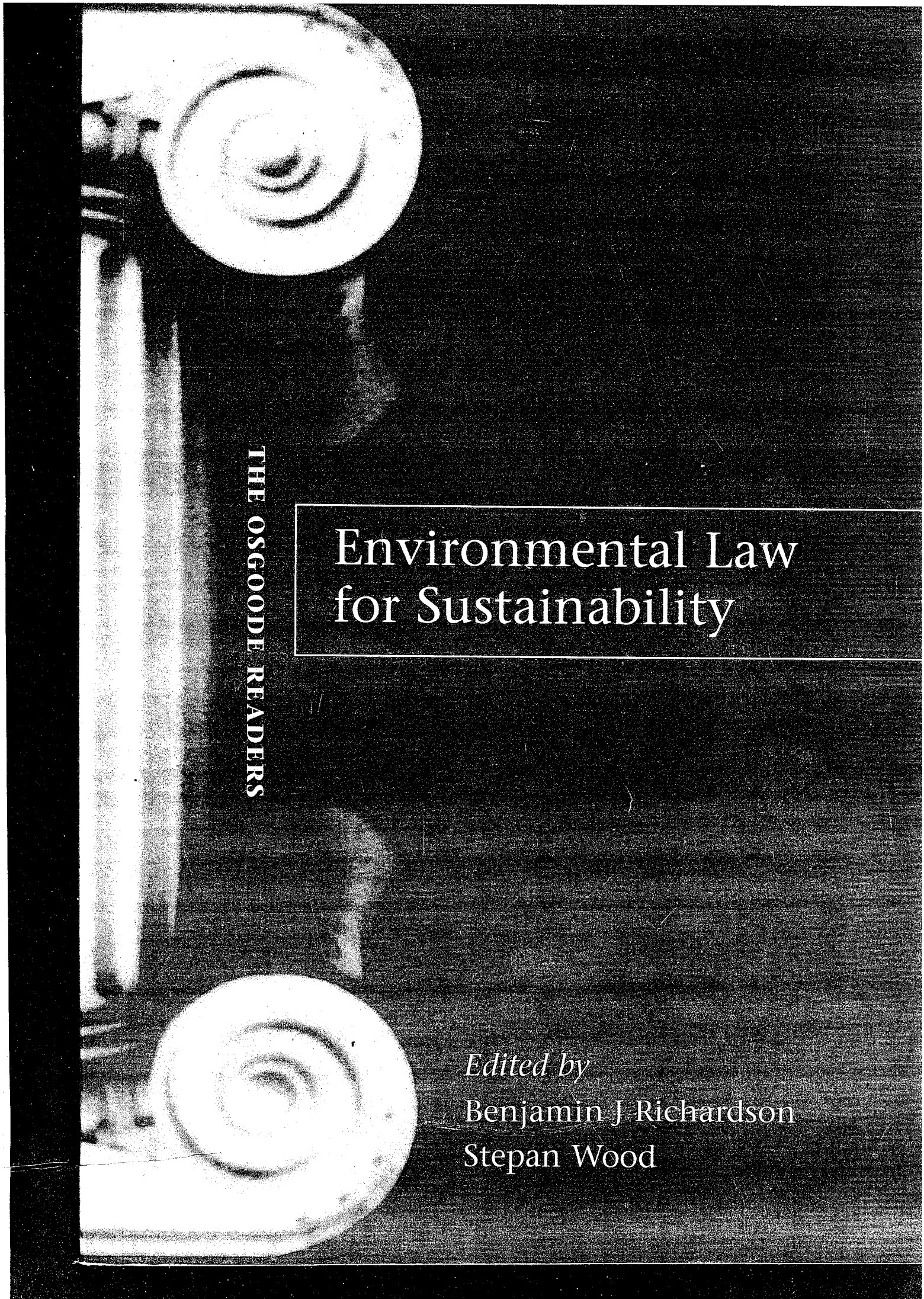
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# 4

# Risk and Environmental Law: A Beginner's Guide

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## A. Introduction

For the intrepid environmental law scholar and practitioner the concept of 'risk' appears impossible to ignore. The term 'risk' and its accompanying language are not only common inclusions in legislation, policy, case law and academic commentary, but are also increasingly framing environmental law discourse. Indeed it is now common for environmental problems to be characterised in terms of risk and the bulk of environmental regulatory law to be thought of as 'risk regulation'.

This chapter provides readers with a starting point for thinking critically about the relationship between risk and environmental law. The chapter is subtitled 'a beginner's guide' because to think critically about these concepts there is a need to think about the area afresh and in terms of first principles. Consequently, and ironically, a sophisticated analysis of risk and its implications for environmental law requires that one first understands the basic terms. This is because, as will become clear, those terms are not as basic as they seem. The chapter's major purpose is to show that, while risk in all its various dimensions is an important feature of environmental law, it must also be treated with care, for three reasons. First, 'risk' has come to dominate environmental law because of the promotion of a tool for decision-making—risk assessment. This has most obviously occurred in the United States (US) but is also the case in other jurisdictions. Moreover, risk assessment has been promoted due to a range of socio-political factors to do with the role of public administration. Secondly, the terms 'risk' and 'risk assessment' can be defined in many different ways depending on context. The way in which these terms are defined will influence what is understood to be a particular environmental problem and what are acceptable solutions to that problem. Thirdly,

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neither of the above two points means that risk as a concept should be ignored. Rather, scholars and lawyers must critically analyse how risk is being defined and deployed in any particular context.

This chapter is structured as follows. The first section gives a brief overview of some of the key features of environmental law and regulation. The second section presents a brief history of the use of risk assessment in environmental law with a focus on the US, where risk has most obviously come to dominate environmental law. The third section examines the second point highlighted above—that there is no single definition of, or discourse about, risk, and different definitions will result in environmental problems being characterised in divergent ways. The fourth section examines the final point—that scholars and lawyers must take a critical approach to examining risk in environmental law. This is illustrated by an analysis of how the precautionary principle has been interpreted in the European Union (EU) by the European Commission in their Communication on the Precautionary Principle.[1]

A number of preliminary points should be made. First, while this chapter refers to the literature on risk it does not attempt to be an exhaustive interdisciplinary overview of the many risk discourses that exist.[2] In particular, the concept of risk has a long and complex history which is quite separate from its use in either law or environmental policy.[3] Nor is this chapter an analysis of the methodological problems inherent in risk assessment, although it should be stressed that there are many.[4] Secondly, this chapter concentrates on how risk is deployed in legal reasoning and doctrine, and this requires an analysis of case law, policy and legislation. The focus is thus neither on legal theory[5] nor on regulatory theory.[6] Thirdly, and following on from this, legal culture is a major determinant of how risk is defined and deployed in any jurisdiction.[7] This chapter very much focuses upon risk and environmental law within Western democracies, and in particular the US and the EU, and care must be taken with making generalisations across jurisdictions. Fourthly, the term 'environmental law' is used quite loosely in this chapter

[1] Commission of the European Communities (European Commission), *Communication from the Commission on the Precautionary Principle,* COM(2000)1 final.

[2] D Lupton, *Risk* (Routledge, 1999); C Jaeger *et al, Risk, Uncertainty, and Rational Action* (Earthscan, 2001); R Boyne, *Risk* (Open UP, 2003).

[3] P Bernstein, *Against the Gods: The Remarkable Story of Risk* (John Wiley, 1996) and V Covello and J Mumpower, 'Risk Analysis and Risk Management: An Historical Perspective' (1985) 5 *Risk Analysis* 103.

[4] K Shrader-Frechette, *Burying Uncertainty: Risk and the Case Against the Geological Disposal of Nuclear Waste* (U California P, 1993); A Stirling, 'Risk, Uncertainty and Precaution: Some Instrumental Implications from the Social Sciences' in F Berkhout *et al* (eds), *Negotiating Environmental Change: New Perspectives From Social Science* (Edward Elgar, 2003).

[5] J Steele, *Risks and Legal Theory* (Hart Publishing, 2004).

[6] C Hood *et al, The Government of Risk: Understanding Risk Regulation Regimes* (Oxford UP, 2001).

[7] D Nelken, 'Disclosing/Invoking Legal Culture' (1995) 4 *Social & Legal Studies* 437.

to refer not only to laws concerned with protecting the environment but also those concerned with protecting human health. This reflects the fact that contemporary discussions about risk have tended to merge these two areas of law.

## B. Basic Features of Environmental Problems and Environmental Law

Sustainability has become one of the most talked about concepts in contemporary environmental law. This is not surprising as the emphasis on sustainability is a reflection of the fact that the most fundamental feature of environmental decision-making is the need to make decisions about future environmental quality. A necessary aspect of that decision-making process is for decision-makers to think about whether laws will actually deliver 'sustainable' outcomes, and this in turn depends on our knowledge about the future and the likely consequences of our actions. In essence this raises issues of risk, and thus it is not surprising that a reader on environmental law for sustainability would include a chapter on the topic. With that said, however, the symbolism of risk transcends that of sustainability, and while they are closely related topics, risk is a concept in its own right. Before exploring that concept in more detail it is useful to chart briefly some of the key features of environmental problems and environmental law which are often forgotten in examining different areas of environmental law and in thinking about the concept of sustainability.

The first thing to note is that, as Dryzek states, environmental problems 'are found at the intersection of ecosystems and human social systems'[8] and are thus complex. Environmental problems are a messy mix of physical phenomena and of socio-political conflicts over those phenomena. Understandings of those physical phenomena are often extremely limited due to a series of methodological, epistemological and ontological problems with science that are commonly described as scientific uncertainties.[9] That said, science remains the main means by which those problems are understood.[10] From a socio-political perspective, environmental problems also tend to be highly polycentric,[11] in that they are not easily reducible to a dispute between two parties, but rather involve a range of parties who have directly or indirectly caused an environmental problem or are interested in how it is resolved. As the activities and actors contributing to environmental problems are many, this also makes the assignation of responsibility for environmental harm

[8] J Dryzek, *The Politics of the Earth: Environmental Discourses* (Oxford UP, 1997) 8.

[9] B Wynne, 'Uncertainty and Environmental Learning' (1992) 2 *Global Environmental Change* 111; M Smithson, 'Ignorance and Science' [1993] *Knowledge: Creation, Diffusion & Utilization* 133.

[10] B Latour, *Politics of Nature: How to Bring the Sciences into Democracy* (Harvard UP, 2004) 4.

[11] L Fuller, 'The Forms and Limits of Adjudication' (1978) 92 *Harvard Law Review* 353, 395–7.

difficult. Moreover, as different actors involved in an environmental dispute have different understandings about the value of environmental protection[12] and how a community should develop,[13] there are also divergent understandings of what the actual problem is. While some may understand the problem as a discrete physical problem that requires a technological fix, others may understand it as being due to widespread cultural practices and that a solution will be achieved only through radical social adjustment. As a consequence of all of this environmental law tends to consist of a variety of ad hoc legislative schemes that reflect divergent policy goals and disparate understandings of environmental problems.[14]

The second important feature of environmental problems and environmental law is the central role of the state. From a legal and regulatory perspective, discussions of the state have grown highly unfashionable in light of the state's changing nature[15] and the proliferation of new regulatory techniques.[16] The reality is, however, that the state is still the major actor in environmental law—it initiates and shapes environmental law regimes as well as being held to account for them.[17] Its role is controversial, however, for two interrelated reasons. First, in light of the many different understandings of environmental problems it becomes very difficult for the state to provide a 'commonly accepted and legitimate meta-rationality' to frame those problems.[18] In constructing and promoting environmental regulatory regimes, the state must privilege one view of environmental problems over another.[19] Secondly, environmental law, and in particular its crucial standard setting aspects, is primarily the province of administrative governance due to the fact it is only public administration that can provide the forum for bringing together the necessary information, expertise and relevant parties, as well as ensuring the application of legislated prescriptions to the facts—all necessary elements of standard setting.[20] The problem is that public administration is the 'awkward family heirloom' of the democratic state,[21] and few can agree on what makes it legitimate,

[12] T O'Riordan, *Environmentalism* (2nd edn, Pion, 1983); D Pepper, *Modern Environmentalism: An Introduction* (Routledge, 1996).

[13] See the work of cultural theory: M Schwarz and M Thompson, *Divided We Stand: Redefining Politics, Technology and Social Choice* (Harvester Wheatsheaf, 1990).

[14] T McGarity, 'The Goals of Environmental Legislation' (2004) 31 *Boston College Environmental Affairs Law Review* 529.

[15] C Foster and C Plowden, *The State Under Stress* (Open UP, 1996).

[16] I Ayres and J Braithwaite, *Responsive Regulation—Transcending the Deregulation Debate* (Oxford UP, 1992).

[17] E Fisher, 'Unpacking the Toolbox: Or Why the Public/Private Divide Is Important in EC Environmental Law' in J-B Auby and M Freedland (eds), *The Public Law/Private Law Divide: Une Entente Assez Cordiale?* (LGDJ Diffuseur, 2004) 205.

[18] Jaeger *et al*, above n 2, 251.

[19] M Douglas and A Wildasky, *Risk and Culture* (U California Press, 1982).

[20] E Fisher, *Risk Regulation and Administrative Constitutionalism* (Hart Publishing, forthcoming) ch 1.

[21] C Farina, 'The Consent of the Governed: Against Simple Rules for a Complex World' (1997) 72 *Chicago Kent Law Review* 987; B Cook, *Bureaucracy and Self Government: Reconsidering the Role of Public Administration in American Government* (Johns Hopkins UP, 1996).

or if it is legitimate at all.[22] Thus many environmental disputes are really disputes over the proper role of public administration.[23]

The final feature of environmental law to note is that there is a constant tension between viewing environmental law as a product of particular legal cultures and viewing it as an expression of universal legal norms. With regard to the former, the highly socio-political nature of environmental problems, as well as the central role for nation states in its promotion, might lead one to conclude that any environmental law regime is a product of a particular jurisdiction and that any comparative analysis must pay careful attention to comparative law methodology.[24] Thus, ideas, principles and regulatory techniques cannot simply be transplanted from one jurisdiction to another.[25] From another perspective, however, national environmental law is increasingly being driven forward by international developments. Principles such as sustainable development, prevention and precaution are now common to most jurisdictions.[26] In light of this, some commentators have pointed to the need to rethink understandings of legal systems and legal reasoning.[27]

The implications of the above discussion for thinking about environmental law and risk can be summed up in two points. The first is that the formidable complexity of environmental law is not superficial, but rather a product of socio-political conflict and the nature of environmental problems. If we think about risk and environmental law we must think about these issues. Secondly, environmental problems and environmental law are deeply embedded in political, social and legal culture. A study of risk and environmental law cannot only concentrate on the law but must also take into account the forces behind it.

## C. A Brief History of Risk Assessment in Environmental Law

A common statement now found in environmental law literature is that people are concerned about environmental and public health risks and that the role of

[22] G Frug, 'The Ideology of Bureaucracy in American Law' (1984) 97 *Harvard Law Review* 1276; C Harlow and R Rawlings, *Law and Administration* (2nd edn, Butterworths, 1997) ch 1–3.

[23] Fisher, above n 20.

[24] O Kahn Freund, 'On Uses and Misuses of Comparative Law' (1974) 37 *MLR* 1.

[25] P Legrand, 'The Impossibility of Legal Transplants' (1997) 4 *Maastricht Journal of European and Comparative Law* 111.

[26] J Wiener, 'Something Borrowed For Something Blue: Legal Transplants and the Evolution of Global Environmental Law' (2001) 27 *Ecology Law Quarterly* 1295.

[27] N De Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (Oxford UP, 2002).

environmental regulatory law is to reduce such risks.[28] Take, for example, this recent statement by two US environmental lawyers:

> The tort system promotes safety by requiring a person who has injured someone else to pay compensation if the defendant has violated applicable tort rules that define when compensation is due. Risk regulation, by comparison, seeks to reduce personal and environmental injuries before they occur by addressing the potential causes of such injuries—that is, the 'risk' of such injuries. Because risk regulation operates before injuries occur, it does not require that people die or be injured, or that the environment be harmed, before it goes into effect.[29]

At first sight such a statement seems rather commonsensical and a concise way of summing up the goals of environmental protection legislation. It identifies a subject matter for environmental regulation—risk—and the purpose of environmental regulation—the reduction of such risk. In doing so it also seemingly highlights a feature of environmental decision-making noted above—scientific uncertainty. Of course, the relationship between risk and uncertainty is not a very straightforward one, nor is it obvious what these terms mean. These issues will be explored later in this chapter, but here the focus is upon how this characterisation came to be.

What is clear from the literature is that describing environmental law in terms of risk is a relatively recent fashion. Thirty years ago the concept of risk was virtually never discussed in environmental law, and while the term was used in some legislation it carried with it little conceptual significance.[30] Moreover, an analysis of the history of how risk has come to play such an important role in environmental law reveals that this development has been driven less by discussions about risk and more by the promotion of a decision-making tool—risk assessment.

Much of that history has taken place in the US where the concept of risk perhaps most dominates environmental law and policy. To understand why this is the case one must start with the founding of contemporary environmental regulatory law in the late 1960s and early 1970s.[31] In a flurry of bipartisan legislative hyperactivity many different pieces of environmental legislation were passed and a number of different administrative agencies were set up including the Consumer Protection Safety Commission (CPSC), Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA).

[28] M Adler, 'Risk, Death, and Harm: The Normative Foundations of Risk Regulation' (2003) 87 *Minnesota Law Review* 1293; H Chang, 'Risk Regulation, Endogenous Public Concerns, and the Hormones Dispute: Nothing to Fear But Fear Itself' (2004) 77 *Southern California Law Review* 743.

[29] S Shapiro and R Glicksman, *Risk Regulation at Risk: Restoring a Pragmatic Approach* (Stanford Law and Politics, 2003) 1–2.

[30] S 3(1) of the Health and Safety at Work Act 1974 (UK) and Toxic Substances Control Act 1976 15 USC § 2605(a) (USA).

[31] C Sunstein, *After the Rights Revolution* (Harvard UP, 1990).

As well, the powers of older agencies such as the Food and Drug Administration (FDA) were strengthened. These agencies all had quite different institutional structures, legislative powers, and were all required to make regulations in a range of different ways.[32] The creation of these agencies gave rise to a debate about their legitimacy and in particular what their role and nature should be.[33] On the one hand, there were those who understood environmental law to be a similar agenda to civil rights and an extension of the 'Great Society' programme of the early 1960s.[34] On this view, the role of these new agencies was to promote environmental protection even in the face of scientific uncertainty.[35] Debate and the exploration of complex problems were seen as a particularly important aspect of an agency's role. Such a perspective tended to encourage an expansive approach to construing these agencies' legislative mandates.[36] On the other hand, some viewed the task of these agencies in far more discrete terms as addressing particular technical issues or problems, and thus agency decision-makers needed to be restrained in exercising their powers.[37] Those holding this perspective often pointed to the failures of the New Deal agencies brought about by bureaucratic inertia and agency capture.[38] Legal frameworks and rules needed to ensure that the new agencies retained their 'proper role as the servant[s] of government' so as not to become 'monsters' with 'no practical limitations on [their] discretion'.[39]

The development of risk assessment techniques was part of this debate, although to begin with few of these techniques actually existed. While mathematical concepts of risk and probability were in regular use in other fields[40] they had little role to play in environmental decision-making. Furthermore, the general study of the relationship between adverse consequences and particular activities was in a relatively basic form in the environmental and public health area, and such studies were routinely hampered by a range of scientific uncertainties including the epistemological limits of science and a lack of experimental data.[41]

[32] For further details see Fisher, above n 20, chapter 2.

[33] Cook, above n 21.

[34] J Morone, *The Democratic Wish: Popular Participation and the Limits of American Government* (revised edn, Yale UP, 1998).

[35] D Bazelon, 'Science and Uncertainty: A Jurist's View' (1981) 5 *Harvard Environmental Law Review* 209.

[36] W Ruckelshaus, 'The Role of the Environmental Protection Agency' (1971–72) 1 *Environmental Affairs* 528.

[37] T Lowi, *The End of Liberalism: The Second Republic of the United States* (2nd edn, WW Norton and Co, 1979).

[38] H Friendly, *The Federal Administrative Agencies: The Need for Better Definition of Standards* (Harvard UP, 1962).

[39] *Greater Boston Television Corp v FCC*, 444 F 2d 841 (DC Cir, 1970) 850. Also see H Leventhal, 'Environmental Decision Making and the Role of the Courts' (1974) 122 *University of Pennsylvania Law Review* 509, 511.

[40] F Knight, *Risk, Uncertainty, and Profit* (Century Press, 1964) and T Porter, *The Rise of Statistical Thinking 1820–1900* (Princeton UP, 1986).

[41] K Shrader-Frechette and E McCoy, *Method in Ecology: Strategies for Conservation* (Cambridge UP, 1993); J Adams, *Risk* (UCL Press, 1995) 45.

This is not to say that these new administrative agencies did not utilise scientific information. All were given open-ended scientific research legislative powers, which they used.[42] What they did not do regularly however, was carry out quantitative assessments of the risks arising from particular activities or products.

