties and Other Binding Instruments 662

1982 UNCLOS 664

1986 Noumea Convention 666

1991 Espoo Convention 667

2003 Strategic Environmental Assessment Protocol 670

1991 Antarctic Environment Protocol 671

1992 Biodiversity Convention 673

Risk Assessment Procedures 673

World Bank and Other Multilateral Lending Institutions 675

International Cases 676

Conclusions 680

Further Reading 681

15 Environmental Information and Technology Transfer 682

Chapter Outline 682

Introduction 682

Environmental Information 683

Information Exchange 685

Reporting and Provision of Information 688

Reports by Organisations 689

Reports Under Treaties or Other Agreements 689

Reports of Events Other than Emergencies 692

Information to and from Non-State Organisations 694

Consultation 694

Prior Informed Consent 697

Notification of Emergency Situations 698

Nuclear Accidents 699

Monitoring and Other Information Gathering 703

Treaty Arrangements 704

Access to Environmental Information and Public Participation 707

1992 OSPAR Convention 708

1998 Aarhus Convention 710

2003 Protocol on Pollutant Release and Transfer Registers 712

Public Education and Awareness 715

Eco-Labeling 716

Eco-Auditing and Accounting 717

Environmental Accounting 717

Environmental Auditing 719

Technology Transfer and Technical Assistance 720

Soft Law Developments 721

Treaty Provisions	722
The Ozone Regime	723
Biodiversity Convention	724
The Climate Change Regime	726
Intellectual Property and Barriers to Technology Transfer	727
Conclusions	730
Further Reading	733

16 Liability for Environmental Damage 735

Chapter Outline	735
Introduction	735
State Liability	737
Introduction	737
General International Law	739
Defining Environmental Damage	741
Threshold at which Environmental Damage Entails Liability	743
Standard of Care	746
Reparation	749
State Practice	752
UN Compensation Commission	755
International Crimes	760
Treaties	762
1972 Space Liability Convention	762
1979 LRTAP Convention	764
1982 UNCLOS	764
1988 CRAMRA and 1991 Antarctic Environmental Protocol	767
1992 Climate Change Convention and 2015 Paris Agreement	768
The Work of the International Law Commission	769
Civil Liability for Environmental Damage Under International Law	771
Nuclear Installations	772
1960 Paris Convention and 1963 Brussels Convention	773
1963 Vienna Convention	775
1988 Joint Protocol	778
1997 Convention on Supplementary Compensation	779
Oil Pollution	779
1992 Civil Liability Convention	780
The 1992 Fund Convention	781
2003 Supplementary Fund Protocol	783
IOPC Fund Practice	784
2001 Bunker Oil Convention	788
Private Compensation Schemes	789
Marine Environment	790
Waste	790
Transport	792
Antarctic	794
1988 CRAMRA	794
1991 Antarctic Environment Protocol	794
Biodiversity	797
General Instruments Relating to Dangerous Goods or Activities	799
1993 Lugano Convention	799
2003 Civil Liability Protocol	801
Conclusions	803
Further Reading	804

PART IV LINKAGE OF INTERNATIONAL ENVIRONMENTAL LAW AND OTHER AREAS OF INTERNATIONAL LAW

17 Human Rights and International Humanitarian Law 811

Chapter Outline 811

Introduction 811

Human Rights Law 813

Development of International Human Rights Law 813

Environmental Protection and Human Rights 814

Economic, Social and Cultural Rights 817

Civil and Political Rights 825

International Humanitarian Law 828

Military Activities and Environmental Protection 829

International Environmental Law During War and Armed Conflict 829

International Law of War and Armed Conflict: General Rules of Environmental Protection 832

International Law of War and Armed Conflict: Special Rules of Environmental Protection 834

Environmental Security and International Law 836

Conclusions 837

Further Reading 838

18 International Economic Law: Trade, Investment and Intellectual Property 841

Chapter Outline 841

Introduction 841

Trade and Environment 843

Trade Measures in International Environmental Agreements 843

Unilateral Environmental Measures and International Trade 848

WTO/GATT 850

WTO Dispute Settlement 854

Measures for Health and Safety Protection 871

Beef Hormones Disputes (1998 and 2008) 873

Assessment 881

Regional and Bilateral Free Trade Agreements 882

European Union 882

North American Free Trade Agreement 887

African Economic Community 893

Competition and Subsidies 894

Subsidies 895

Anti-Competitive Agreements 898

Anti-Dumping 899

Foreign Investment 900

Investment Treaties 900

Substantive Rules 901

Dispute Settlement 904

Case Law 905

Insurance 916

Intellectual Property Rights 916

Patents and Other Rights 917

Traditional Knowledge 922

Conclusions 924

Further Reading 926

19 Future Developments 930

Chapter Outline 930

Introduction 930

Governance Challenges 933

Implementation and Enforcement Challenges 936

Future Regulatory Development 938

Conclusions 940

Index 941