

Contents

Foreword xxi

Preface and Acknowledgements to the Fourth Edition xxv

Preface and Acknowledgements to the Third Edition xxvii

Preface and Acknowledgements to the Second Edition xxix

Preface and Acknowledgements to the First Edition xxxi

Table of Cases xxxv

Table of Treaties and Other International Instruments xxxix

List of Abbreviations | xxv

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

٧



vi Contents

```
2 History 21
  Chapter Outline
  Introduction 21
  From Early Fisheries Conventions to the Creation of the United Nations
  From the Creation of the United Nations to Stockholm: 1945–72 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
    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
```



vii Contents

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

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



viii Contents

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



ix | Contents

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



x | Contents

```
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
  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
```



xi | Contents

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 Lac Lanoux 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 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 Chapter Outline 384 Introduction 384 Convention on Biological Diversity and Its Protocols 388

Objectives 389

1992 Convention on Biological Diversity 388

Preamble and Jurisdictional Scope 389



xii | Contents

```
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

xiii | Contents

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 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

Conservation of Marine Living Resources 506

Introduction 506

Development of International Law Rules 509

Pacific Fur Seal Arbitration 509

Regional Agreements 504 Liability and Compensation 505

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



Contents xiv

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

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



xv | Contents

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 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



xvi

Contents

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-Labelling 716

Eco-Auditing and Accounting 717

Environmental Accounting 717

Environmental Auditing 719

Technology Transfer and Technical Assistance 720

Soft Law Developments 721



xvii | Contents

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

Conclusions 803 Further Reading 804

1993 Lugano Convention 7992003 Civil Liability Protocol 801



xviii

Contents

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



xix Contents

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