From the 1950s onwards quantitative risk assessment techniques were being developed in specific fields such as engineering (particularly atomic energy) and the assessment of the health effects of carcinogens, but these were not immediately translatable into the regulatory field and often depended on a number of value assumptions about how carcinogens and complex systems worked.[43] With that said, risk assessment was promoted within these new agencies due to it being viewed as a means of making decision-making more objective and 'rational' and thus more accountable and effective, particularly important issues in an era of budget cutbacks and increasing concern with over-regulation.[44]

By 1976, several crude mathematical models for risk assessment had been developed by the new agencies, but there were differing views on their utility. While the EPA used risk assessment on a regular basis, the FDA used it less often, and OSHA used it only for priority setting.[45] In 1977 these three agencies and the CPSC formed an Interagency Regulatory Liaison Group which developed common guidelines on risk assessment.[46] While the guidelines set out risk assessment methodologies and stressed the importance of regulatory decision-making being based on the 'best judgements of scientists',[47] they did not definitively state what should be the actual role of risk assessment in regulatory decision-making. Moreover, in 1980, OSHA published a generic carcinogenic policy in which it recognised the limits of science and set out a more policy-based approach to standard setting.[48]

The impetus for resolving what role risk assessment should play in standard setting came from the courts. Since the early 1970s the courts had regularly been engaged in judicial review of the rule-making decisions of these agencies and there was an ongoing debate about what form such review should take.[49] The doctrinal and legislative complexity of that case law should not be underestimated,[50] but by

[42] S Jasanoff, *The Fifth Branch: Science Advisers as Policy Makers* (Harvard UP, 1990) 39.

[43] National Research Council (NRC), *Science and Judgement in Risk Assessment* (National Academy Press, 1994) 31–2 and Jaeger *et al*, n 2, 89–95.

[44] P Yeager, *The Limits of Law: The Public Regulation of Private Pollution* (Cambridge UP, 1991) 182–5.

[45] For a history of this period see NRC, above n 43, 32.

[46] M Landy *et al*, *The EPA: Asking the Wrong Questions: From Nixon to Clinton* (Oxford UP, 1994) ch 6.

[47] 44 Fed Reg 38858, 6 July 1979.

[48] Classification and Regulation of Potential Occupational Carcinogens, 45 Fed Reg 5002, 22 Jan 1980.

[49] The most obvious example of this is the debate between Chief Judge Bazelon and Judge Leventhal in the DC Circuit of the Federal Court of Appeals over 'hard look' review. See *NRDC v Nuclear Regulatory Commission*, 547 F 2d 633 (DC Cir, 1976) and *Ethyl Corp v EPA*, 541 F 2d 1 (DC Cir, 1976).

[50] Fisher, above n 20, ch 3.

the late 1970s there was a growing consensus that agencies must ensure that their regulations had a factual basis shaped by a rational methodology if such a regulation was to withstand judicial review.[51] The Supreme Court in *Industrial Union Department, AFL-CIO v American Petroleum Institute*[52] (the *Benzene* decision) confirmed this by stating, among other things, that OSHA must establish a 'significant risk' before it could regulate. This effectively nullified OSHA's generic carcinogenic policy in which risk assessment had very little role to play,[53] and also promoted the concept of risk to the top of the regulatory agenda.

One of the direct consequences of the *Benzene* decision was that Congress commissioned the National Research Council (NRC) to write a report on whether risk assessment should be separated from policy-making and whether there should be uniform guidelines for risk assessment across the regulatory agencies. The NRC concluded that while no separate organisation should undertake risk assessment, (either institutionally or otherwise), a 'clear conceptual distinction' should be made between risk assessment and risk management.[54] In other words, decision-making about risk should be divided into a 'scientific process' of risk assessment, in which the scientific information about risk was collected and evaluated and a 'political' process of risk management in which a policy decision was made about what regulatory action should be taken in relation to that risk. Such a division would appear to guarantee the objectivity of decision-making. The NRC also concluded that uniform guidelines should be promoted across the agencies.[55] The NRC's report, also known as the Red Book, has become the authoritative statement on the role of risk assessment in environmental regulation not only in the US but also, more recently, in other jurisdictions.[56] This is despite the fact that the NRC itself was critical about the utility of the risk assessment/risk management distinction in its later reports.

What the NRC report, reforms in Presidential oversight[57] and the accompanying judicial developments[58] did was to prompt Federal regulatory agencies in this area to think in terms of risk. Thus the EPA produced reports on priority setting and comparative risk assessment,[59] and the courts continued to scrutinise decisions on

[51] *American Petroleum Institute v OSHA*, 581 F 2d 493 (5th Cir, 1978) and *National Lime Association v EPA*, 627 F 2d 416 (DC Cir, 1980).

[52] *Industrial Union Dept AFL-CIO v American Petroleum Institute*, 448 US 607 (1980).

[53] S Jasanoff, 'Science and the Limits of Administrative Rule Making: Lessons from the OSHA Cancer Policy' (1982) 20 *Osgoode Hall Law Journal* 536.

[54] NRC, *Risk Assessment in the Federal Government: Managing the Process* (National Academy Press, 1983) 151.

[55] *Ibid*, 153–65.

[56] See eg the risk assessment and risk management distinction in European Commission, above n 1.

[57] R Plides and C Sunstein, 'Reinventing the Regulatory State' (1995) 62 *University of Chicago Law Review* 1, 39.

[58] Fisher, above n 20, ch 2.

[59] Science Advisory Board, *Reducing Risk: Setting Priorities and Strategies for Environmental Protection* (US Environmental Protection Agency, 1990) and United States Environmental Protection Agency, *Unfinished Business: A Comparative Assessment of Environmental Problems* (US Environmental Protection Agency, 1987).

the basis of how rigorously decision-makers adhered to risk assessment and other analytical methodologies.[60] Moreover, Congress attempted to legislate for risk assessment methodologies.[61]

By the late 1990s environmental law in the US was increasingly being labelled and conceptualised as 'risk regulation' by many commentators.[62] This became the generic term for health and environmental law.[63] The significance of this re-branding of environmental law should not be underestimated. Not only was environmental law being described in terms of risk, but the problems with it were also being diagnosed in such terms. From this perspective environmental law was hampered by poor risk assessment techniques, inconsistency, the regulatory creation of substitute risks and problems of tunnel vision.[64] More difficult debates about the legitimacy of regulatory agencies tended to be ignored and the challenges for environmental law were understood in terms of a 'pragmatic' search for the right risk assessment methodology.[65]

What is striking about this transformation of environmental law into risk regulation is that it was almost solely a product of the utilisation of risk assessment as a decision-making methodology. Until the 1990s the concept of risk itself was virtually ignored. The NRC in its first two reports did not even define risk[66] and the Supreme Court in the *Benzene* decision was rather ambiguous about what the term 'significant risk' meant.[67] Moreover, while there were many critiques of the dominance of 'risk' thinking, they focused more on the limits of risk assessment as a decision-making tool than on the concept of risk itself. Thus risk assessment was criticised for ousting non-scientific values;[68] ignoring the socio-political nature of risk conflicts;[69] giving a false façade of certainty;[70] and creating inefficiencies and ossification.[71] By the 1990s there was a sharp polarisation between those who promoted risk assessment as a 'sound science' for good regulatory

[60] *AFL-CIO v OSHA*, 965 F 2d 962 (11th Cir, 1992); *Corrosion Proof Fittings v EPA*, 947 F 2d 1201 (5th Cir, 1991); *Competitive Enterprise Institute v NHTSA*, 956 F 2d 321 (DC Cir, 1992).

[61] C Sunstein, *Free Markets and Social Justice* (Oxford UP, 1997) ch 14.

[62] S Breyer, *Breaking the Vicious Circle: Towards Effective Risk Regulation* (Harvard UP, 1993); Shapiro and Glicksman, above n 29.

[63] Eg www.riskworld.com.

[64] Breyer, above n 62, ch 1.

[65] C Sunstein, *Risk and Reason: Safety, Law and the Environment* (Cambridge UP, 2002) 26.

[66] NRC, above n 54, 18–9 and NRC, above n 43, 25–6.

[67] While the term was not meant to be a 'mathematical straitjacket' it did appear from Justice Steven's plurality opinion to have a quantitative aspect to it: *Benzene*, above n 52, 655.

[68] K Shrader-Frechette, *Risk and Rationality: Philosophical Foundations for Populist Reforms* (U California Press, 1991).

[69] S Rayner and R Cantor, 'How Fair is Safe Enough?: The Cultural Approach to Societal Technology Choice' (1987) 7 *Risk Analysis* 39.

[70] W Wagner, 'The Science Charade in Toxic Risk Regulation' (1995) 95 *Columbia Law Review* 1613.

[71] T McGarity, "Some Thoughts on 'DeOssifying' the Rulemaking Process" (1992) *41 Duke Law Journal* 1385.

decision-making[72] and those who viewed risk assessment as a profound distortion of environmental regulatory regimes.[73]

This focus on risk assessment as opposed to risk is significant because it also gives us a clue about what forces were driving these developments. Risk assessment was promoted by many actors because it was perceived as ensuring more rational decision-making and thus more 'legitimate' public administration, or at least more 'legitimate' according to one group of actors. Writing in 1983 shortly after the publication of the Red Book, EPA Administrator, Ruckelshaus noted that:

> Risk assessment at [the] EPA must be based only on scientific evidence and scientific consensus. Nothing will erode. . . . public confidence faster than the suspicion that policy considerations have been allowed to influence the assessment of risk.[74]

Risk assessment legitimised the unelected power of public administration and ensured that agencies such as the EPA remained 'instrument[s] of policy'[75] due to the fact that they could act only if they could establish a risk. It was heavily promoted alongside other analytical tools such as cost/benefit analysis and regulatory impact analysis.[76]

In other words, the transformation of environmental law into risk regulation in the US had less to do with the identification of risk as a physical 'reality' and more with anxieties about the nature and role of the administrative state.[77] Commentators talk in terms of risk because they believe that characterising environmental law in such terms will lead to better public administration. This preoccupation with legitimate administrative governance has not been limited to the US. By the late 1990s the concepts of risk and risk assessment were becoming popular in other jurisdictions[78] such as Canada,[79] Australasia[80] and the EU.[81] Thus, for example, risk assessment began to be promoted in the United Kingdom (UK) in the early 1980s[82] in a radical departure from the previous regulatory paradigm

[72] J Graham and J Wiener, *Risk Versus Risk: Tradeoffs in Protecting Health and the Environment* (Harvard UP, 1995).

[73] T McGarity, 'A Cost Benefit State' (1998) 50 *Administrative Law Review* 7.

[74] W Ruckelshaus, 'Science, Risk and Public Policy' (1983) 221 *Science* 1026, 1027.

[75] *Ibid*, 1026.

[76] Sunstein, above n 61, ch 14.

[77] Fisher, above n 20, ch 3.

[78] For an overview of different methodologies being developed in different jurisdictions see the OECD/IPCS's database on chemical risk assessment methodologies, available at http://webdomino1.oecd.org/ehs/ipcs.nsf.

[79] Canadian Environmental Protection Act 1999 and Government of Canada, *A Framework for the Application of Precaution in Science-based Decision Making about Risk* (Government of Canada, 2002).

[80] S 50 of the Gene Technology Act 2001 (Australia) and Standards Australia, *AS/NZS 4360: 2004 Risk Management* (Standards Australia, 2004).

[81] Commission of the European Communities *First Report on the Harmonisation of Risk Assessment Procedures* (Health and Consumer Protection Directorate-General, 2000).

[82] Royal Society, *Risk Assessment—A Group Study Report* (Royal Society, 1983).

in which the emphasis had been on interpersonal negotiation between regulatory inspectors and the regulated.[83] A number of different executive and advisory bodies produced reports on risk assessment and risk management, and risk assessment began to dominate environmental decision-making.[84] In all cases the promotion of risk assessment was designed to ensure 'better' public administration. This was viewed as particularly important in the wake of a number of regulatory crises such as that over BSE[85] and was also consistent with deregulatory agendas.[86]

Risk assessment was not just promoted within national jurisdictions. It also began to play a role in trade law. In particular, the World Trade Organisation's (WTO) 1994 Agreement on Sanitary and Phyto-Sanitary Measures (the SPS Agreement) requires Members to base their sanitary and phytosanitary measures on a risk assessment.[87] There are a number of reasons for the promotion of risk assessment in this context, but it is manly due to a belief that risk assessment ensures that signatories to trade agreements do not act in a discriminatory and arbitrary manner.[88] While the WTO SPS regime is distinct from national regimes it has acted as a conduit for transferring ideas about risk assessment from one jurisdiction to another,[89] as well as drawing on national understandings of good risk regulation.[90]

Alongside these developments in environmental law, risk assessment and risk management techniques have also been promoted in other regulatory areas such as criminal justice[91] and public finance,[92] as well as being used as overarching frameworks for governance.[93] These other developments are not of direct concern in this chapter, although it is interesting to note that this has led some to characterise the role of the state as one of 'handling risk'.[94]

[83] K Hawkins, *Environment and Enforcement* (Oxford UP, 1984).

[84] E Fisher, 'Drowning by Numbers: Standard Setting in Risk Regulation and the Pursuit of Accountable Public Administration' (2000) 20 *Oxford Journal of Legal Studies* 109.

[85] UK Government, *The Food Standards Agency: A Force for Change* (Cm 3830, TSO, 1998).

[86] Regulatory Impact, Unit *Better Policy Making: A Guide to Regulatory Impact Assessment* (Cabinet Office, 2003).

[87] Art 5(1).

[88] W Maruyama, 'A New Pillar of the WTO: Sound Science' (1998) 32 *International Lawyer* 651.

[89] D Wirth, 'International Trade Agreements: Vehicles for Regulatory Reforms?' (1997) *University of Chicago Legal Forum,* 331.

[90] A Sykes, 'Regulatory Protectionism and the Law of International Trade' (1999) 66 *University of Chicago Law Review* 1 and Fisher, above n 20, ch 5.

[91] M Feeley and J Simon, 'Actuarial Justice: The New Criminal Law' in D Nelken (ed), *Actuarial Justice: The New Criminal Law* (Sage Publications, 1994).

[92] Treasury Taskforce, *Partnerships for Prosperity* (HM Treasury, 1997).

[93] E Fisher, 'The Rise of the Risk Commonwealth and the Challenge for Administrative Law' [2003] *Public Law* 455.

[94] *Ibid*; Standards Australia, above n 80; Strategy Unit of the Cabinet Office, *Risk: Improving Government's Capability to Handle Risk and Uncertainty, Full Report: A Source Document* (TSO, 2002).

## D. The Many Definitions of Risk and Risk Assessment

The previous section has shown that the conceptualisation of environmental regulatory law as risk regulation has a far more complex history than such a label suggests. Risk has tended to take on an almost iconic and timeless status in contemporary environmental law discourse, but looking at the historical development of risk and environmental law such status seems dubious. Risk, like most regulatory concepts, is the product of political and social forces. What is also clear from closer scrutiny is that, while there tends to be a presumption that there are settled understandings of the definitions of 'risk' and 'risk assessment', this is not the case. This is perhaps best shown by returning to the US context.

As already noted, risk assessment techniques were developed out of a number of different disciplines and in particular engineering and toxicology. With regard to the former, probabilistic risk assessment was developed as a way of assessing the probabilities of failure of complex technological systems. This technique rests on the assumption that such systems can be comprehensively understood and that probabilities can be assigned to various types of systems failure.[95] In contrast, techniques developed in relation to toxicology and the related field of epidemiology are concerned with assessing the causal effects of particular substances using animal bioassays and epidemiological studies.[96] Those carrying out risk assessments in this area are dealing with open ended systems, and often studies are not only concerned with assessing probabilities but also determining the nature of a risk.

Thus, even at the outset, the term 'risk assessment' could mean different things. Developments in the US have not led to a universal understanding of what is a risk assessment. Most obviously, different techniques have been developed in relation to different types of risk although the determinative factor is not so much whether what are at risk are humans or the environment, but more what is the state of existing scientific knowledge about those risks. Thus, for example, the NRC has defined human health risk assessment as:

> the evaluation of scientific information on the hazardous properties of environmental agents and on the extent of human exposure to those agents. The product of the evaluation is a statement regarding the probability that populations so exposed will be harmed, and to what degree.[97]

This definition tends to characterise risk assessment as a process in which the hazardous properties of an agent and the nature of exposure can be identified. Thus,

[95] Jaeger *et al*, above n 2, 89–91.
[96] *Ibid*, 91–3, and NRC, above n 43, 29–33.
[97] NRC, above n 54, 25–6.

in their 1983 report the NRC identified risk assessment as a four-step process—hazard identification, dose-response assessment, exposure assessment and risk characterisation.[98] In contrast, the EPA has defined ecological risk assessment as:

> A process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors. The process is used to systematically evaluate and organise data, information, assumptions, and uncertainties in order to help understand and predict the relationships between stressors and ecological effects in a way that is useful for environmental decision making.[99]

Here, there is more an expectation that a risk assessment will provide some insight into what is actually occurring in a particular environment as opposed to generating a probability. This broader approach to risk assessment is not surprising considering the often limited understandings about how ecosystems work.

The variations in risk assessment do not end there, however. Thus, for example, Rhomberg in 1997 wrote a 173-page survey of the different chemical risk assessment methodologies used by US Federal administrative agencies. The variations were enormous, often within the same organisation. He noted that these variations can be:

> attributed to the different questions being asked of the risk assessment process in different regulatory contexts by different environmental statutes. In part it reflects different institutional judgments about the most appropriate methods and different scientific judgments about matters with high scientific uncertainty. And in part it reflects a simple policy choice made for the sake of consistency within each organisation (which, owing to independent histories, become inconsistent among organisations).[100]

In other words, how risk assessment is defined is not just due to scientific factors but also institutional and socio-political ones as well. Thus we saw above that the distinction between risk assessment and risk management made by the NRC in its Red Book was in part due to its terms of reference which were a direct product of the *Benzene* decision.

Moreover, the highly objective understanding of risk assessment as promoted in the 1983 Report has been severely criticised by a number of official bodies including the NRC itself. In 1994 the NRC published a substantive report in which it explored the problems of scientific uncertainty and discretion in risk assessment.[101] In 1996 it published *Understanding Risk*, in which it concluded that the

[98] *Ibid*, 3.

[99] US Environmental Protection Agency, *Guidelines for Ecological Risk Assessment* (EPA/630/R-95/002F Final 1998) 1.

[100] L Rhomberg, *A Survey of Methods for Chemical Risk Assessment Among Federal Regulatory Agencies* (National Commission for Risk Assessment and Management, 1997) 2.

[101] NRC, above n 43.

assessment/management distinction, while useful for insulating scientific activity from political pressure, was problematic, in that it ignored the close interrelationship between the evaluation of scientific information and policy discussion.[102] It argued that the focus should be on risk characterisation which it described in the following manner:

> Risk characterization is the outcome of an analytic-deliberative process. Its success depends critically on systematic analysis that is appropriate to the problem, responds to the needs of the interested and affected parties, and treats uncertainties of importance to the decision problem in a comprehensible way. Success also depends on deliberations that formulate the decision problem, guide analysis to improve decision participants' understanding, seek the meaning of analytic findings and uncertainties, and improve the ability of interested and affected parties to participate effectively in the risk decision process. The process must have an appropriately diverse participation or representation of the spectrum of interested and affected parties, of decision makers, and of specialists in risk analysis, at each step.[103]

This is a radical departure from the approach seen in the Red Book and it grants considerable discretion to public administration. A year later the Presidential/Congressional Commission on Risk Assessment and Risk Management also concluded that the assessment/management distinction was not a helpful one, although the approach it outlined was less radical than that above.[104] These divergent characterisations of risk assessment can be partly explained as due to different terms of reference and different subject matters. Thus, for example, *Understanding Risk* was not a direct response to a court case as the Red Book was, and thus was not posited as a solution to a problem of accountability as that report was. Likewise, *Understanding Risk* was concerned with ecological risk assessment where, compared to human health risk assessment, there has been less focus on the development of a strict methodology due to the significant scientific uncertainties involved and the dynamic nature of scientific knowledge.

The variations in definitions of risk assessment become even more obvious when one turns to other jurisdictions. Thus a survey conducted by the UK Interdepartmental Liaison Group on Risk Assessment (ILGRA) revealed a wide variation in how government departments made decisions about risk.[105] Indeed in many cases the term 'risk assessment' was avoided altogether.[106] When the term was used it often took on different meanings. Thus while ILGRA broadly defined

[102] NRC, *Understanding Risk: Informing Decisions in a Democratic Society* (National Academy Press, 1996) 36–6.

[103] *Ibid*, 3.

[104] Presidential/Congressional Commission on Risk Assessment and Risk Management (CRARM), *Framework for Environmental Health Risk Management—Volume One* (CRARM, 1997).

[105] ILGRA, *Use of Risk Assessment Within Government Departments* (Health and Safety Executive, 1996).

[106] Health and Safety Executive, *Reducing Risks, Protecting People* (Health and Safety Executive, 1999).

it as a 'tool for extrapolating from statistical and scientific data' the UK Parliamentary Office of Science and Technology defined 'risk assessment' in 1996 to include not only the scientific evaluation of risks but their management as well.[107] This latter definition is consistent with the Australian definition,[108] although the Australians define the 'scientific' part of decision-making about risk as risk analysis while the Parliamentary Office described it as risk evaluation. In contrast, risk analysis is defined under the EU Regulation on principles of food law and establishing the European Food Safety Authority (EFSA) as consisting of risk assessment, risk management, and risk communication.[109] The term 'risk assessment' is defined as 'a scientifically based process consisting of four steps: hazard identification, hazard characterisation, exposure assessment and risk characterisation', a definition similar to that seen in the Red Book.[110]

In contrast again, risk assessment is defined in the WTO SPS Agreement very broadly as:

> The evaluation of the likelihood of entry, establishment or spread of a pest or disease within the territory of an importing Member according to the sanitary or phytosanitary measures which might be applied, and of the associated potential biological and economic consequences; or the evaluation of the potential for adverse effects on human or animal health arising from the presence of additives, contaminants, toxins or disease-causing organisms in food, beverages or feedstuffs.[111]

What is understood by this is open to question. The WTO Dispute Settlement Panel in the *EC-Hormones* case, one of the first disputes in relation to the SPS Agreement, defined risk assessment in terms of the risk assessment/risk management distinction seen in the Red Book. The Panel stated that risk assessment must be understood as a 'scientific examination of data and factual studies' that required Members to evaluate the 'potential or probability' of an adverse event occurring.[112] The Appellate Body, however, in the same dispute settlement proceeding argued there was no authority for making the risk assessment/risk management distinction and that the danger of the Panel's approach was that it excluded from the scope of assessment 'all matters not susceptible of quantitative analysis'.[113] In other

[107] Parliamentary Office of Science and Technology, *Safety In Numbers* (TSO, 1996) 10.

[108] T Beer and F Ziolkowski, *Environmental Risk Assessment: An Australian Perspective* (Supervising Scientist Report No 102, 1995).

[109] Art 3(10) of Regulation 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety [2002] OJ L/31/1.

[110] Art 3(11).

[111] Annex A.4.

[112] Panel Report, *EC Measures Concerning Meat and Meat Products (Hormones)—Complaint by the United States*, WT/DS26/R/USA, 13 Feb 1998, paras 8.91–98.

[113] Appellate Body Report, *European Communities—Measures Concerning Meat and Meat Products (Hormones)*, WT/DS26/AB, 16 Jan 1998, paras 181, 187.

words, they acknowledged that risk assessment may be qualitative in nature. To make matters more complicated the SPS Agreement encourages harmonisation on the basis of standards set by such international bodies as the Codex Alimentarius Commission.[114] Over the last couple of years that body has been developing a set of working principles for risk analysis that is more consistent with the framework regulating the EFSA.[115]

The discussion so far has not concentrated upon how the term 'risk' is defined. This is because, while there is an ongoing focus on risk assessment, 'risk' as a concept has been ignored.[116] Likewise, while scientific uncertainty is noted to be a feature of decision-making in this area, its meaning is rarely elaborated.[117] When there is some fleshing out of what these terms mean, it quickly becomes clear that different actors hold divergent views about how these terms should be defined.

Compare the definition of risk contained in two official US reports published within a year of each other. The 1996 NRC report, discussed above, defined risk as a:

> [c]oncept used to give meaning to things, forces or circumstances that pose danger to people or to what they value. Descriptions of risk are typically stated in terms of the likelihood of harm or loss from a hazard and usually include: an identification of what is 'at risk' and may be harmed or lost (eg health of human beings or an ecosystem, personal property, quality of life, ability to carry on an economic activity); the hazard that may occasion this loss; and a judgment about the likelihood that harm will occur.[118]

Such a definition is clearly consistent with their description of risk assessment in that it acknowledges the context-bound notion of characterising risk and conceptualising it in non-quantitative terms. In contrast the Presidential/Congressional Commission on Risk Assessment and Risk Management that reported in 1997 defined risk in more quantitative terms as a:

> probability that a substance or situation will produce harm under specified conditions. Risk is a combination of two factors:
>
> —The probability that an adverse event will occur (such as a specific disease or type of injury).
> —The consequences of the adverse event.
>
> Risk encompasses impacts on public health and on the environment, and arises from exposure and hazard. Risk does not exist if exposure to a harmful substance or situation

[114] Art 3(1).
[115] Codex Alimentarius Commission, *Report of the Twentieth Session of the Codex Committee on General Principles*, ALINORM 04/27/33A, Paris, 3–7 May 2004, paras 37–43.
[116] An exception to this is Art 3(9) of Regulation (EC) No 178/2002, above n 109.
[117] For an exception to this see NRC, above n 43.
[118] NRC, above n 102, 215–6.

> does not or will not occur. Hazard is determined by whether a particular substance or situation has the potential to cause harmful effects.[119]

This is the more conventional definition of risk used by those carrying out risk assessment in the environmental protection field, and the distinction between hazard and risk is a particularly important one.[120] It originated from risk assessment in the engineering context and is quite distinct from how risk is defined in other areas such as economics.[121]

Another example of the problem of finding a uniform definition of risk can be seen in the 1992 report of the UK Royal Society on *Risk: Analysis, Perception and Management.*[122] The Report was meant to be an official report of the Royal Society and a follow up to its 1983 Report that promoted risk assessment.[123] There was, however, no agreement among those writing the report over how risk should be defined, so that the report was recast as a contribution to an ongoing discussion rather than as an official report of the Royal Society.[124]

The lack of a coherent definition can also be seen in the variations in how scientific uncertainty is discussed in policy reports. Problems of quantification,[125] lack of research,[126] limits of methodology[127] and ignorance[128] may all be noted, but rarely in the same document. In part this is not surprising; the types of scientific uncertainty in relation to different environmental problems vary considerably. Thus, for example, while in toxicological risk assessment there is a rich discussion about the relative uncertainties involved in animal bioassays as opposed to epidemiological studies, the uncertainties facing those doing ecological risk assessment are far more about whether any particularly ecological system can be properly understood. Moreover, the language of uncertainty varies considerably from discipline to discipline.[129]

There are many different scientific ways of understanding risk and risk assessment. The same is also true of social scientific understandings of risk. While many social science commentators criticise mainstream risk policy they do so on diverse

[119] Presidential/Congressional Commission on Risk Assessment and Risk Management, above n 104, 1.

[120] Royal Society, *Risk, Analysis, Perception and Management* (Royal Society, 1992) 4.

[121] Royal Commission on Environmental Pollution, *Setting Environmental Standards, 21st Report* (TSO, 1998) 51 and Fisher, above n 93, 466–70.

[122] Royal Society, above n 120.

[123] Royal Society, above n 83.

[124] Royal Society, above n 120, 12. For a discussion of this see Adams, above n 41, 7–9.

[125] Royal Commission on Environmental Pollution, above n 121, 55–6.

[126] Independent Expert Group on Mobile Phones, *Mobile Phones and Health* (IEGMP Secretariat, 2000).

[127] NRC, above n 43, ch 9.

[128] NRC, above n 102, 5.

[129] Compare NRC, above n 43, and R Carpenter, 'Limitations in Measuring Ecological Sustainability' in T Trzyna (ed), *A Sustainable World: Defining and Measuring Sustainable Development* (IUCN- World Conservation Union, 1995) 175.

grounds and from fundamentally different starting points.[130] Thus, for example, there are those who criticise risk assessment because it ignores the psychological aspects of risk perception. From this perspective 'risk acceptability' must take into account the psychological reasons why individuals place divergent values on different types of risks.[131] This group of commentators are quite distinct from those that seek to show that risk assessment is a flawed methodology and not the 'sound science' it claims to be.[132] Distinct again are those commentators who use cultural theory to show that within different institutional cultures divergent approaches to risk acceptability will emerge.[133] Others conceptualise technological risks as part of modernisation and think that the development of a politics of risk amounts to a reflexive process by which a citizenry seeks to question both governing and modernisation processes.[134] Then there are those that characterise the development of risk assessment as part of a technology of control and domination.[135] Moreover, among these different commentators are quite profound divisions about the nature of risk and risk assessment. Some see risk as socially constructed, and some do not.[136] Some view risk assessment as fundamentally flawed while others merely view it as a limited tool.[137] Some see science as necessary and others see it as technocratic domination.[138] Just as with mainstream policy no single discourse about risk can be found among the social scientists.

Matters are complicated by the fact that the use of risk is not neutral, and understanding environmental problems in terms of risk has a powerful impact on how those problems are characterised and 'solved'. If risk is understood primarily in quantitative terms then only those aspects of an environmental problem that can be measured will be subject to analysis.[139] If, however, a broader definition such as the NRC's 1996 definition is used, other forms of information will be utilised in the decision-making process. However, if the deployment of risk is understood to be a means of domination and control then even the legitimacy of this more inclusive approach is to be doubted.[140] If risk is understood as a touchstone for debates

[130] For an overview see Lupton, above n 2, and Jaeger *et al*, above n 2.

[131] B Fischoff *et al*, *Acceptable Risk* (Cambridge UP, 1981).

[132] Shrader-Frechette, above n 4.

[133] M Douglas, *Risk Acceptability According to the Social Sciences* (Routledge and Kegan Paul, 1985) ; Schwarz and Thompson, above n 13.

[134] U Beck, *Risk Society: Towards A New Modernity* (Sage Publications, 1992).

[135] M Dean, *Governmentality: Power and Rule in Modern Society* (Sage Publications, 1999) ch 9.

[136] B Szerszynski *et al*, 'Introduction: Ecology, Realism and the Social Sciences' in S Lash *et al* (eds), *Introduction: Ecology, Realism and the Social Sciences* (Sage Publications, 1996) 10–12.

[137] Compare Shrader-Frechette, above n 4, and AJ Brown, 'Prayers of Sense and Reason: Mining, Environmental Risk Assessment and the Politics of Objectivity' (1992) 9 *Environmental Planning & Assessment Journal* 387.

[138] Compare Latour, above n 10, and F Fischer, *Technocracy and the Politics of Expertise* (Sage, 1990).

[139] T Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton UP, 1995).

[140] P O'Malley, 'Uncertain Subjects: Risks, Liberalism, and Contract' (2000) 29 *Economics and Society* 460.

about modernity, however, then a more inclusive response to environmental decision-making is needed, but one that extends beyond the collection of scientific information to include normative debate.[141]

The same is true of risk assessment. A risk assessment methodology will define how a problem is understood. Thus, for example, the NRC's definition of human health risk assessment above rests on the assumption that hazardous properties of agents can be identified and that exposure to those agents can be adequately assessed. This is even though our knowledge of carcinogens and other toxins is often very poor. The same is true of probabilistic risk assessment developed in the engineering field, which rests on the assumption that all forms of system failure can be identified before they occur, even when accidents such as that at Three Mile Island showed that this is not the case.[142] What this amounts to is that the use of risk and risk assessment in any particular context privileges a particular meta-rationality.[143] As is clear from the above, however, it is difficult to conclude what meta-rationality is being privileged without looking at the legislative and policy context governing any particular environmental law issue.

## E. Moving Forward: a Constructive Approach to Thinking about Risk and Environmental Law

The discussion so far has largely been concerned with deconstructing the present discourse about risk and environmental law. In doing so it has highlighted two points. First, thinking of environmental regulatory law as risk regulation is a relatively new phenomenon, and one that has been primarily driven by the promotion of risk assessment as a means of ensuring legitimate public administration. Moreover, these developments have mainly occurred in the US although they can be seen in other jurisdictions. Secondly, there are actually many different definitions of risk and risk assessment being used in environmental regulation. These variations cannot only be seen between different jurisdictions but also within jurisdictions and even within regulatory agencies. The same is true in social science commentary. Moreover, how 'risk' and 'risk assessment' are defined will have a powerful influence on how environmental problems and acceptable solutions are characterised.

All this would seem to be rather sobering for those who were expecting this chapter to provide a clear framework for thinking about risk and environmental

[141] Stirling, above n 4.

[142] President's Commission on the Accident at Three Mile Island, *Final Report* (Government Printing Office, 1980).

[143] Jaeger *et al*, above n 2, 251.

law. Rather than providing a firm foundation for the student or practitioner to build on, the above analysis appears to do the opposite. Not only do conventional 'objective' concepts of risk and risk assessment prove problematic, there also appears no single social scientific explanation of why this is the case. The strong temptation in such circumstances is to embrace post-modern relativism and either to ignore risk altogether or argue there is no 'right' answer. This however is neither a desirable nor a realistic option.

It is not desirable because what is striking about the issues highlighted above is that they are entirely consistent with the features of environmental law seen in the first section of this chapter. Environmental problems are physically and socio-politically complex and different environmental law regimes will define environmental problems and their solutions in divergent ways. Moreover, those problems are not simply about the physical state of the environment but also encompass issues about how we are governed and how communities should develop. Describing environmental regulatory law as risk regulation does not eradicate these features, but rather draws our attention to them. In thinking about risk we actually can begin to see more clearly some of the real issues shaping environmental law. It is perhaps not surprising that Ewald has noted that risk has become the 'single point upon which contemporary societies question themselves, analyse themselves, seek their values and, perhaps, recognise their limits'.[144]

Post-modern relativism is also not realistic, because the reality in most jurisdictions is that risk is an entrenched feature of environmental law which cannot be ignored in decision-making. Moreover, it is becoming the fundamental issue at the heart of a number of legal disputes.[145] Cases must be resolved, and crucial to their resolution is for some decision to be made about the role and nature of risk and risk assessment.

In this last section it will be shown that the conclusions above need not lead to post-modern angst and self-pity. Rather, an appreciation of these points requires environmental lawyers to take a more careful and critical approach to analysing how risk and risk assessment are deployed in environmental decision-making. In particular, it requires scholars and lawyers to appreciate that risk and risk assessment do not have fixed definitions and different definitions are due to divergent legal cultures, socio-political forces and decision-making contexts. The utility of such an approach for thinking about risk is best illustrated by an example, and this last section focuses on a legal principle closely related to both risk and sustainability—the precautionary principle—and how it has been interpreted by the European Commission.[146]

[144] F Ewald, 'Risk in Contemporary Society' (2000) 6 *Connecticut Insurance Law Journal* 365, 366.

[145] *American Dental Association v Martin*, 984 F 2d 823 (7th Cir, 1993); *T Mobile (UK) Ltd v First Secretary of State* [2004] EWCA Civ 1763; and Appellate Body Report, *European Communities—Measures Concerning Meat and Meat Products (Hormones)*, WT/DS26/AB/R; WT/DS48/AB/R (World Trade Organisation, 16 Jan 1998).

[146] European Commission, above n 1.

The precautionary principle has been a controversial and high-profile principle due to its inclusion in national and international regulatory regimes since the 1980s.[147] This is not surprising as it is concerned with one of the most intractable aspects of environmental decision-making—scientific uncertainty.[148] Broadly speaking, and acknowledging that there is no settled view on the matter,[149] the principle requires decision-makers to take seriously the problems that scientific uncertainty creates for regulatory decision-making in both the environmental and public health field.[150] A common formulation of the principle states that:

> Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.[151]

The problems created by scientific uncertainty are multitudinous and include: the fact that 'no evidence of harm' does not mean 'no harm', that scientific assessments are limited in predicting the consequences of actions, that there is often no way of collecting the information to assess future impacts, and that there are ontological limitations on the capacity to predict future outcomes.[152] Indeed, the precautionary principle prompts us to reflect on the fact that, while sustainability requires us to think about the future impacts of present actions, this is a complex process because we cannot, with any accuracy, gauge what those impacts will be.

Following on from this, a fundamental feature of the precautionary principle is that it is not concerned with guaranteeing particular outcomes, but rather with the *process* by which a decision is made.[153] This is not only logical in light of the inability to predict outcomes in cases of scientific uncertainty, it is also consistent with the principle's status as a *legal* principle.[154] Identifying the principle as being concerned with the process by which decisions are made does not, however, provide any clear guidance in relation to what that process may be, and what is clear

[147] R Harding and E Fisher (eds), *Perspectives on the Precautionary Principle* (Federation Press, 1999); T O'Riordan *et al* (eds), *Reinterpreting the Precautionary Principle* (Cameron May, 2001); A Trouwborst, *Evolution and Status of the Precautionary Principle in International Law* (Kluwer, 2002); and C Sunstein, *The Laws of Fear: Beyond the Precautionary Principle* (Cambridge UP, 2005).

[148] See S Jasanoff and B Wynne, 'Science and Decision Making' in S Rayner and E Malone (eds), *Human Choice and Climate Change—Volume One* (Battelle Press, 1998).

[149] For discussions of differing definitions see R Stewart, 'Environmental Regulation Under Uncertainty' (2002) 10 *Research in Law and Economic,* 71; Sunstein, n 147, ch 1.

[150] C Raffensberger and J Tickner, *Protecting Public Health and the Environment: Implementing the Precautionary Principle* (Island Press, 1999).

[151] Principle 15, Rio Declaration on Environment and Development, (1992) 31 ILM 874.

[152] Wynne, above n 9; A Klinke and O Renn, 'Precautionary Principle and Discursive Strategies: Classifying and Managing Risks' (2001) 4 *Journal Risk Research* 159.

[153] E Fisher and R Harding, 'The Precautionary Principle: Towards a Deliberative, Transdisciplinary, Problem-Solving Process' in Harding and Fisher, above n 147, 290.

[154] E Fisher, 'Precaution, Precaution Everywhere: Developing a 'Common Understanding' of the Precautionary Principle in the European Community' (2002) 9 *Maastricht Journal of European and Comparative Law* 7.

from a study of the operation of the principle in different contexts and legal cultures is that the process might take on many different forms.[155] Thus it is very difficult to talk about the operation of a single precautionary principle and, as with environmental law generally, scholars and lawyers must be aware that definitions cannot be transplanted from one regime to another.[156]

With that said, a few generalisations can be made. Not surprisingly the principle has been advocated by those who see a heavy reliance on risk assessment as problematic, and who argue the need for a more broadly based approach to decision-making which takes into account both the physical and socio-political complexities of environmental decision-making.[157] In other words, the precautionary principle requires a more flexible, discursive process in which there is a greater role for administrative discretion. In contrast, those who oppose the precautionary principle tend to characterise it as a mandate for arbitrary decision-making or as a 'trump' card that hides ulterior motives because it allows decision-makers to make decisions without a factual basis.[158] This same group tend to be ardent supporters of risk assessment.[159] Again, as with risk, the reason for this division is driven by a number of different factors. In the national/supranational setting opinions about precaution tend to be shaped by different understandings about the legitimate role of public administration, while in the international setting they tend to be influenced by understandings about the autonomy sovereign states have, or should have, under international agreements.[160] In relation to this latter point, a quite significant issue of the last decade has been whether, and when, the precautionary principle allows states to derogate from their obligations under international trade agreements.[161]

From the brief discussion above it can be seen that the precautionary principle raises many of the same issues that we saw above in relation to risk and risk assessment, and in particular those in relation to how 'rational' regulatory action is defined. Moreover, in some legal cultures[162] such as the EU risk assessment, risk and the precautionary principle have become intertwined.

[155] *Ibid.*

[156] See Section B.

[157] Stirling, above n 4, and A Klinke and O Renn, 'A New Approach to Risk Evaluation and Management: Risk-Based, Precaution Based, and Discourse Based Strategies' (2002) 22 *Risk Analysis* 1071.

[158] G Majone, 'What Price Safety? The Precautionary Principle and its Policy Implications' (2002) 40 *Journal of Common Market Studies* 89 and C Sunstein, 'Beyond the Precautionary Principle' (2003) 151 *University of Pennsylvania Review* 1003.

[159] Graham and Wiener, above n 72; Sunstein, above n 65.

[160] Fisher, above n 154, 20–23.

[161] J Scott and E Vos, 'The Juridification of Uncertainty: Observations on the Ambivalence of the Precautionary Principle within in the EU and WTO' in C Joerges and R Dehousse (eds), *Good Governance in Europe's Integrated Market* (Oxford UP, 2002).

[162] Although this is not the case in all jurisdictions. See eg the Australian debate in Harding and Fisher, above n 147, where risk has not played such a significant role.

In terms of its history and application in the EU, the precautionary principle was enshrined in the 1992 Treaty of Rome as a basis for Community policy although it was not defined.[163] Within the EU context, the principle has a number of overlapping spheres of operation,[164] including its deployment by Member States in non-EU areas;[165] its application by Member States in the application of EU law;[166] its application by Member States to derogate from EU law;[167] its application by Community institutions in law- and policy-making;[168] and the EU's reliance on it to derogate from international obligations.[169] When one considers that each of these different spheres of operation raises distinct issues concerning the reasonableness and acceptability of Member State and Community action across a series of overlapping legal cultures then one can see there is a very real challenge in developing a 'common understanding' of the principle within the EU.[170] This is further complicated by the fact that within the EU context the principle applies to a range of environmental protection, health protection and consumer protection activities, each of which involve different forms of uncertainty and risk.[171]

Despite the diversity of situations to which the principle applies there have been attempts to identify a common definition of it within the EU context.[172] The most high-profile and significant example of this was the publication in 2000 of the European Commission's Communication on the Precautionary Principle. Strictly speaking that document is meant only to set out how the Commission applies or intends to apply the precautionary principle,[173] but the guidelines contained in the Communication are now commonly used to assess the validity of Member State action as well.[174] This is not surprising, considering the Commission's explicit statement in the Communication that they also wish to promote a 'common understanding' of how to assess and manage risk within the Community.[175] Moreover, regulatory regimes such as the EU's food safety regime have been clearly influenced by the guidelines.[176]

[163] Art 174(2).
[164] Fisher, above n 154.
[165] One example is mainstream town planning.
[166] Case C–236/01 *Monsanto Agricoltura Italia SpA* [2003] ECR I–8105.
[167] Case C–95/01 *Criminal Proceedings Against Greenham and Abel* [2004] 3 CMLR 33.
[168] Case T–13/99 *Pfizer Animal Health SA* [2002] ECR II–3305.
[169] Appellate Body Report, above n 113.
[170] Fisher, above n 154.
[171] Case T–74/00 *Artegodan GmbH* [2002] ECR II–4965.
[172] De Sadeleer, above n 27, ch 3.
[173] European Commission, above n 1, 3, 9.
[174] Case E–3/00 *EFTA Surveillance Authority* [2001] 2 CMLR 47; *Monsanto,* above n 166; and Case C–192/01 *Commission v Denmark* [2003] ECR I–9693.
[175] European Commission, above n 1, 3, 9.
[176] Regulation 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety [2002] OJ L/31/1.

The starting point for the guidelines is to characterise standard setting and risk appraisal in terms of risk analysis, and thus as a three-step process involving risk assessment, risk management, and risk communication.[177] The Communication states that the principle applies to risks only where a risk assessment has identified a 'potential risk' and the uncertainties surrounding it.[178] An assessment of the risk requires:

> reliable scientific data and logical reasoning, leading to a conclusion which expresses the possibility of occurrence and the severity of a hazard's impact on the environment, or health of a given population including the extent of possible damage, persistency, reversibility, and delayed effect.[179]

Risk assessment is then defined as having the four components set out in the Red Book.[180] Putting these two statements together, it is not obvious what form a risk assessment should take. The latter statement suggests a specific procedure while the former is more general. Moreover, the Communication also stresses that any 'prudential' approach to taking into account scientific uncertainty as part of the risk assessment process should be seen as quite distinct from the application of the precautionary principle.[181] Such a prudential approach, however, would seem to take into account many of the uncertainties that are normally understood as the subjects of the precautionary principle.[182] The second step of applying the precautionary principle is that there must be a decision to act or not to act, and this, the Commission stresses, is a political decision directly concerned with 'acceptable risk', and as such is part of risk management.[183]

As well as these two steps the Commission states that there must be a transparent and inclusive process assessing the consequences of different forms of action and inaction.[184] This process is primarily an analytical one and presumably could be carried out with the first step in some cases. How it relates to risk management is not discussed, nor are the mechanisms for transparency and inclusiveness expanded upon. Finally, there must be a decision in relation to what measures should be taken, and the Commission stresses that such measures must be consistent with the principles of risk management and must be proportional, non-discriminatory, consistent, based on an examination of potential costs and benefits, subject to revision in light of new data and capable of assigning responsibility for the production of more scientific evidence.[185] This list broadly reflects requirements in WTO and EU law.

[177] European Commission, above n 1, 3.
[178] *Ibid*, 13.
[179] *Ibid*.
[180] *Ibid*, 13 and Annex III.
[181] *Ibid*, 12.
[182] *Ibid*, 13–14. Wynne, above n 9.
[183] *Ibid*, 14.
[184] *Ibid*, 16.
[185] *Ibid*, 17–20.

In terms of providing a set of guidelines for applying the precautionary principle the Communication is far from being a clear or logical document. First, as already noted, there seem to be no fixed understandings of risk assessment or uncertainty informing the document. This has clearly created problems for its legal interpretation.[186] Moreover, although the Communication would appear to relate to all areas where the precautionary principle may apply, the discussion of risk assessment in Annex III is directed at the health field. Secondly, it is not clear how each of the steps identified by the Commission in the Communication relate to each other. The Communication divides up its guidelines into 'the constituent parts of the precautionary principle' and 'guidelines for applying the precautionary principle' but it is ambiguous when and how each step in the decision-making process must occur. Thirdly, the Communication seems to be odds with conventional understandings of the precautionary principle, in that it appears to place great weight on risk assessment in circumstances of scientific uncertainty where any risk assessment is likely to be unreliable. Moreover, the list of requirements in relation to what measures can be applied ignores the problems of scientific uncertainty. There also appears to be no appreciation that the risk assessment/management divide is a problematic one.

Yet the Communication makes more sense when one understands it less as a set of guidelines drafted in isolation and more as a product of its context and surrounding legal culture. In particular, the Communication has been shaped by two distinct agendas—a concern to ensure that EU decision-making is consistent with the WTO SPS regime and anxieties over the validity of Community regulation. When seen from this perspective both the disjunctions in the Communication and the reasons for them can be identified more clearly.

The first major catalyst for the Communication was the WTO dispute settlement proceeding in relation to the EU's ban on beef derived from cattle treated with growth hormones.[187] In the Communication the Commission makes constant reference to the WTO SPS Agreement which regulated such bans.[188] The result of that dispute settlement process was that the EU's ban was found to be inconsistent with the SPS Agreement because the EU had not established that its ban was based on a risk assessment.[189] As already noted above, however, there were quite dramatic differences between the Panel and the Appellate Body about what type of risk assessment was required.[190] The Appellate Body also concluded (as did the Panel) that the precautionary principle could not override the provisions of the SPS Agreement. The Appellate Body further noted, however, that the

[186] See Fisher, above n 20, ch 6. For the case law see *Pfizer, above* n 168, and Case T–70/99 *Alpharma* [2002] ECR II–3495.

[187] For an overview of the dispute settlement process see J Paulwelyn, 'The WTO Agreement on Sanitary and PhtyoSanitary (SPS) Measures as Applied in the First Three Disputes: EC-Hormones, Australia-Salmon and Japan-Varietals' (1999) 2 *Journal of International Economic Law* 641.

[188] European Commission, above n 1, 3, 11, 12, 20, 21, 27, 28.

[189] Art 5(1). See para 208.

[190] Fisher, above n 20, ch 5.

principle was reflected in the right under the Agreement for Member States to establish their 'own level of protection'[191] and that:

> a panel charged with determining, for instance, whether 'sufficient scientific evidence' exists to warrant the maintenance by a Member State of a particular SPS measure may, of course, and should, bear in mind that responsible, representative governments commonly act from perspectives of prudence and precaution where risks of irreversible, e.g. life-terminating, damage to human health are concerned.[192]

These two decisions shaped the Communication in three ways. First, the Commission uses the decisions for its definition of risk assessment although there appears to be no appreciation that there is a disparity between the Panel and the Appellate Body on this point. Secondly, the Commission's strong statement that the principle is part of risk management and risk assessment, as well its reference to the 'prudential' treatment of scientific uncertainty in risk assessment, is derived from these decisions. Thirdly, the Communication is very much focused on SPS measures when in fact it applies to all Community action in relation to the precautionary principle.

The second catalyst for the Communication is an increased concern about the accountability of EU institutions,[193] and the Communication stresses throughout that the precautionary principle should never be used as a justification for arbitrary decision-making.[194] What little commentary there has been on the Communication has tended to focus on this issue and whether the principle as elaborated in the Communication provides an appropriate standard for assessing the legitimacy of administrative action.[195] Thus, Sunstein has stated that the Communication is 'partly sensible' because of its emphasis on risk assessment and proportionality but also 'frequently vague' because it does not set down clear guidelines.[196] In contrast, those who construe the precautionary principle as requiring a more deliberative and broadly based approach to regulation would clearly see the Communication's guidelines as placing too great a reliance on risk assessment.[197] The problem is that, as seen above, what is understood as 'arbitrary' will depend on what is understood to be the role and nature of legitimate public administration, and this will vary considerably.

[191] Paras 124–5.

[192] Para 124.

[193] G Majone, 'The Credibility Crisis of Community Regulation' (2000) 38 *Journal of Common Market Studies* 273; C Harlow, *Accountability in the European Union* (Oxford UP, 2002).

[194] European Commission, above n 1, 12, 15 and 21.

[195] K Lenaerts, ''In the Union We Trust': Trust Enhancing Principles of Community Law' (2004) 41 *CML Rev* 317; S Wolf, 'Risk Regulation, Higher Rationality and the Death of Judicial Self Restraint: A Comment on Ladeur' (2004) 41 *CML Rev* 1175.

[196] Sunstein, above n 147, 121. See also G Marchant and K Mossman, *Arbitrary and Capricious: The Precautionary Principle in the European Union Courts* (AEI Press, 2004) 23.

[197] Compare the guidelines with P Harremoës *et al* (eds), *The Precautionary Principle in the Twentieth Century: Late Lessons From Early Warnings* (Earthscan, 2002) ch 16. It is interesting to note that there have been few criticisms of the Communication in the literature from this perspective.

In particular, the principle tends to require a more flexible, discretionary administrative regime than is promoted by a heavy use of risk assessment. Yet the guidelines in the Communication attempt to reconcile the precautionary principle with risk assessment, and arguably this leads to a paradoxical situation where decision-makers are both required to take into account scientific uncertainty and act only on the basis of objective evidence.[198] This paradox can be seen in the way in which the European Court of Justice and Court of First Instance have struggled in their interpretation of the principle as elaborated in the Communication.[199] As one Advocate General has noted, the guidelines as interpreted by the courts exhibit:

> all the tension inherent in applying the precautionary principle; on the one hand, a measure cannot be based on a purely hypothetical risk, yet on the other hand, one cannot wait until the risk has been established with certainty.[200]

Commentators have tended to be critical of the courts' reasoning in these decisions because of these tensions,[201] but the paradox is not so much the judiciary's fault but a result of the fact that the Communication actually provides no coherent model of legitimate regulatory action. Furthermore, while anxiety over the legitimacy of Community action was a catalyst for the Communication, the guidelines are also increasingly being applied to and by Member States.[202] This raises a fundamental question over whether the legitimacy issues raised by Community institutions are the same as those raised by Member State actions.[203]

This brief example illustrates how in practice an understanding of the different ways in which risk and risk assessment are defined is vitally important for understanding what law and policy actually says, as well as understanding what conceptual problems such law and policy raise. The Communication begins to make far more sense when concepts of risk and risk assessment are understood to be products of their surrounding contexts and cultures. Thus we can see how definitions of these two terms have been awkwardly translated across different legal cultures, and we can also see how guidelines have been shaped by a concern to be consistent with a range of legal frameworks and legitimacy concerns. Such an analysis, however, does more than provide insight. It also paves the way for an analytical agenda. Thus, for example, in relation to the Communication there is, among other things, a need to: assess whether the Commission's interpretation of the

[198] Fisher, above n 20, ch 6.

[199] Most notably in *Pfizer*, above n 168, paras 109–173.

[200] *Commission v Denmark*, above n 174, para 101 of the AG's opinion.

[201] R Lofstedt, 'The Swing of the Regulatory Pendulum in Europe: From Precautionary Principle to (Regulatory) Impact Analysis' (2004) 28 *Journal of Risk & Uncertainty* 237; C MacMaolain, 'Using the Precautionary Principle to Protect Public Health: Pfizer v Council' (2003) 28 EL Rev 723.

[202] *Monsanto*, above n 166, and ILGRA, *The Precautionary Principle: Policy and Application* (ILGRA, 2002).

[203] Fisher, above n 20, chapter 6.

WTO Dispute Settlement Panel's and Appellate Body's decisions is legally correct; determine whether the definition of risk assessment provided in the Communication is relevant to every situation to which the precautionary principle applies; and determine whether the same guidelines should apply to both Community institutions and Member States.

Each of these is a significant question which has implications for both the theory and practice of risk and environmental law. Moreover, this mode of analysis leads us back to the three key features of environmental law highlighted at the start of this chapter. Environmental problems are socio-politically and physically complex, and this limits the ability to have universal concepts of risk, risk assessment and the precautionary principle. The role of the state is profoundly important, and an understanding of risk, risk assessment and the precautionary principle will be shaped by understandings of legitimate state action.[204] Finally, legal culture does matter. In thinking about risk environmental lawyers need to pay careful attention to legal context and legal reasoning.

## F. Conclusion

This chapter has provided an introduction to risk and environmental law for environmental lawyers and environmental law scholars. It has highlighted three points. First, the increasing tendency to conceptualise environmental regulatory law in terms of risk regulation is the product of a long and complicated history in which risk assessment has had a significant role to play. We cannot think of either risk or risk assessment in isolation but must look at the many different social, political and legal forces that have led to these developments. Secondly, there are no agreed definitions of risk and risk assessment in environmental law, and these terms mean many different things. Accordingly, care must be taken in using these terms, particularly when such terms have a powerful impact on how environmental problems are conceptualised. Thirdly, not only do the two preceding points reflect the nature of environmental problems and environmental law, but understanding them helps environmental lawyers make sense of environmental law and policy, and this was illustrated in the last section by the analysis of the European Commission's Communication on the Precautionary Principle. In conclusion, then, risk does not provide a neat formula for understanding and conceptualising environmental law. What it does, however, is to provide a means of understanding the many complexities that are a very real part of the subject. Consequently, thinking about risk is a necessary part of being an environmental lawyer and a necessary element of environmental law for sustainability.

[204] *Ibid.*

# 9

# Economic Instruments for Sustainable Development

DAVID DRIESEN*

## A. Introduction

This chapter primarily addresses the means of environmental protection, as distinguished from its goals. Most writing about the question of means posits a dichotomy between 'command and control' regulation and economic incentive programmes, such as emissions trading and eco-taxes. This dichotomy, however, may distort our understanding of both traditional regulation and alternatives to it.

Because economic theory shows that 'economic incentive' programmes are more cost effective than traditional regulation, one might assume that economic incentive programmes offer a superior method for achieving sustainable development. This chapter questions that assumption. It argues that achieving sustainable development requires an emphasis on transformative technological innovation and that traditional economic incentive programmes do not work as well in this regard as commonly assumed.

This topic has taken on great importance as the use of economic instruments has spread worldwide. Their growing popularity has sometimes had little to do with the technical merits of competing approaches. Rather, governments skeptical of the efficacy of government intervention, such as the Thatcher government in Britain and the Reagan and George W Bush administrations in the United States (US), have tended to embrace a deregulatory philosophy that relies on the 'free market' to solve many social problems.[1] Those sharing this perspective have found 'market-based' approaches to environmental protection attractive.[2] These market-based

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[1] See generally H Stretton, *Public Goods, Public Enterprise, Public Choice: Theoretical Foundations of the Contemporary Attack on Government* (St Martin's Press, 1994); PM Jackson and CM Price, *Privatisation and Deregulation: A Review of the Issues* (Longman, 1994).

[2] See RB Stewart, 'Models for Environmental regulation: Central Planning versus Market-based Approaches' (1992) 19(3) *Boston College Envtl Affairs L Rev* 547; FE Anderson *et al, Environmental Improvement through Economic Incentives* (Johns Hopkins UP, 1977).

approaches have also proven congenial to many governments not as committed to free market ideology, such as those in Europe seeking a 'third way' alternative to the welfare state and laissez-faire.[3] They may view economic incentive approaches as moderating the excesses of command and control regulation, without giving in to a laissez-faire ideology.

The goal of this chapter, however, is not a thorough description of the political economy of instrument choice. Rather, it is to provide an introduction to the variety of instruments that have been labelled 'economic instruments' and to contribute to the assessment of their value to sustainable development. The chapter will begin with a review of traditional regulation, with some emphasis on correcting the misimpressions that the term 'command and control' creates. It will then review the nature of economic incentive programmes and the traditional theory behind them. The third part will explain the importance of technological innovation to sustainable development. The final part will question the traditional view that emissions trading programmes help much with technological transformation and suggest ways of encouraging a pattern of sustainable development through the design of instruments aimed at encouraging innovation.

## B. Traditional Regulation[4]

The term command and control regulation suggests that regulators employing traditional regulation usually proceed by telling polluters how they must reduce pollution.[5] In fact, however, regulators very often set performance standards that limit the amount of pollution allowed, but do not dictate compliance techniques.[6] A good example of a performance standard comes from the New Source Performance Standard for coal-fired power plants that Professors Ackerman and Stewart addressed in their book, *Clean Coal/Dirty Air*,[7] a leading critique of 'command and control' regulation. While Professors Ackerman and Stewart claim that this standard required 'forced scrubbing', (ie, the use of coal scrubbers), the regulation itself required operators of power plants to meet a target for

[3] T Giddens, *The Third Way and its Critics* (Polity Press, 2000).

[4] See also Abbot, this vol.

[5] D Keeth, 'The California Climate Law: A State's Cutting-Edge Efforts to Achieve Clean Air' (2003) 30 *Ecology Law Quarterly* 715, 720 (characterising 'command and control' regulation as regulations where the government mandates particular technologies); DM Driesen, 'Is Emissions Trading an Economic Incentive Programme? Replacing the Command and Control Economic Incentive Dichotomy' (1998) 55 *Washington & Lee L Rev* 289, 290–1.

[6] Driesen, above n 5, 297–8.

[7] BA Ackerman and WT Hassler, *Clean Coal/Dirty Air: Or How the Clean Air Act Became a Multibillion-Dollar Bailout for High-Sulfur Coal Producers and What Should be Done About it* (Yale UP, 1981).

approaches have also proven congenial to many governments not as committed to free market ideology, such as those in Europe seeking a 'third way' alternative to the welfare state and laissez-faire.[3] They may view economic incentive approaches as moderating the excesses of command and control regulation, without giving in to a laissez-faire ideology.

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pounds of pollution per million BTUs or, in the alternative, a percentage reduction requirement.[8] The Court of Appeals that reviewed this regulation stated that 'given the current state of technology' this standard would require scrubbing.[9] But this statement implies that owners of coal-burning power plants could employ any new technology that came along, if it met the performance standard. Indeed, the regulation nowhere states that it requires scrubbing. Such performance standards have been common under the air and water pollution control laws of many countries and under the Convention on Long-Range Transboundary Air Pollution.[10]

Sometimes, however, setting a performance standard is not possible, because measurement of the pollution a facility releases is technically impracticable. In such a case, regulators often set 'work practice' standards that dictate the use of a technique known to reduce pollution, in lieu of requiring compliance with a performance standard.

An example is the regulation of asbestos emissions during building demolition.[11] Since destruction of buildings containing asbestos sends fibres hither and yon, one cannot measure the amount of asbestos emanating from a building undergoing demolition. Accordingly, when the US Environmental Protection Agency (EPA) regulated asbestos emissions in building demolitions, it did so by requiring a set of practices, such as wetting down the building, known to reduce emissions.[12] These command and control regulations are acts of desperation, denying regulated entities flexibility only because it is impossible to verify compliance with the more flexible regulatory instrument—the performance standard.

Whether the regulator establishes a performance standard or a work practice standard, the regulator must make decisions about how stringent the regulation will be—decisions about whether to require a great reduction in pollution or just a small reduction. Statutory criteria usually guide these administrative goal-setting decisions. Many statutes employ some kind of technology-based criteria. These imply that an administrative agency will establish the level of stringency that technologies are capable of achieving.[13] While writers often use the term 'command and control' regulation as a synonym for technology-based regulation, most technology-based regulation consists of performance standards, not technology-dictating work practice standards. Moreover, one can use technological capability to determine a regulation's goals and use emissions trading or pollution

[8] *Sierra Club v Costle*, 657 F 2d 298, 312 (DC Cir, 1981).

[9] *Ibid*, 316.

[10] Convention on Long-Range Transboundary Air Pollution 1979, 18 ILM 1442.

[11] C Twight, 'Regulation of Asbestos: The Microanalytics of Government Failure' (1990) 10 *Policy Studies Review* 9.

[12] *Adamo Wrecking Co v US*, 434 US 275, 277, 294–5 (1978).

[13] DM Driesen, 'Distributing the Costs of Environmental, Health and Safety Protection: The Feasibility Principle, Cost-Benefit Analysis, and Regulatory Reform' (2004) 32 *Boston College Environmental Affairs L Rev* 1.

taxes as the means of achieving those goals. In other words, technology-based emissions trading programmes and tax programmes are possible. So, one should not equate technology-based regulation with particular regulatory instruments. To avoid confusion, this chapter will use the term 'traditional regulation' to refer to both performance standards and work practice standards, rather than the term command and control regulation.

Traditional regulation, especially technology-based traditional regulation, has produced significant reductions in pollution in many countries. The US, for example, has developed technology-based federal standards for point sources of water pollution, which has, by most accounts, led to great reductions in pollution.[14] Although most analysts treat traditional regulations as the opposite of an economic incentive programme, a traditional regulation creates a significant economic incentive to reduce pollution.[15] Governments usually levy substantial fines on violators of traditional regulatory limits. Polluters conform to the limits, in part, to avoid these fines. Despite traditional regulation's success in reducing pollution, scholars have criticised traditional regulation on numerous grounds.

First of all, traditional regulation frequently makes inefficient use of private sector compliance expenditures.[16] Because facilities have uneven control costs, uniform standards for an industry category require relatively large compliance expenditures from some facilities, while requiring relatively small expenditures from others.[17] In theory, it is possible to get the same industry-wide reduction that a uniform standard demands at lower cost by demanding more reductions from facilities with low control costs and fewer reductions from facilities with higher control costs. The difficulty of acquiring good marginal control cost information for individual facilities, however, can limit a regulator's ability to engage in efficient fine-tuning of this nature.

While this cost effectiveness critique has merit, a seemingly related critique, claiming that traditional regulation is often excessively stringent, has also sometimes been cited in the US as a reason to prefer economic instruments. This argument usually rests on the proposition that command and control regulation often requires cost grossly disproportionate to benefit.[18] Recent work by Professors Heinzerling and Parker raises serious issues about the data underlying this critique.[19] The more

[14] WL Andreen, 'Water Quality Today—Has the Clean Water Act Been a Success?' (2004) 55 *Alabama L Rev* 537.

[15] JT Preston, 'Technology Innovation and Environmental Progress' in MR Chertow and DC Esty (eds), *Thinking Ecologically: The Next Generation of Environmental Policy* (Yale UP, 1997) 136, 148.

[16] RB Stewart 'Economic, Environment, and the Limits of Legal Control' (1985) 9 *Harvard Environmental L Rev* 1, 7.

[17] RW Hahn and RN Stavins, 'Incentive-Based Environmental Regulation: A New Era for an Old Idea?' (1991) 18 *Ecology Law Quarterly* 1, 3.

[18] See NO Keohane RL Revesz and RN Stavins, 'The Choice of Regulatory Instruments in Environmental Policy' (1998) 22(2) *Harvard Environmental L Rev* 313.

[19] RW Parker, 'Grading the Government' (2003) 70 *University of Chicago L Rev* 1345; L Heinzerling 'Regulatory Costs of Mythic Proportions' (1998) 107 *Yale LJ* 1981.

important point, for purposes of understanding the instrument choice debate, is that this argument may have little to do with instrument choice. The argument that a problem of excessively stringent regulation provides evidence of the need to use economic instruments seems to confuse means and ends. If a traditional regulation is desirable as a means of environmental protection, then a conclusion that environmental regulation is too strict could be met by relaxing the standards, not necessarily by changing the means of environmental protection. Moreover, since economic instruments have the potential to reduce compliance cost, cost effectiveness arguments favour them whether or not current regulations are excessively stringent. This stringency claim is more properly directed to a debate about the proper criterion for determining the goals of environmental regulation, and has less relevance to a debate about the means. And most proponents of this view lavish most of their energy on calls for more use of cost-benefit analysis to determine the goals of environmental regulations.[20]

Conversely, some environmentalists criticise trading programmes as efforts to subvert the achievement of environmental goals.[21] While this can be a fair criticism of the design of particular trading programmes, it should not be taken as a criticism of the concept of emissions trading itself.

Traditional regulation has been criticised for its failure to simulate innovation.[22] In fact, a dearth of post-compliance studies makes it difficult to know precisely how effective traditional regulation has been in stimulating innovation. There are a number of cases, however, where traditional regulation has stimulated significant innovation.[23] For example, some companies responded to the US Occupational Safety and Health Administration's regulation of vinyl chloride by employing a proprietary 'stripping process' or by employing other innovations.[24] These measures not only lowered vinyl chloride exposure but also improved vinyl chloride resin production. Manufacturers responded to regulation of occupational exposure to cotton dust through modernisation of equipment needed anyway

[20] Eg CR Sunstein, *The Cost-Benefit State: The Future of Regulatory Protection* (American Bar Association, 2002); CR Sunstein, *Risk and Reason: Safety, Law, and the Environment* (Cambridge UP, 2002); RW Hahn, *Reviving Regulatory Reform: A Global Perspective* (AEI-Brookings Joint Center for Regulatory Studies, 2000).

[21] OECD, *Implementing Domestic Tradeable Permits: Recent Developments and Future Challenges* (OECD, 2002).

[22] MH Levin and BS Elman, 'The Case for Environmental Incentives' (1990) 7(Jan/Feb) *Environmental Forum* 7, 8–9.

[23] K Strasser, 'Cleaner Technology, Pollution Prevention, and Environmental Regulation' (1997) 9 *Fordham Environmental LJ* 1, 32 (innovation sometimes results from emission and discharge limits); eg US Congress Office of Technology Assessment, *Gauging Control Technology and Regulatory Impacts in Occupational Safety and Health—An Appraisal of OSHA's Analytical Approach* (US Government Printing Office, 1995) 64; NA Ashford and GR Heaton Jr, 'Regulation and Technological Innovation in the Chemical Industry' (1983) 46 *Law & Contemporary Problems* 109, 139–40; NA Ashford, C Ayers and RF Stone, 'Using Regulation to Change the Market for Innovation' (1985) 9 *Harvard Environmental L Rev* 419, 440–1.

[24] US Congress, above n 23, 89; also Ashford *et al*, above n 23, 419–66.

to compete internationally.[25] Most metal foundries responded to regulation limiting workplace formaldehyde, not through the ventilation and enclosure approach expected by the regulator, but through development of low-formaldehyde resins.[26] While most established smelters responded to sulphur dioxide limits with a conventional approach, copper mining firms developed a new and cleaner process to assist their entry into the smelting business.[27] And operators of chloralkali plants responded to EPA regulation of mercury with some process innovations.[28]

Innovation tends to occur when regulators demand significant reductions through performance standards, thereby creating incentives for polluters to innovate to escape potentially high control costs. A good example involves decisions to phase out ozone depleting substances. While the Montreal Protocol[29] authorised some trading of compliance obligations, in practice most countries relied on a strict traditional regulatory approach, a phase out of ozone depleting substances, to achieve the Protocol's goals. Even when countries authorised trading, little or no trading occurred. The Montreal Protocol set off a wave of innovations as companies sought substitutes for the substances being phased out.[30]

Polluters have an economic incentive to use the flexibility performance standards offer, if they can meet the standard through innovations that provide less costly, but adequate, compliance methods. Nevertheless, some writers have suggested that technology-based performance standards discourage technological innovation, even when they allow it as a matter of law. Professor Stewart, for example, has argued that technology-based standards may provide an incentive to choose the technologies that regulators evaluated in setting a performance standard, in order easily to persuade the regulator of compliance.[31] Yet, this incentive may be less powerful than the incentive to innovate to escape high compliance costs. Polluters should have little difficulty in persuading regulators of their compliance when they can readily monitor pollution to show that their alternative technology does produce emissions meeting the performance standard. Similarly, when they choose to eliminate a pollutant from their production process to avoid costly regulation, they will have no difficulty at all persuading the government of compliance.

Thirdly, writers have criticised traditional regulation for slow plodding progress. They have associated traditional regulation with litigiousness and intensive lobbying.[32] This criticism accurately describes a central problem with

[25] US Congress, above n 23, 90.
[26] *Ibid*, 95.
[27] Strasser, above n 23, 28–29.
[28] Ashford, *et al*, above n 23, 437.
[29] Protocol on Substances That Deplete the Ozone Layer 1987, 26 ILM 1550.
[30] ER DeSombre, 'The Experience of the Montreal Protocol: Particularly Remarkable, and Remarkably Particular (2000) 19 *UCLA Journal of Environmental Law & Policy* 49.
[31] RB Stewart, 'Regulation, Innovation, and Administrative Law: A Conceptual Framework' (1981) 69 *California L Rev* 1256, 1269.
[32] See Stewart, above n 31; Ackerman and Hassler, above n 7.

and Principle 6 calls for 'special priority' to be given to the needs of developing countries, underlining the link between global environmental protection and international development.

The need for economic development is often presented as a need for economic *growth*, and 'sustainable development' as entailing sustainable (or sustained) economic growth, not just for developing countries but for developed countries as well.[117] The Brundtland Report, for instance, calls for rapid economic growth in developing countries,[118] and the Rio Declaration calls for 'a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation'.[119]

### *(c) Limits: Resource Conservation*

A second major element in the international legal discourse of sustainability is respect for the limits of the environment and natural resources. This is typically taken to imply rational conservation of natural resources, a proposition that has featured prominently in international environmental law since its earliest days and is reflected in the contemporary notion of 'sustainable utilisation' of natural resources.[120] The theme of limits also refers to the ultimate limits of planetary life support systems. The Brundtland Report, for example, warns against endangering earth's natural life support systems and acknowledges 'ultimate limits' to economic growth, although it characterises these primarily as social and technological rather than ecological.[121]

### *(d) Equity: Intra- and Intergenerational Fairness*

A third element of the discourse of sustainable development is equity in the distribution of the benefits and burdens of environmental protection and economic development. There is broad agreement that this includes at least two kinds of equity: 'intragenerational' and 'intergenerational'.[122] Intragenerational equity refers to equity among states and people(s) in existence now; intergenerational equity refers to equity between present and future generations of humans.

In international legal discourse, the main concern of intragenerational equity is equity among *states*, or 'international' equity, especially between developing and

[117] Eg UNFCCC, above n 20, Preamble and Arts 3(5), 4(2); UN Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa 1994, 33 ILM 1328, Preamble; Resolution on an Agenda for Development, UNGA Res 51/240 of 20 June 1997, paras 1, 43.

[118] Brundtland Report, above n 109.

[119] Above n 34, Principle 12.

[120] *Report of the Expert Group Meeting*, above n 79, paras 57–63.

[121] Brundtland Report, above n 109.

[122] I Voinovic, 'Intergenerational and Intragenerational Equity Requirements for Sustainability' (1995) 22(3) *Environmental Conservation* 223.

developed states. At a minimum international equity means that the use of resources or the environment by one state should take into account the needs and interest of other states, an idea that is reflected in numerous principles of international environmental law including good neighbourliness, equitable balancing of interests, equitable utilisation, prior notice and consultation and prior informed consent.[123] A specific concern with equity between developing and developed countries is reflected in legal principles such as common but differentiated responsibilities and common heritage (or concern),[124] in calls for a more open and equitable international economic system, elimination of barriers to developing country exports, debt reduction and elimination of unsustainable patterns of production and consumption in the developed countries.[125] It is also reflected in calls for capacity-building and transfer of technology or financial resources to developing countries.[126]

Intragenerational equity can also be understood in terms of equity among people, rather than states. Sustainable development, in this sense, is concerned with redressing inequities both within and between countries. This conception of equity recognises that women, the poor, minorities and indigenous peoples often bear a disproportionately large share of the burdens of environmental degradation and enjoy a disproportionately small share of the benefits of economic growth. This conception of equity is controversial insofar as it may imply international interference in national affairs, but it is reflected in international legal principles of gender equity, a human right to a healthy environment, public participation, access to information, access to justice, poverty eradication and indigenous rights.[127]

One aspect of the discourse of equity that has attracted broad consensus among international lawyers is the proposition that sustainability rests on a commitment to respect the needs of future generations, ie, a commitment to intergenerational equity.[128] The principle of intergenerational equity calls upon states to take into account the long-term environmental effects of their present policies, in order to ensure that future generations will have access to environmental

[123] See GF Maggio, 'Inter/Intra-generational Equity: Current Applications under International Law for Promoting the Sustainable Development of Natural Resources' (1997) 4 *Buffalo Environmental L Rev* 161.

[124] D French 'Developing States and International Environmental Law: The Importance of Differentiated Obligations' (2000) 49 *I C LQ* 34; K Baslar, *The Concept of Common Heritage of Mankind in International Law* (Brill Academic Publishers, 1998).

[125] Eg Rio Declaration, above n 34, Principles 8, 12.

[126] UN Development Programme (UNDP), *Capacity 21: A Programme in Support of Agenda 21* (UNDP, 1993); UN Commission on Sustainable Development (CSD), *Transfer of Environmentally Sound Technology, Co-operation and Capacity-Building: Report of the Secretary-General*, (UNCSD, 1994).

[127] Eg Rio Declaration, above n 34, Principles 5, 10, 20, 22, 23; Agenda 21, above n 126, ch 3, 26, 34, 36, 40.

[128] See EB Weiss, *In Fairness to Future Generations* (Transnational Publishers, 1989).

resources adequate to meet their needs and permit their flourishing. While this idea is found, in various forms, in a large number of international environmental instruments covering a wide range of subject matters and spanning many years,[129] its exact meaning and implications for sustainability remain controversial.

All of these forms of equity, whether intra- or intergenerational, concern equity among humans. While there have been frequent proposals to address inequities between humans and non-humans throughout the history of international environmental law,[130] none has gained the widespread support of governments, with the possible exception of the non-binding 1982 World Charter for Nature, a UN General Assembly resolution which declared that 'every form of life is unique, warranting respect regardless of its worth to man'.[131]

Finally, as discussed earlier, the concept of equity addresses rights and obligations in general, flexible terms, leaving their precise extent and implications to be worked out in particular circumstances, and drawing the concerned actors together in a reiterative cycle of negotiation. While the issues addressed under the rubric of equity are among the most intractable problems facing the international community—poverty, inequality, funding, technology transfer, etc, the open-textured quality of equitable principles may help to ensure, at least, that the relevant actors continue to strive for co-operative outcomes.

### *(f) Integration: Uniting Environment and Development*

The fourth basic element of sustainable development discourse is the proposition that environmental protection should not be considered independently of economic development issues. This idea is encapsulated in Principle 4 of the Rio Declaration, which states that '[i]n order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it'. That environmental protection and economic development can be integrated in decision-making processes and that both can be achieved simultaneously is an article of faith in sustainable development discourse.[132] The idea of integration has featured in international environmental discourse since at least the Stockholm Conference,[133] and is operationalised in numerous procedural arrangements such as EIA, sustainable development

[129] Eg International Convention for the Regulation of Whaling 1946, 161 UNTS 72, Preamble; UNFCCC, above n 20, Art 3(1); Convention on the Protection and Use of Transboundary Watercourses and International Lakes, above n 40, Art 2(5)(c).

[130] See A Gillespie, *International Environmental Law, Policy, and Ethics* (Oxford UP, 1998).

[131] Above n 33, Preamble.

[132] Eg S Schmidheiny, *Changing Course: A Global Business Perspective on Development and the Environment* (MIT Press, 1992); M Hajer, *The Politics of Environmental Discourse* (Clarendon Press, 1995); J Elkington, *Cannibals With Forks: The Triple Bottom Line of 21st Century Business* (New Society, 1998).

[133] Above n 38, Principle 13.

criteria and indicators, obligations to notify or consult with other states, and schemes for gathering and disseminating environmental information.[134]

The principle of integration draws attention to the links between the global economy and the problems of poverty and environmental degradation in the South. The problems of environmental degradation and the difficulties that countries of the South have in regulating and controlling such degradation cannot be considered in isolation from transnational flows of capital and manufactured goods. Furthermore, the environmental and economic policies of both states and international agencies, including economic and financial agencies such as the World Bank and World Trade Organisation, are among the issues that must be considered in order to address the issue of global environmental protection and promotion of sustainable development.[135] The principle of integration signals the 'mainstreaming' of environment concerns into national and international law- and policy-making.[136] It calls for environmental concerns to be incorporated in economic and development institutions rather than being confined to specialised environmental institutions such as the UN Environment Programme or national environment ministries. Under the banner of sustainable development, environmental issues have become routine concerns of international economic, social and development institutions. Integration thus marks both a major victory for environmental concerns in international legal discourse and the possible start of their demise as an autonomous body of law.[137]

### *(g) Whither Sustainable Development?*

What are the prospects, then, for sustainable development as a new 'meta-principle' of international environmental law, or international law more generally? The term 'sustainable development' has generated a great deal of international legal and policy activity, but it has not been embraced by ordinary citizens and grassroots social movements the way some other ideas, such as human rights or environmental protection, have. The 10-year anniversary of the Rio Summit, held in Johannesburg in 2002, was marked more by reckoning of failures and scaling back of expectations than by renewed enthusiasm for the goal of sustainable development.[138] This may reflect more the magnitude of the challenge of sustainable development than its failure as a political and legal objective. In any event we can

[134] NA Robinson, 'Legal Structures and Sustainable Development: Comparative Environmental Law Perspectives on Legal Regimes for Sustainable Development' (1998) 3 *Widener Law Symposium Journal* 247.

[135] See MC Cordonier Segger and A Khalfan, *Sustainable Development Law: Principles, Practices and Prospects* (Oxford UP, 2004); A Boyle and D Freestone (eds), *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford UP, 1999); Sands, above n 1, 252 ff.

[136] Wood, above n 115.

[137] *Ibid.*

[138] K Ruffing, 'Johannesburg Summit: Success or Failure?' *OECD Observer*, Oct 2002.

expect the meaning and role of sustainable development to continue to preoccupy international environmental lawyers for decades to come.

## C. Conclusion

International environmental law is a dynamic and growing field, characterised by a high degree of experimentation, but its development is often frustratingly slow: in the face of an international scientific consensus on the dangers to the global atmosphere of greenhouse gas emissions, for example, the response of states has been to agree to emissions reductions that are generally acknowledged to be inadequate.[139] Furthermore, the state with the highest emissions on the planet, the US, refuses to ratify the document, and developing countries, many with growing economies and ever-increasing greenhouse gas emissions, have no binding emission reduction targets.[140] On the other hand, texts such as the Kyoto Protocol represent significant progress. It is remarkable that only 30 years after states first reached a consensus on the global nature of environmental protection and the need to develop a body of international legal rules to address problems of environmental degradation, a group of states responsible for the majority of developed country $CO_2$ emissions have ratified an international agreement that imposes emissions reductions on them and exposes them to the possibility of sanctions handed down by an international body in the case of non-compliance.[141]

One of the major challenges facing international environmental law today is the need to integrate the myriad legal norms for environmental protection, and to integrate environmental rules with rules governing international trade and finance, protection of intellectual property, human rights and other areas. As international environmental rules come to penetrate more and more spheres of activity, the possibility of collision among various environmental rules, and between environmental and other rules, is increased. Furthermore, environmental goals cannot be achieved on the basis of a strictly environmental agenda: since all areas of human endeavour have environmental implications, environmental considerations need to be woven into law- and policy-making in virtually all fields. This, in essence, is the challenge of international law-making for sustainability.

[139] PD Cameron and D Zillman (eds), *Kyoto: From Principles to Practice* (Kluwer, 2002).

[140] N Matsuo, 'Analysis of the U.S.'s New Climate Initiative: The Attitude of the Bush Administration Towards Climate Change' (2002) 3(1) *International Review of Environmental Strategies* 177.

[141] Kyoto Protocol, above n 33. For figures on ratifications and shares of emissions, see UNFCCC secretariat, at http://unfccc.int.

# 12

# International Trade Law and the Environment

OREN PEREZ*

## A. Introduction

The global society has experienced an extensive process of economic integration over the last decade.[1] This process was reflected both in an unprecedented increase in cross-border economic and financial transactions, and in a parallel empowerment of global economic institutions, such as the World Trade Organisation ('WTO'), the International Monetary Fund (IMF), the World Bank and the International Chamber of Commerce (ICC).[2] The possible adverse effects of this far-reaching process of economic integration—in the environmental and other domains—have been the subject of wide-ranging and highly intense public debate, evident both in street protests in major economic meetings (eg, at the WTO conference in Seattle, 1998) and in the popular media and scholarly journals. This chapter carefully assesses this conflict, decoding the social frictions underlying it, and exploring the impact of trade liberalisation on the prospects for sustainable development. The chapter explores these themes in one critical institutional domain: the WTO.

This chapter is organised into eight sections. The next section provides a brief introduction to the multiple legal systems and transnational institutions that

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[1] R Went, 'Economic Globalization Plus Cosmopolitanism?' (2004) 11 *Review of International Political Economics* 337.

[2] The literature on trade law and other international economic institutions, and their social and environmental effects, is vast. See especially G Teubner (ed), *Global Law Without a State* (Dartmouth, 1997); BR Copeland and MS Taylor, *Trade and the Environment: Theory and Evidence* (Princeton, UP, 2003); D Esty, 'Bridging the Trade–Environment Divide' (2001) 15(3) *Journal of Economics Perspectives* 113; B Hoekman and M Kostecki, *The Political Economy of the World Trading System: The WTO and Beyond* (Oxford UP, 2001); R Howse and M Trebilcock, 'The Fair Trade—Free Trade Debate: Trade, Labor, and the Environment' (1996) 16 *International Review of Law & Economics* 61; J Jackson, *The World Trading System: Law and Policy of International Economic Relations* (MIT Press, 1997); A Quereshi, *International Economic Law* (Sweet and Maxwell, 1999).

together constitute the field of 'international trade law'—itself part of the broader realm of international economic law. The process of global economic integration is driven and facilitated by this complex legal network; the tendency of some of the observers of this process to associate it solely with the WTO is, I will argue, wrong. Section C explores the various frictions which together constitute the 'trade and environment' conflict. It also discusses the place of the concept of sustainable development within this debate. Section D starts with a general question: what role can the law play in resolving this conflict? It focuses on the potential synergies between the trade and environment realms, and on the possible role of law in enabling their actual realisation. The section explains this idea, setting it against the various frictions discussed in the previous section. The next four sections focus on a concrete institution—the WTO. They analyse the legal manifestations of this conflict within the boundaries of the WTO, exploring how the frictions and synergies between the trade and environment realms are reflected in the law of the WTO (highlighting the role of the idea of sustainable development in the WTO jurisprudence). Sections F and G draw some general conclusions and make some tentative proposals for reform. The chapter concludes with a brief analysis of the Doha negotiations framework on the 'trade and environment' question.

## B. Global Economic Integration and Legal Pluralism

In thinking about the legal network underlying the process of global economic integration one needs, first, to make sense of this term. Following Rodrik, I will define this process as denoting a movement towards a world in which markets for goods, services and factors of production are perfectly integrated.[3] In this chapter I am focusing prominently on the market for goods. The move towards a more integrated global economy can be attributed to two main processes, which can be traced back to the twentieth century.[4] First, far-reaching technological progress, especially in the fields of transportation and telecommunication, has helped to create an integrated global economy. The second factor has been the creation of multiple legal systems that support and facilitate transnational trade.

Understanding the critical role of law in the facilitation of global trade requires us to take a step back and to consider the costs that are imposed on cross-border interactions by legal and political discontinuities. These costs or trade barriers include classic trade-related measures, such as tariffs, quotas and export and

[3] D Rodrik, 'How Far Will International Economic Integration Go?' (2000) 14 *Journal of Economic Perspectives* 177, 178.

[4] Despite the far-reaching integrative processes, which have taken place over the last decade, the world is still far from being a fully integrated economy. See the discussion in Went, above n 1, and Rodrik, above n 3.

import licensing requirements, indirect impediments such as dissimilar technical, health and environmental standards (what are called in the trade-law jargon 'non-tariff barriers'), and the strategic use of distorting economic policies (eg, subsidies and anti-dumping measures). But there is another sense in which the discontinuity between national legal systems creates impediments to trade. The fact that cross-border transactions may be subject to disparate national rules and competing jurisdictions subjects transnational deals to extra risks, relating primarily to problems of conflicting doctrinal constructions (eg, in private law and corporate law) and questions of contract enforcement.

Over the last 50 years the global society has developed multiple legal frameworks in an effort to reduce the transaction costs associated with transnational commerce.[5] These systems have varied structures. Some of them such as the WTO and regional trade agreements, are treaty-based, while some have private origins (such as the systems of technical standardisation and standard business contracts). The General Agreement on Tariffs and Trade (GATT),[6] established in 1947, and replaced by the WTO in 1995,[7] occupies a central place in this network. The GATT's main contribution was a gradual reduction of tariffs and quotas, prominently on industrial products.[8] The WTO extended the GATT agenda in several respects. First, its rule-book does not cover just trade in goods, but deals with other fields such as trade in services and intellectual property rights. Second, the WTO targets, through several, specifically tailored instruments,[9] non-tariffs barriers such as food standards and health and safety standards.

However, despite its undeniable importance, the WTO is only one element of the complex 'international trade law' network. Some of these systems deal with issues that are also dealt with by the WTO. Among these are regional trade treaties, such as the European Union (EU) and Mercusor of South America and multiple bilateral trade agreements, generating together a complex labyrinth of trade rules.[10]

[5] The examples below refer prominently to trade law. There are further examples relating to other aspects of global economic integration, such as the various systems of law that facilitate the work of the global financial system: see further Quereshi, above n 2; Jackson, above n 2.

[6] (1947) 755 UNTS 194. The text of the GATT's original agreement, as amended through the years, was incorporated into the WTO framework through the GATT 1994.

[7] Agreement Establishing the World Trade Organization, 15 April 1994, Uruguay Round of Multilateral Trade Negotiations: Legal Instruments Embodying the Results of the Uruguay Round (GATT Secretariat 1994), in World Trade Organisation, *The Legal Texts—The Results of the Uruguay Round of Multilateral Trade Negotiations* (Cambridge UK, 1999).

[8] Consecutive GATT negotiating rounds reduced the average tariff rate on industrial goods from 40% in 1945 to near 6% in 1978. The Uruguay Round, which led to the establishment of the WTO, reduced average industrial tariffs to 4%. See, USDA, 'Agriculture in the WTO,' *International Agriculture and Trade Reports* (WRS-98-4, Dec 1998) 6.

[9] Prominently, the Agreement on the Application of Sanitary and Phytosanitary Measures, Marrakesh, 15 Apr 1994 and the Agreement on Technical Barriers to Trade, Marrakesh, 15 Apr 1994, both in World Trade Organisation above n 7.

[10] See WTO, *Regionalism and the World Trading System* (WTO, 1995); World Bank, *Trade Blocs* (Oxford UP, 2000).

The issue of technical standards is governed by various global organisations such as the International Organization for Standardisation and the Codex Alimentarius Commission, with varying levels of state involvement.[11] Other systems deal with the problem of disparate rule structures and contract enforcement. Thus, various systems provide universal normative frameworks, governing various aspects of cross-border transactions. Paradigmatic examples are the International Chamber of Commerce, 'Uniform Customs and Practices for Documentary Credits—1994' ('UCP 500'), which governs the field of international letters of credit,[12] and FIDIC's standard construction contracts.[13] The Lex Mercatoria or Law Merchant is another source of universal rules governing transnational commerce. Other legal instruments target the problem of jurisdictional discontinuity. The two main instruments in this context are the New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards, 1958,[14] and the recent Hague Convention on Choice of Court Agreements of 2005.[15] Both of these treaties seek to reduce the risks of opportunistic behaviour in transnational deals by providing mechanisms for global enforcement. This is achieved through the establishment of rules for the recognition and enforcement of arbitral awards and foreign court judgments (both treaties focus, primarily, on business-to-business agreements).

## C. Frictions Between International Trade and Environmental Protection

The trade and environment conflict is realised, simultaneously, in multiple legal domains. Studying the legal aspect of this conflict requires, therefore, a multi-facet examination, exploring how it is mirrored and reconstructed in any of the distinct sub-domains of the global trade law network. This chapter focuses only on the WTO, thus providing only a partial picture of the legal realisation of this conflict.[16] However, the ideas developed here can be applied to other institutional domains, such as the North American Free Trade Agreement (NAFTA).[17] To facilitate the legal analysis of the trade–environment dilemma, we need to look first at the underlying nature of this conflict.

[11] See further, Wood, this vol.

[12] Most of the standard forms international letters of credit ('LC') issued by banks include a provision that the LC is governed by the UCP.

[13] FIDIC stands for the International Federation of Consulting Engineers. It produces several standard contracts for big construction projects.

[14] 330 UNTS 38.

[15] Available at www.hcch.net/index_en.php?act=conventions.text&cid=98%20.

[16] I explored the manifestations and policy consequences of the trade–environment conflict in other institutional domains elsewhere: O Perez, *Ecological Sensitivity and Global Legal Pluralism: Rethinking the Trade and Environment Conflict* (Hart Publishing, 2004).

[17] (1993) 32 ILM 289.

## 1. The Adverse Effects of Global Economic Integration: An Economic Perspective

Over the last decade or longer environmentalists and 'anti-globalisers' have criticised the move toward a more open global economy (led by the GATT and the WTO), arguing that this process has adverse ecological impacts which are being ignored by the global business community, and are undermining the prospects for sustainable development.[18] One of the more common responses to this criticism was the claim that trade liberalisation, by promoting global efficiency, is in effect beneficial to the environment. Thus a WTO report from 1999 argued that free trade can both help to generate the resources developing countries 'need to protect the environment and work towards sustainable development', and contribute to 'improved allocation and more efficient use of resources'.[19] This argument pictures the trade and environment conflict as an imaginary construct. I will argue that this characterisation of the trade–environment conflict is too simplistic, and that the friction between trade and environmental concerns represents a real and systemic dilemma, which cannot be ignored and requires creative institutional response. In support of this argument I will briefly review the recent economic research that considered the trade–environment question.[20] While this research does not provide a conclusive answer to the trade–environment dilemma, it points out, first, that this dilemma constitutes a real theoretical possibility. Second, while the results of the empirical studies are mixed, they nonetheless provide sufficient grounds for concern with respect to the environmental impacts of trade liberalisation (especially if one interprets these studies using a precautionary perspective).

The trade–environment problem can be examined through several perspectives. The first perspective looks at the way in which international trade influences the *domestic environment* of the trading parties; the second examines the way in which trade affects *transboundary ecological problems.*[21] The third perspective

[18] See Friends of the Earth (FoE), "Fools Gold . . ."—the General Agreement on Tariffs and Trade and the Threat of Unsustainable Development' (FoE, 1992); WWF's Trade and Investment Programme website, at: www.panda.org/about_wwf/what_we_do/policy/ trade_and_investment, and H Daly, 'From Adjustment to Sustainable Development: The Obstacle of Free Trade' (1992) 15 *Loyola LA International & Comparative LJ* 33.

[19] WTO, *Trade and the Environment in the GATT/WTO, Background Note by the WTO Secretariat for the High Level Symposium on Trade and Environment* (WTO, 15 March 1999) 7.

[20] For more detailed surveys see: SB Brunnermeier and A Levinson, 'Examining the Evidence on Environmental Regulations and Industry Location' (2004) 13 *Journal of Environmental & Development* 6; BR Copeland and MS Taylor, 'Trade, Growth, and the Environment' (2004) 42 *Journal of Economic* Literature 7; DI Stern, 'The Rise and Fall of the Environmental Kuznets Curve' (2004) 32 *World Development* 1419.

[21] Transboundary pollution can arise in two ways. First, it may represent the incidental result of industrial processes. The emissions of country A's power plants may affect—through acid rain for example—people in country B. Secondly, transboundary pollution can be the result of trade in hazardous products.

examines the link between transnational trade and *'global ecological resources'* (eg, the ozone layer, fish stocks, etc). These issues underpin many of the debates about the achievement of sustainable development.

The economic literature has tackled the question of the environmental impact of trade liberalisation by distinguishing between four causal effects.[22] The *scale* effect measures the ecological impact of the expansion in the scale of production, which is likely to occur with the transition to an open trading regime. *Ceteris paribus*, the scale effect is likely to prove damaging to the environment: if production and/or consumption of a product is polluting, an expansion in the global output of that product is likely to lead to greater environmental degradation. The *composition* effect examines the change in the composition of industry, which is triggered by the process of trade liberalisation, as countries *specialise* in sectors in which they enjoy a comparative advantage. Whether the ecological impact of this change is positive or negative depends on the nature of the specialisation (ie, whether it is geared toward more or less pollution-intensive sectors).

The *technological* effect examines how the technological changes, associated with the process of trade liberalisation, could influence the environment. It is usually assumed that these technological changes should, overall, be beneficial to the environment, whether through the introduction of cleaner production methods or through improved waste treatment methods. This hypothesis is supported by two different arguments. First, open economies should have greater access to foreign 'environmental' technologies. Secondly, the transition to an open market regime should lead to an increase in individual income, which, in turn, should generate a greater demand for 'environmental goods', such as clean air and uncontaminated water (generating steeper demand for 'clean technology'). Finally, the *regulatory effect* examines the way in which trade liberalisation affects local environmental standards. In this context one can distinguish between two conflicting trends. On the one hand, the anticipated increase in average income, as well as more extensive exposure to foreign regulatory methods, is likely to lead to increase in the demand for environmental control, pushing the government to adopt stricter environmental regulations. On the other hand, the 'race to the bottom' hypothesis suggests that free trade may induce a process by which countries will lower their environmental standards in order to gain competitive advantage.[23]

[22] Grossman and Krueger were probably the first to use this analytical framework in their study of the environmental impact of NAFTA: GM Grossman and AB Krueger, 'Environmental Impacts of a North American Free Trade Agreement' in PM Garber (ed), *The Mexico–U.S. Free Trade Agreement* (MIT Press, 1993) 14–15.

[23] See Daly above n 18, 36–7. Some of the economic literature treats the regulatory and technological effects as one effect. While this joint treatment makes some sense, because both effects depend to some extent on income, it may obscure the fact that pro-environmental technological change does not depend just on income-driven regulatory change, but also on non-regulatory processes.

Since each of these different effects can generate distinct environmental impacts all of them must be taken into account simultaneously. Resolving the trade–environment dilemma requires, then, an empirical evaluation, which would be sensitive to the way in which these varied effects interact in the unique context of a country/region and the ecological variable in question. So what does the economic research tell us? The picture generated by these studies is mixed. Cole and others examined the environmental impact of the Uruguay Round in terms of five air pollutants for a number countries/regions.[24] They concluded that 'trade liberalization may result in some degree of environmental damage, particularly in the developing regions, as a result of increased emissions of local air pollutants and perhaps globally for carbon dioxide emissions'.[25] Their findings regarding carbon emissions were confirmed in subsequent studies.[26]

However, other writers reached different conclusions (albeit examining the impact of trade on other types of pollution). Antweiler and others examined the impact of a policy of 'openness' on *sulphur dioxide concentrations*, relying on data from the Global Environment Monitoring Project.[27] Their estimates of scale and technique elasticities indicate that 'if openness to international markets raises both output and income by 1%, pollution concentrations fall by approximately 1%'.[28] Freer trade, according to Antweiler, is good for the environment.[29]

Several other studies examined the effect of trade liberalisation on specific countries, particularly in the developing regions. Overall, their findings indicate that a transition toward a more open global trading regime causes some environmental damage in the developing world.[30] Because the regulatory establishment in developing countries is generally weaker and the local industry is (on average) more pollution intensive, the economic expansion that follows the move toward a

[24] MA Cole *et al*, 'Trade Liberalisation and the Environment: the Case of the Uruguay Round' (1998) 21 *The World Economy* 337.

[25] *Ibid*, 347.

[26] See L Adkins and R Garbaccio, 'The Effects of the Proposed FTAA on Global Carbon Emissions: A General Equilibrium, Analysis' *Second World Congress of Environmental and Resource Economics* (Monterey, June 2002), available at http://weber.ucsd.edu/~carsonvs/papers/853.PDF; S Managi, 'Trade Liberalization and the Environment: Carbon Dioxide for 1960–1999' (2004) 17 *Economic Bulletin* 1.

[27] W Antweiler *et al*, *Is Free Trade Good For the Environment* (National Bureau of Economic Research August 1998).

[28] *Ibid*, 41.

[29] Ferrantino and Linkins reach similar conclusions with respect to the impact of trade liberalization on global toxic industrial emissions: MJ Ferrantinoand and LA Linkins, 'The Effect of Global Trade Liberalization on Toxic Emissions in Industry' (1999) 135(1) *Review of World Economics* 128.

[30] These findings should not be interpreted as giving support to the 'pollution haven' hypothesis. They reflect mostly changes in the local economy, such as changes in the make-up of the local industry, and increasing domestic demand for various pollution-intensive goods, and not the results of flight of polluting industries into developing countries. The reason there has not been such flight is probably due to the fact that those industries with the largest pollution abatement costs, and hence the largest motivation to relocate, also happen to be the least geographically mobile: J Ederington *et al*, *Footloose and Pollution Free* (National Bureau of Economic Research 2003) 13–14. See further, Copeland and Taylor, above n 20, 35, 48.

more open trading regime is more likely to increase the level of pollution.[31] Further, trade liberalisation may also have unexpected impacts. Thus, for example, a study of the environmental impacts of NAFTA showed how an increase in American exports of maize into Mexico had adverse ecological effects in both markets.[32] In the US the new export opportunities have provided additional support to unsustainable, mass-production, agricultural practices. In Mexico the liberalisation of the maize market led to a loss of bio-diversity both through out-migration of farmers with traditional knowledge and through the displacement of local corn varieties with other crops or with commercial hybrid seeds.[33]

The theoretical and empirical insights included in this expanding body of literature provide sufficient grounds for concern regarding the environmental effects of trade liberalisation and its consequences for sustainable development. This body of research demonstrates that there is a solid theoretical and empirical basis for the green critique.[34] If trade liberalisation can indeed be harmful to the environment there is good reason to spend resources in devising proper policy responses that could counteract it.

## 2. Discursive Cleavages

But it is wrong to view the trade–environment conflict just through the prism of the adverse tangible effects of trade-induced economic growth. It is also a crossroads of complex and conflicting discursive structures. Like the broader sustainable development discourse, the trade–environment debate is not governed by a single discursive system (with common and well-defined criteria for reaching understanding), but is, rather, the playground of multiple discourses and ideologies. Making the differences between these conflicting discourses more transparent is a necessary step in the attempt to alleviate the social frictions associated with the trade and environment conflict.

One way by which the rich discursive horizon which underlies the trade–environment conversation can be exposed is by looking at it through the lens of a distinct

[31] See D Wheeler, 'Beyond Pollution Havens' (2002) 2 *Global Environmental Politics* 1, 6; S Dessus and M Bussolo, 'Is There a Trade-off Between Trade Liberalization and Pollution Abatement: A Computable General Equilibrium Assessment Applied to Costa Rica' (1998) 20 *Journal of Policy Modelling* 11; J Beghin *et al*, 'Trade Integration, Environmental Degradation, and Public Health in Chile: Assessing the Linkages' (2002) 7 *Environment & Development Economics* 45.

[32] A Nadal and TA Wise, *The Environmental Costs of Agricultural Trade Liberalization: Mexico–U.S Maize Trade Under NAFTA* (Working Group on Development and Environment in the Americas, 2004).

[33] *Ibid*, 20.

[34] The current literature is limited in two important ways. First, it focuses on a limited number of pollutants. Second, it does not provide, in most cases, a complete cost-benefit analysis of the trade–environment problem (comparing the social costs of trade-induced environmental degradation, with the social benefits of free trade). These limitations reflect both the deep scarcity of environmental data and the difficulties in translating environmental data into monetary terms. Drawing policy conclusions from the available studies is therefore somewhat speculative, reflecting the intuitions and world-view of the observer.

*problematic*: the relationship between *society* and *nature*. The traditional construction of the *nature/society* duality insisted that nature could be of value—whether intrinsic or instrumental—only to the extent that it is of value to humans.[35] One of the major achievements of the modern 'environmental' movement has been to call the validity of this traditional conceptualisation into question. However, as the discussion below demonstrates, this common challenge has not produced a singular understanding of the nature/society duality (a common *environmental rationality*). Instead, it has created an assemblage of different visions, which produces competing interpretations of the trade–environment conflict.

Consider, first, the view of 'deep ecology'. The deep ecologists argue that the *nature/society* duality should be understood in terms of a new *transcendent, non-anthropocentric ethics*. The answer to the current ecological crisis lies, according to this view, in a different conception of nature, which gives nature a 'social role beyond being a means for human well-being'.[36] This trend of thought sees the major problem of modern society in the idea of 'domination' of nature, which informs all our political and economic institutions. In practical terms, the deep ecologists call for a complete withdrawal from the industrial system and the adoption of a pre-capitalist way of life.[37] For them, 'social asceticism' constitutes the only route by which the belief in the intrinsic value of nature can be given fulleffect.

Other ecological and moral thinkers reject the foregoing challenge to the long-established Kantian, anthropocentric morality. What we need, they argue, is simply to take more seriously the idea that what is 'good-for-man' depends on what is good for 'nature'. The ecological challenge is constructed, therefore, not as a demand for alternative 'ethics', but as a locus of *pragmatic dilemmas*: how to utilise (or exploit) nature more responsibly. This pragmatic vision provides the basis for a range of interpretations. Some (economic conservatives) take this view to mean that there is no need for a fundamental change in the basic *ethos* of modern society, with its strong reliance on technology and free-market structures, and its endless appetite for growth. In the eyes of neo-classical economics and conservative mercantilists the trade–environment conflict is a 'false dilemma': trade liberalisation cannot be harmful to the environment because it leads to more efficient use of resources and helps in generating the resources needed to protect the environment.[38] Other economic observers take a more sceptical view of the power of the 'market', and believe in the need to develop a more 'enlightened', or ecologically-sensitive, economic thought, which will be able to deal with the various maladies (eg, market failures, externalities) of the current economic system.[39]

[35] This point of view is the heritage of the Enlightenment tradition; see J Whitebook, 'The Problem of Nature in Habermas' (1979) 40 *Telos* 41.

[36] K Eder, *The Social Construction of Nature: A Sociology of Ecological Enlightenment* (Sage, 1996) 207.

[37] See eg A Naess, 'The Shallow and the Deep, Long-Range Ecology Movement: A Summary' (1983) 16 *Inquiry* 95.

[38] See WTO, above n 19, 7.

[39] See eg the various contributions in JM van den Bergh (ed), *Handbook of Environmental and Resource Economics* (Edward Elgar, 1999).

Yet, for others, the current ecological crisis is, in fact, a reflection of a deeper *political crisis*: our multiple environmental problems are seen as the inevitable result of, on the one hand, the failure of the political institutions of the modern democratic state to create mechanisms for fair deliberation, which could give voice to the *different constituents* of the polity (from marginal human communities to non-humans[40]). From this perspective ('eco-politics') the solution to the trade–environment conflict lies in the creation of a new political order.

These various visions of the nature/society dichotomy provide a different portrait of the trade–environment conflict. Thus, for those who accept the Kantian framework, the debate focuses on the *value* of free trade and the institutional framework that supports it *for humanity*. Trade liberalisation and the various institutions supporting it can be criticised only if it is shown that they are not sufficiently attentive to the environmental impact of international commerce, to the extent that it also has adverse impacts on the lives of human beings.

The idea of sustainable development, as it was interpreted in environmental economics, offers a model for balancing between the benefits of trade liberalisation and its adverse ecological impacts.[41] For non-Kantian observers such as deep ecologists and eco-socialists, the economic world view, and its vision of sustainability, does not form an acceptable solution to the trade–environment conflict because it leaves *unchallenged* the *basic paradigms* and *social structures* that dominate the contemporary society. Accepting this 'starting point' will bar any discussion of the radical reforms that these non-anthropocentric viewpoints call for.[42] For these non-Kantian observers, the trade–environment conversation is seen as an opening to a broader debate about the structure of human society and its relationship with the natural (non-human) environment.

## 3. The Role of International Trade Law

What is the place of law in this disputed discursive landscape? From the perspective of deep ecology, international trade law may be useful only to the extent that it can contribute to its own destruction, opening the door for a completely different governance structure—a new global political order. Merely introducing

[40] See eg B Latour, 'To Modernise or to Ecologise? That is the Question' in N Castree and B Willems-Braun (eds), *Remaking Reality: Nature at the Millenium* (Routledge, 1998); M Gadgil and R Guha, *Ecology and Equity: the Use and Abuse of Nature in Contemporary India* (Penguin, 1995) 118–20.

[41] Modern environmental economics defines a sustainable path as one that is both efficient and non-decreasing in utility over time: see RL Revesz and RN Stavins, *Environmental Law and Public Policy* (Resources for the Future May 2004) 6.

[42] For a different vision of sustainability, closer to the view of deep ecology, see: Daly, above n 18. For Daly sustainable development means 'living within environmental constraints of absorptive and regenerative capacities': *ibid*, 41. This understanding of sustainability is based on the idea of keeping the eco-system carrying capacity—rather than utility—intact. See, further H Daly 'Sustainable Development: Definitions, Principles, Policies' Invited Address (World Bank, 30 Apr 2002) 1–2, available at http://info.worldbank.org/etools/VoD/PresentationView.asp? PID=5530/EID=269.

changes to the current system (eg, 'greening' the WTO) will not suffice, because this system is structurally 'corrupt'. However, from the perspective of both eco-politics and environmental economics, law presents an interesting playground. Law has long-lasting expertise in representing and giving life to non-speaking objects—from firms (corporate law) to the dead (inheritance law). As such, it can provide a forum in which nature can be given voice, and actively participate in a dialogue with humans. Law, in other words, can create the institutional setting necessary for multi-party conversation, leading to actual deals. The policy challenge lies in designing institutional mechanisms that could realise this potential. From the perspective of environmental economics, law offers a mechanism for transforming its models and guidelines for balancing trade and environment interests into normative prescriptions.

A further unique feature of law is its capacity to resolve disputes between competing world-views without making a clear ideological commitment. This capacity is valuable both because of the deep cleavages between the distinct schools of thought associated with the trade–environment conflict, and because neither of them provides a definite algorithm for resolving this conflict. One of the major mechanisms through which the law performs this 'neutral' arbitration function is by using fluid concepts, which can acquire different meanings depending on context, timing and external pressures.[43] In our context, it is the concept of sustainable development—with its deep vagueness and malleability—which provides the law with the discursive freedom necessary to develop these transient bridges. International trade law can build, in that context, on the ways in which this idea is invoked in other domains.[44]

My foregoing observations were driven by an interest in the possible contribution of international trade law to the resolution of the trade–environment conflict, considered from different perspectives. But in analysing the ecological sensitivity of international trade law one can also adopt a more detached perspective, focusing not on how different systems of trade/economic law can be utilised to resolve this conflict, but on decoding the institutional and historical idiosyncrasies that determine the approach of these systems to ecological concerns.

## D. From Friction to Synergy: Can Trade Institutions Promote Environmental Cooperation?

The idea of regime-linkage, which builds on insights from modern environmental and institutional economics, provides an interesting response to the

[43] See O Perez, 'The Institutionalization of Inconsistency: From Fluid Concepts to Random Walk' in O Perez and G Teubner (eds), *Paradoxes and Inconsistencies in Law* (Hart Publishing, 2006).

[44] See eg Rio Declaration on Environment and Development 1992, 31 ILM 874; UN Conference on Environment and Development (UNCED), *Agenda 21: Earth's Action Plan* (UNCED, 1992).

trade–environment conflict. Law has an important role to play in the process of putting this idea into effect. What is interesting in the idea of regime-linkage is that it not only provides a mechanism for comparing between trade and environmental interests, by acknowledging the economic value of global ecological assets (through the use of economic valuation techniques), but also is able to translate this insight into concrete institutional proposals. However, as argued below, this idea also suffers from certain blind spots.

The argument for linkage is based on two key insights regarding the difficulties of resolving transnational environmental dilemmas.[45] First, it is difficult to provide collective solutions to transnational ecological dilemmas because of their inherent *public-good* characteristic. In negotiating solutions to problems such as climate change some countries may prefer to free-ride. That is, countries may prefer to profit from the public good—stable climate—without paying the associated costs, relying instead on the joint efforts of other countries. This is possible because the ecological benefits associated with these agreements are not excludable.[46] This feature of environmental negotiations goes a long way toward explaining the weakness of transnational environmental institutions. In a world without a central authority free-riding cannot be deterred through hierarchical control. A further difficulty concerns the asymmetries among countries, with respect to both their moral preferences regarding ecological and economic issues and the way in which their economies may be affected by different ecological problems (and the associated policy responses).

Trade law and trade institutions can play a positive role in resolving these difficulties through the mechanism of linkage. There are three major paths through which linkage can assist in resolving part of the aforementioned difficulties. First, linkage can resolve the problem of reaching an international agreement in a world without a central authority by allowing countries to use the surplus enforcement power that may be available in one policy domain to discipline co-operation in other domains.[47] Linkage provides a method for aggregating available enforcement power, allowing for its more efficient allocation to additional policy domains. Second, issue linkage may be used to resolve the problem of free-riding also by linking the negotiations on a regional or global public good to negotiations on

[45] The idea of linkage has less to say about the possible role of trade measures in resolving purely local problems. For a discussion of that issue see Parts E and F and Perez, above n 16, chs 3 and 4.

[46] I Kaul *et al*, 'Defining Global Public Goods' in I Kaul *et al* (eds), *Global Public Goods* (Oxford UP, 1999) 2.

[47] I use the idea of surplus enforcement power in two ways. First, it can reflect disparities in institutional capacities (eg, denoting the extra powers of the WTO dispute settlement system). Second, it can also be used in a game-theoretic way, which considers this notion in the context of infinitely repeated Prisoner's Dilemma interaction. Surplus enforcement power is defined in terms of disparities between domains with respect to the difference between the *expected losses* from punishment (in reply to defection) and the *expected gains* from one-off defection (free-riding), as they occur in each domain. See generally G Spagnolo, 'Issue Linkage, Delegation, and International Policy Cooperation', CEPR Working Paper, 2001.

another issue which has the characteristic of a club good (that is a good whose benefits are provided only to club members, and thus cannot be reaped by free-riders). Paradigmatic examples of international clubs are the European Union, NAFTA and the WTO. The intuition behind this proposal is that the incentives to free-ride on the non-excludable benefits of the global public good can be offset by the incentives to appropriate the excludable benefits of the club good.[48]

Finally, issue linkage can resolve the problem of asymmetric preferences and varied geo-economic conditions, by allowing countries to link together issues in which they have dissimilar interests. Institutional linkage operates in this context as an indirect form of side payment. If co-operation on an individual issue benefits country A but hurts B (or is simply not of interest to B), then linkage allows country A to compensate B by offering co-operation on a different issue that benefits B. The mechanism of linkage uses the mechanism of free exchange to bridge between different world-views regarding the social and moral value of ecological resources. The use of linkage as a form of side payment when there are asymmetric benefits across countries is especially important in the context of the relations between Northern and Southern countries.[49]

The idea of linkage, and the various institutional mechanisms associated with it, provides a possible road map for bridging between the trade and environmental domains. However, setting the linkage modules explored above against the discursive frictions that were discussed in the previous section raises several questions, which must be considered. One difficulty emerges from the fact that all the forms of linkage explored above depend on the idea that nature, or environmental damage, can be commodified or monetised. Thus, for example, the idea that linkage could facilitate barter between trade concessions and environmental commitments is based on the assumption that the value of these exchanged commitments can be calculated and compared using common monetary values.

The assumption that a monetary value can be assigned to all aspects of the natural environment is problematic in several senses.[50] First, there is a tension between this assumption and the visions of deep ecology and political ecology. While this framework gives nature a voice in the trade universe, this voice is filtered by economic calculations, which are embedded in an anthropocentric world-view. The radical thesis of these two ecological world-views—that nature should be viewed

[48] For a study of this aspect of the linkage question see B Buchner *et al*, 'Back to Kyoto? Us Participation and the Linkage between R&D and Climate Cooperation', CESifo Working Paper Series No 688, 2002.

[49] This possible role of treaty-linkage is explored, eg, by L Abrego *et al*, 'Trade and Environment: Bargaining Outcomes from Linked Negotiations' (2001) 9 *Review of International Economics* 414. See also H Sigman, 'Does Trade Promote Environmental Coordination? Pollution in International Rivers' (2004) 3 *Contributions to Economic Analysis & Policy Sciences* 1.

[50] Although there has been significant progress on the question of valuing nature and translating environmental damage into monetary terms. See eg SC Farber *et al*, 'Economic and Ecological Concepts for Valuing Ecosystem Services' (2002) 41 *Ecological Economics* 375.

as an equal member of the global moral and political community—is therefore left unchallenged. But the idea of linkage is also problematic from the perspective of classical mercantilism because the kind of exchange it calls for—between tangible trade concessions and ecological commitments whose economic value is uncertain and even speculative—is seen as artificial and problematic. A further problem concerns the possibility that the institutional mechanisms responsible for implementing the idea of linkage will be captured by narrow political forces, and be used to promote particularistic (rather than collective) interests.

The idea that there could be synergic linkage between trade and sustainable development can be found in several international instruments. Thus, for example, the 1992 Rio Declaration on Environment and Development urges states to 'promote a supportive and international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation'.[51] Similarly, Agenda 21, adopted at the 1992 Earth Summit, states that the 'international community should provide a supportive international climate for achieving environment and development goals' by, among other things, 'promoting sustainable development through trade liberalization' and 'making trade and environment mutually supportive'.[52] In the same spirit, when the GATT was amended in 1994 and the WTO established, sustainable development was incorporated into the WTO's objectives.[53] However, none of these instruments offers a detailed institutional plan for realising the idea of linkage, nor do they offer a satisfactory response to the foregoing concerns.

While the notion of linkage constitutes a compelling idea, implementing it requires deeper analysis of the various issues noted above. At this point it should be useful to turn our gaze to a concrete institutional setting. The following sections offer a detailed analysis of the response of the WTO legal system to the trade–environment challenge, exploring it in view of the frictions and synergies, outlined in the foregoing sections.

# E. The State of Play: The Approach of Wto Law to the Trade-Environment Conflict

## 1. Introduction

The WTO regime, involving about 150 member nations, actually comprises a number of discrete trade agreements dealing with trade in services, agricultural products, financial measures, intellectual property rights and much more. But a

[51] Above n 44, Principle 12
[52] *Ibid*, 2, section 2.3.
[53] Preamble, Agreement Establishing the World Trade Organization, 15 Apr 1994, above n 7.

number of fundamental principles and rules run throughout these agreements, evolving from the original GATT of 1947.[54] At the core of the GATT–WTO system are two non-discrimination principles: the most-favoured nation (MFN), established in Article I of the GATT, and the national treatment principle, established in Article III. Article I, the most favoured nation clause, requires WTO Members to grant to the products of other Members treatment no less favourable than that accorded to the products of any other country. The MFN principle extends to customs, duties and rules connected with importation and exportation. Article III, the National Treatment principle, stipulates that once goods have entered a market, they must be treated no less favourably than equivalent domestically produced goods (in terms, for example, of local taxes and rules regulating the selling and distribution of goods). Article XI addresses the elimination of quantitative restrictions introduced by countries on the importation or exportation of products. It prohibits such restrictions with the objective of encouraging countries to convert them into tariffs, a more transparent and less trade-distorting instrument.

The 'General Exceptions' provision of the GATT, Article XX, comprises various conditional exceptions to the GATT obligations, including Articles I, III and XI. Article XX's sub-sections (b) and (g) provide a framework for deliberating both *inward-oriented* and *extra-territorial* trade–environment conflicts. The relevant provisions state:

> Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:. . .
>
> (b) necessary to protect human, animal or plant life or health;
>
> . . .
>
> (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption"
>
> . . .

The burden of establishing that an Article XX exception applies is placed upon the party asserting it as a defence.

The WTO regime includes a system of compulsory binding dispute settlement.[55] Where disputes cannot be resolved by consultation and negotiation, they

[54] See generally Jackson, above n 2.

[55] WTO Understanding on Rules and Procedures Governing the Settlement of Disputes, 1994, in World Trade Organisation, above n 7.

are adjudicated upon by dispute settlement panels and appealed to an Appellate Body. In the event of a party's non-compliance with a panel or Appellate Body ruling, it can be subjected to sanctions in the form of compensation and suspension of trade concessions.[56]

The establishment of the WTO has changed the structure of the legal deliberation of trade–environment disputes because of the creation of a new regime, regulating the field of non-tariff barriers. The adoption of the Agreement on the Application of Sanitary and Phytosanitary Measures and the Agreement on Technical Barriers to Trade meant that most of the *inward oriented* cases, which under the GATT were considered under Article XX(b), are now considered through the prism of these two agreements.[57] These agreements raise new kinds of questions, mainly because they impose broader restrictions on the regulative capacities of WTO Members (by imposing new obligations such as risk assessment). Because of limits of space, this chapter considers only the jurisprudence of the GATT/WTO with respect to Article XX.[58]

Principally, two types of trade–environment conflicts arise within the WTO system. The first type involves environmentally motivated trade measures, which are *inward-oriented*; that is, governmental measures whose objective is the protection of a domestic ecological unit or the health and safety of the local population. The second type of conflict is characterised by an *extra-territorial* motivation. These conflicts are triggered by trade measures whose objective lies outside the territory of the regulating state; the target of such measures can be an ecological asset that is located within the borders of another state but has a global significance (eg, the Brazilian tropical forests), a common access resource (eg, the high seas) or a migratory species (eg, sea turtles). The term *'outward-oriented'* is used to describe this type of conflict.

These two types of disputes produce quite different legal dilemmas. The disputes involving inward-oriented measures raise the question of the freedom of WTO members to determine the environmental regime that will persist within their borders.[59] The key question in this context is to what extent the WTO limits this freedom. *'Outward-oriented'* disputes raise a different question: the freedom of WTO members to respond with trade measures to environmental policies of their trading partners, which they find problematic—even if these policies are otherwise consistent with WTO rules. These trade measures are usually triggered by a production externality, taking place outside the borders of the importing

[56] See M Bütler and H. Hauser, 'The WTO Dispute Settlement System: First Assessment from an Economic Perspective' (2000) 16 *Journal of Law Economics & Organization* 503.

[57] But not all cases. See eg *European Communities—Measures Affecting the Prohibition of Asbestos and Asbestos-Containing Products*, WT/DS135, 18 Sept 2000 (Appellate Body Report) (*'EC–Asbestos'*).

[58] For a discussion of the SPS and TBT Agreements, and their role in the trade-environment conflict, see Perez, above n 16, ch 4.

[59] Inward-oriented measures involve both *production standards* (eg, emission controls) and standards relating to *consumption* (eg, recycling laws or regulations controlling the sale and distribution of products).

country—eg, incidental killing of dolphins or production practices that endanger the ozone layer. The focus of these disputes, then, is on the adverse ecological aspects of the *production method* of the imported product.[60] The main question raised by these cases is the consistency of such indirect interference in the way in which foreign products are produced with the rules of the WTO (and previously the GATT). Since outward-oriented measures cannot influence directly the production processes which take place abroad; they are based on trade restrictions that influence local consumption choices.

The resolution of these disputes within the WTO can become more complex if the disputed trade measure is authorised by an external regime such as a Multilateral Environmental Agreements (MEA). An increasing number of MEAs use trade mechanisms to achieve their objectives.[61] In certain MEAs, such as the Basel Convention,[62] trade measures serve to discourage or prohibit the transfer from one nation to the other of hazardous waste. Like the Basel Convention, the Convention on International Trade in Endangered Species (CITES)[63] also sanctions the use of trade measures to achieve its objectives. The CITES aims to ensure that the international trade in specimens of species of wild fauna and flora does not threaten the conservation status of the species concerned. Thus, trade in certain species is prohibited or carefully regulated. Other MEAs use a variety of trade and economic measures to encourage states to become parties to the agreement. The Montreal Protocol[64] and the Kyoto Protocol,[65] dealing with ozone depleting chemicals and fossil fuels respectively, use trade measures in this way. The relationship between trade restrictions in MEAs and the rules of the WTO is still unresolved. It has been on the WTO negotiation agenda since the Fourth Ministerial Conference, held at Doha, Qatar, in 2001. This question is considered again in the sections below.

## 2. The Ground-breaking Decisions of the Appellate Body in the Shrimp Case

### *(a) Background and general observations*

The WTO–GATT trade and environment jurisprudence has a long history, stretching back to the early 1990s. Two early disputes—the US–Mexico *Tuna—Dolphin*

[60] Theoretically these disputes can also arise in the context of concerns over the adverse effects (still, strictly foreign) of the consumption or end-of-life treatment of certain products (eg, the possible global impact of the disposal of hazardous waste in the Amazonian forests).

[61] L Schalatek (ed), *Trade and Environment, the WTO, and MEAs: Facets of a Complex Relationship* (Heinrich Böll Foundation, 2001), available at www.boell.org/docs/WTO-MEA.pdf.

[62] Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention) 1988, 28 ILM 657.

[63] Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973, 993 UNTS 243.

[64] Protocol on Substances That Deplete the Ozone Layer 1987, 26 ILM 1550.

[65] Protocol to the Framework Convention on Climate Change 1997, (1998) 37 ILM 22.

dispute,[66] and the U.S–Thailand dispute regarding the *Importation of and Internal Taxes on Cigarettes*[67]—have become the symbol of the trade system's inattentiveness to environmental values. The *Tuna—Dolphin* dispute was triggered by a US programme, which sought to reduce the number of dolphins that were killed as an incidental result of fishing of yellowfin tuna using purse-seine nets (mainly in the Eastern Tropical Pacific Ocean). In order to convince other countries to adopt fishing techniques which were less harmful to dolphins the US government introduced a *ban* on the importation of fish caught with fishing technology that resulted in the incidental killing of dolphins. Two GATT panels which heard this case ruled that the US regulations were inconsistent with the rules of the GATT. The US measure being a direct import prohibition, was seen as inconsistent with Article XI(1) prohibition against quantitative restrictions. The panels also ruled that the US measure did not qualify for the protection of Article XX (for reasons clarified below).[68] This ruling was interpreted as a general prohibition on the introduction of trade measures targeting the process and production methods ('PPMs') of imported products.

The *Thai—Cigarettes* case focused on certain Thai measures that limited the ability of foreign cigarettes producers (mostly US companies) to penetrate the Thai tobacco market. The Thai authorities invoked Article XX(b), arguing that these measures had a positive public health impact, because of the contracting effect they had on the tobacco market (and on cigarette consumption). The Panel rejected this argument, ruling that the Thai measures were inconsistent with GATT's Article XI(1),[69] and did not qualify for the defence of Article XX. The Panel noted that while measures designed to reduce the consumption of cigarettes fell within the scope of Article XX(b), because smoking constituted a serious risk to human health, the Thai measures did not meet the 'necessity' condition of Article XX(b) and, as such, could not enjoy its protection. The Panel noted that the Thai authorities could have used alternative policy measures, such as labelling, disclosure requirements, restrictions on advertisement and taxes, which, in its view, were as efficient (in terms of Thailand public-health objectives) as the measures under dispute, and were not inconsistent with the GATT. Both rulings reflected deep insensitivity to the adverse ecological and social aspects of

[66] *United States—Restrictions On Imports of Tuna ('Tuna I')* (1991) 30 ILM 1594; and *United States—Restrictions On Imports of Tuna ('Tuna II')* (1994), 33 ILM 839.

[67] *Thailand—Restrictions on Importation of and Internal Taxes on Cigarettes* (*'Thai—Cigarettes'*), GATT Doc DS10/R - 37S/200, 7 Nov 1990.

[68] The Panels also rejected the US attempt to justify the measures under Art III, as legitimate border tax adjustment. For a more detailed discussion of the Tuna–Dolphin cases, see Perez, above n 16, 60–65.

[69] Para 67 of the Panel's decision.

trade liberalisation, and disregard of the synergies between the trade and environmental domains.[70]

The Appellate Body's two decisions in the *Shrimp—Turtles* dispute[71] have broken new ground, by breaking the mould of the GATT's mercantilist culture.[72] The *Shrimp* decisions offer a broader and more responsive reading of the WTO mandate, relying, among other things, on the inclusion of the concept of sustainable development in the WTO Agreement.[73] These decisions—which reflect a clear exercise of judicial autonomy—signal a stronger institutional willingness to incorporate ecological considerations into the legal universe of the WTO. However, this willingness remains bounded by the heritage of the GATT and is still facing substantial opposition both within the organisation and beyond.

The *Shrimp* dispute was triggered by an import ban that was introduced by the US authorities on the importation of shrimp which were harvested in a way that endangered the lives of sea turtles. The US regulations required exporting countries to adopt, as a condition for obtaining an export certificate, a conservatory programme including a requirement to use ecologically friendly fishing technology (ie, Turtle Excluder Devices or 'TEDs'), supported by credible enforcement system.[74] The Appellate Body concluded that the US import ban on shrimp was not consistent with GATT Article XI, being a quantitative restriction on trade, and could not be justified under Article XX.[75] The second *Shrimp* ruling was triggered by a complaint by Malaysia accusing the US of failing properly to implement the recommendations of the Appellate Body. This complaint was deliberated according to the

[70] Thus, the *Tuna* Panels did not recognise the difficulties of negotiating international environmental agreements, and the role that the GATT can play in overcoming them. The *Thai—Cigarettes* Panel down-played the health risks associated with the liberalisation of the cigarettes marker, demonstrating a too optimistic belief in the capacities of national regulatory bodies. Consequent studies showed that the market share of US cigarettes increased dramatically in countries that have opened their markets following US pressure, and, further, that *per capita* cigarette consumption was 10% higher than it would have been absent liberalisation; see FJ Chaloupka and A Laixuthai, *US Trade Policy and Cigarette Smoking in Asia* (National Bureau of Economic Research April 1996).

[71] *United States—Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/R, 12 May 1998 (Panel Report), WT/DS58/AB/R, 12 Oct 1998 (Appellate Body Report); *United States—Import Prohibition of Certain Shrimp and Shrimp Products—Recourse to Article 21.5 by Malaysia*, WT/DS58/RW, 15 June 2001 (Panel Report), WT/DS58/AB/RW, 22 Oct 2001 (Appellate Body Report), henceforth, the *first* and *second Shrimp* reports/rulings.

[72] With its obsession with market access and narrow understanding of welfare. See, further P Krugman, 'What Should Trade Negotiators Negotiate About?' (1997) 35 *Journal of Economics Literature* 113, 114; Perez, above n 16, 51–3.

[73] The preamble to the WTO Agreement states that the organisation of the trade relations between WTO Members should allow 'for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development'.

[74] 1996 Guidelines, 17344, 61 Fed Reg 17342, 19 Apr 1996. In order to simplify the presentation, some of the details of the US programme were omitted.

[75] First *Shrimp* Report, above n 71, paras 187–188.

procedure set out in Article 21(5) of the Dispute Resolution Understanding.[76] The complaint challenged the measures that were taken by the US to implement the Appellate Body decision, focusing, in particular, on the Revised Guidelines, which were issued by the US in July 1999.[77] The Appellate Body rejected the Malaysian complaint and upheld the Panel's finding that the US's revised regulatory framework was being applied in a manner that met the requirements of Article XX.[78]

In the first *Shrimp* ruling the Appellate Body reconstructed the normative hierarchy of the WTO by creating parity between the environmental exceptions included in Article XX and the substantive obligations of the GATT (eg, Articles I and III).[79] The Appellate Body rejected the Panel's attempt to reintroduce to the WTO legal system, through the interpretation of the introductory section of Article XX—the chapeau, a pro-trade preference (in the spirit of the *Tuna—Dolphin* decisions). The Panel ruled that measures (such as unilateral trade embargos) which undermine the WTO multilateral trading system must be regarded as not within the scope of measures permitted under the chapeau of Article XX,[80] a formulation similar to the one used by the *Tuna* Panels.[81] The Appellate Body disagreed. It noted that the interpretation of the chapeau should *not* be governed by the narrow goal of maintaining the multilateral trading system, emphasising the importance of the idea of sustainable development in that context.[82] The main goal of the chapeau, the Appellate Body stated, is to prevent the abuse of the exceptions of Article XX;[83] it is, in fact, 'one expression of the principle of *good faith*'.[84] The chapeau reflects the necessity to strike a balance between these competing rights.[85] The Appellate Body emphasised in this context that a failure to comply with one of the general obligations of the GATT cannot, in itself, prevent a Member from invoking Article XX successfully, because such interpretation would deprive Article XX of any practical meaning, denying the idea that Article XX environmental exceptions have an independent value.[86] The

[76] Under Art 21.5 a panel is called to review the measures taken to implement the Panels or Appellate Body rulings. Second *Shrimp* Report (Appellate Body), above n 71, at para 2.

[77] Revised Guidelines for the Implementation of Section 609 of Public Law 101–162 Relating to the Protection of Sea Turtles in Shrimp Trawl Fishing Operations (the 'Revised Guidelines'), US Department of State, 64 Federal Register no 130, 8 July 1999, Public Notice 3086, 36946.

[78] Second *Shrimp* Report, above n 71, paras 153–54.

[79] See also *United States—Standards for Reformulated and Conventional Gasoline*, WT/DS2/AB/R, 29 Apr 1996 (Appellate Body Report) ('Reformulated Gasoline'), 17–18.

[80] First *Shrimp* Report, above n 71, paras 7.44 and 7.49.

[81] See *United States—Restrictions On Imports of Tuna ('Tuna I')*, (1991) 30 ILM 159, para 5.27; *United States—Restrictions On Imports of Tuna ('Tuna II')*, (1994) 33 ILM 839, para 5.26, and First *Shrimp* Report, above n 71, paras 7.46.

[82] First *Shrimp* Report, above n 71, paras 116 and 155. The Appellate Body made a similar comment with respect to the interpretation of Art XX(g), at paras 129–31.

[83] *Ibid*, para 151.

[84] *Ibid*, para 158.

[85] *Ibid*, paras 156, 159.

[86] *Ibid*, para 150.

Appellate Body's general ruling was embedded in a new framework for interpreting Article XX, based on a two-tiered model.[87] According to this model, to be accorded the protection of Article XX a measure must not only come under one of the particular exceptions listed in Article XX; it must also satisfy the requirements imposed by the opening clause of Article XX—the chapeau.[88]

### *(b) Article XX(b) and XX(g)*

The Appellate Body accepted the US provisional claim under Article XX(g), finding that the US scheme satisfied Article XX(g)'s three conditions. The *first condition* requires that the measure in dispute shall target 'exhaustible natural resources'; sea turtles, the Appellate Body noted, meet this condition.[89] The *second element* of Article XX(g)—'relating to the conservation of exhaustible natural resources'—is a causal condition, focusing on the relationship between the disputed measure and the policy goal it purports to serve. The Appellate Body examined whether the US scheme is 'reasonably related to the ends', that is, to the goal of conserving sea turtles.[90] Despite the fact that the US measures sought to prevent the incidental take of sea turtles *indirectly*, through the imposition of an import ban the Appellate Body found that the US scheme satisfied this requirement. The Appellate Body found that the requirement to use TEDs by commercial shrimp trawling vessels was 'directly connected with the policy of conservation of sea turtles', relying on the experts' testimony regarding the efficacy of TEDs in protecting sea turtles.[91] The *third element* of Article XX(g), is an *'even-handedness'* requirement, according to which the disputed measure should be 'made effective in conjunction with restrictions on domestic production or consumption'. Since the requirement to use ecologically friendly fishing technology applied to US shrimp trawlers, as well as to foreign vessels, the Appellate Body decided that US measure satisfied this requirement.[92]

The *Shrimp* ruling did not discuss Article XX(b), which provides provisional protection to measures 'necessary to protect human, animal or plant life or health'. The core of this provision—the necessity condition—was interpreted in *EC—Asbestos* as requiring the defendant to demonstrate, first, that there is no alternative measure which it could reasonably be expected to employ and which is not inconsistent with other GATT provision, and, secondly, in those cases where a measure consistent with other GATT provisions is not reasonably available, that it has chosen, among the measures reasonably available to it, that which entails the least degree of inconsistency with other GATT provisions.[93] In *EC—Asbestos* the

[87] *Ibid*, para 118.
[88] See *Reformulated Gasoline* decision, above n 79, 22.
[89] First *Shrimp* Report, above n 71, paras 127–134.
[90] First *Shrimp* Report, above n 71, paras 141.
[91] *Ibid*, para 140.
[92] *Ibid*, paras 143, 145.
[93] *EC-Asbestos*, above n 57, para 171.

Appellate Body showed willingness to relax the causal standard of Article XX(b) by noting that, in evaluating the element of necessity, a panel can also take into consideration the importance of the common interests or values protected by the disputed trade measure, and that "the more vital or important [the] common interests or values pursued, the easier it would be to accept as 'necessary' measures designed to achieve those ends".[94] By creating a link between the 'pursued value' of the measure and the 'necessity' condition, this ruling extends the judicial discretion in making Article XX(b) causal determinations.

### *(c) The Interpretation of the Chapeau in the Shrimp Ruling*

After concluding that the US regulatory scheme satisfied the requirements of Article XX(g), the Appellate Body considered whether the US scheme, as it was applied in practice, met the requirements of the Article XX chapeau. The Appellate Body found that it did not. It noted, first, that while the US scheme permitted a degree of flexibility with respect to the determination of comparability between the exporting countries' policies and those of the US, this flexibility has been effectively eliminated. In implementing the 1996 Guidelines the US officials required the exporting countries to adopt essentially the same regulatory programme as that in force within the US, *disregarding* the possibility that different conditions may occur in those countries.[95] The Appellate Body further noted the 'failure of the United States to engage the appellees, as well as other Members exporting shrimp to the United States, in serious, across-the-board negotiations with the objective of concluding bilateral or multilateral agreements for the protection and conservation of sea turtles, before enforcing the import prohibition against the shrimp exports of those other Members'.[96] Finally, the Appellate Body noted that in applying its regulatory scheme the US has discriminated among various countries desiring certification.[97]

The US administration implemented the Appellate Body recommendations in new Guidelines which were issued in 1999, and by making further attempts to negotiate an international environmental agreement. A renewed attempt to challenge the US regulatory scheme was rejected by the Appellate Body in subsequent proceedings.

[94] *Ibid*, para 172.
[95] First *Shrimp* Report, above n 71, para 164.
[96] *Ibid*, para 166.
[97] The Appellate Body noted that 'far greater efforts to transfer that technology successfully were made to certain exporting countries—basically the fourteen wider Caribbean/western Atlantic countries—than to other exporting countries, including the appellees' (*ibid*, para 175).

## 2. Implications of the *Shrimp* Case for Extending the Linkage between the WTO and the Environmental Realm

The Appellate Body's innovative reading of Article XX reflects a deep recognition of the linkage between the trade and environmental domains, and a willingness to give this linkage a legal effect. In the second *Shrimp* ruling, the Appellate Body accepted as legitimate the imposition of an effective embargo by the US against certain shrimp producing countries (mainly from East Asia), as a mean to pressurise these countries to join a multilateral effort to promote the conservation of sea-turtles. By that, the Appellate Body has recognised the seminal role that trade measures can play in securing participation in and compliance with multilateral environmental agreements, acknowledging that the conclusion of multilateral environmental agreements may be thwarted by 'free-riding', and that the threat of trade sanctions may be necessary in order to deter such behaviour.

The Appellate Body laid down several conditions, which must be satisfied by a trade measure if it is to receive the protection of Article XX (which I call the *good faith protocol* of Article XX). The conditions consist of the following obligations: a requirement to *explore* the possibility of solving the environmental problem through a multilateral agreement rather than unilaterally; the measure in question should be applied in a transparent, flexible and even-handed manner—a *'due process' requirement*; any provision of technical assistance should be pursued on a *non-discriminatory basis*; and, finally, an obligation to consider the *incremental costs* that the environmental programme may generate, both for the domestic manufacturers and for the foreign exporters as a result of the measure.[98]

It is important to point out, however, the differences between the *Shrimp* ruling, and the economics-inspired models of linkage discussed above. The two forms of linkage which are relevant to our discussion involve, first, the utilisation of the greater enforcement capacities of one regime to facilitate co-operation in another regime and, second, conditioning the access to one regime, with 'club-good' features, with a requirement to contribute to the production of a public good that is the subject of another regime. The Appellate Body's decision is much more modest in what it authorises. It merely allows one country to suspend some of the trade concessions that it has previously negotiated with another country. Despite the narrow scope of the Appellate Body's decision, the rationale of its decision can be used to justify broader actions, which are closer in their structure to those envisaged in the theoretical literature.

To identify these possible extensions we need to understand the *ratio decidendi* of the *Shrimp* case. The *Shrimp* ruling dealt with a relatively narrow environmental

[98] The first three requirements are based on the decisions of the Appellate Body in the *Shrimp* case above n 71. The last obligation is based on the Appellate Body decision in the *Reformulated Gasoline* case, above n 79, at 28. For a more detailed exposition of this argument, see Perez, above n 16, 82.

dilemma—the conservation of an endangered migratory species,[99] and focused on the difficulties of forging a new Multilateral Environmental Agreement (MEA). It was triggered by a unilateral trade measure which was initiated by the US without formal legal backing from an international legal authority (eg, from an MEA).[100] One possible extension questions the applicability of the *Shrimp* ruling to cases involving *pure global public goods*, such as problems relating to the atmosphere. This extension seems to follow naturally from the case reasoning.[101] A second possible direction concerns extending the *Shrimp* ruling to a *group of countries acting together*. Such extension seems consistent with the logic of the decision (as long as these countries satisfy, collectively, the 'good-faith' protocol depicted above). This possible extension may be very important in real life, because, given the current asymmetries that characterise the global economy, pressurising big players such as the US or the EU to collaborate on some environmental cause, can happen, if at all, only through the concerted action of several countries.

A further question involves the extension of the *Shrimp* ruling from the *negotiation* phase to the *post-contractual* phase. While the free-riding problematic is most visible at the *pre-contractual* phase, similar difficulties can arise after the conclusion of an MEA, both with respect to non-signatories that free-ride on the efforts of contributing parties, and with respect to members that fail to comply with the provisions of the MEA. This scenario raises the question of the legality of a trade measure that was initiated in order to force non-signatories to join the agreement or in order to force a non-complying party to fulfil its commitments. Such measures may be authorised by the MEA or reflect a private initiative.[102] Whether such measures can be justified under the *Shrimp* ruling may be open to debate.[103] On the one hand, if it is legitimate to use a unilateral trade measure in order to secure participation in a multilateral effort to resolve a global ecological problem (the *Shrimp* case), it is hard to see why it should not be legitimate to invoke this tool in order to secure participation in or compliance with the provisions of an existing agreement. On the other hand, one can argue that once an agreement has entered into force, its parties should abide by its provisions, including those governing the issues of compliance and dispute resolution. Thus, if the trade measures in dispute were not authorised by the MEA, they can be

[99] See para 133 of the first *Shrimp* ruling, above n 71.

[100] Such as the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979, 19 ILM 15.

[101] Possible difficulties may arise in the case of global public goods, such as tropical forests which are located in the territory of one nation. This case involves deeper tension between the collective interests of the global community and the sovereignty of the nation hosting the global public good.

[102] States may use a variety of trade measures to pressurise their trading partners. These include, in addition to trade embargos, eco-tariffs, countervailing measures and green subsidies.

[103] The following discussion resonates, of course, with the more general question regarding the relationship between the WTO and MEAs; see further section H below.

interpreted as an act of 'bad faith', denying the acting state(s) from the protection of Article XX.[104]

Overall the *Shrimp* ruling seems to open the door to a partial usage of trade measures in order to facilitate co-operation in the environmental realm. Note that all of the extensions discussed above continue to assume that the WTO does not authorise directly the use of trade measures to facilitate co-operation or compliance in environmental matters. Rather, the validation provided by the WTO is indirect, channelled through the environmental exemptions of Article XX. This means that the WTO leaves to the parties the task of structuring the sanctioning measures (in contrast to the very active role of the WTO judicial bodies in authorising sanctions in the case of trade disputes).

## F. Synergy and Friction Reconsidered: The Institutional Challenge Within the WTO

Linking trade and environmental regimes can have positive synergic effects. However, as explained in section D, implementing the idea of linkage in a society that is divided in its stance toward nature is fraught with difficulties. There are primarily three institutional challenges facing the linkage programme. First, the idea of linkage requires the development of a single metric which will enable one to compare and balance between the projected costs and benefits of the trade and environmental regimes—otherwise it will not be possible to uncover any potential synergy. Second, to the extent that the environmental regime at stake targets a regional/global public good, there must be a consensus about the universal value of that good. Finally, the linkage thesis, as I previously described it, also disregards the local institutional barriers and transaction costs that are likely to accompany the actual linking process.

These various difficulties also influence the legal world. To understand how they could influence the legal deliberation of trade–environment disputes let me consider some concrete example. The principal forms of linkage that are currently recognised by WTO law are: Article XX enforcement actions (following the *Shrimp* ruling), incentive measures (under the Generalised System of Preferences ('GSP')),[105] and

[104] According to this view there is no conflict between the rules of the WTO and trade measures used and authorised by certain MEAs, such as the Basel Convention and CITES.

[105] The GSP provides preferential market access to developing countries; it reflects the non-homogenous efforts of developed countries to provide preferential tariffs and other privileges to developing countries, in response to Art XXXVI(3) of the GATT. Some of these schemes, such as the EU's GSP programme, require the beneficiary countries to meet certain environmental requirements as a condition for receiving preferential treatment. See S Charnovitz, 'Internet Roundtable: The Appellate Body's GSP Decision' (2004) 3 *World Trade Review* 239; Appellate Body decision: *European Communities: Conditions for the Granting of Tariff Preferences to Developing Countries*, WT/DS246/AB/R, 7 Apr 2004.

very restricted institutional co-operation (eg, limited observer status to certain MEAs). Consider, for example, the idea of using Article XX to authorise enforcement action. In deliberating the consistency of such measures with Article XX, WTO tribunals are likely to face serious difficulties, which were not given sufficient consideration in the *Shrimp—Turtle* rulings. Deciding on the legality of trade-based enforcement action would require the WTO tribunals to apply the good-faith protocol, which was developed by the Appellate Body as a guide for interpreting the chapeau. This protocol requires a state, before introducing a unilateral trade measure, to *explore* the possibility of responding to the environmental risk in question through international agreement.

The law of the WTO does not however, contain evaluative criteria that could allow its tribunals to determine whether the Member using a trade measure has made a good-faith effort to negotiate an MEA with the countries targeted by the trade measure. The ultimate failure of such negotiations may be the result of conflicting moral preferences with respect to the value of the ecological asset that was the subject of the dispute.[106] In some cases this philosophical dispute may be (legally) resolved by looking into the existing body of international environmental law. Thus, for example, in the *Shrimp—Turtle* dispute, the thesis that sea turtles are worth preserving was supported by their classification as endangered species in CITES.[107] But this move can provide only a partial solution because international environmental law is prominently treaty-based, and the membership of MEAs is far from universal. And, of course, some negotiations may focus on issues that are not covered by existing agreements.[108]

The negotiations may also fail because the parties may have different views with respect to the economic value of the ecological asset, preventing the conclusion of eco-financial barters. To give a concrete example, imagine that Malaysia had agreed to join a multilateral effort to protect sea turtles, but required certain financial compensation, which would help it to fund the environmental technology needed to protect sea turtles. This demand could reflect differences between Malaysia and the US concerning their environmental preferences and national economic wealth. Suppose, next, that a certain package, which was proposed by the US, was rejected by Malaysia. According to what criteria should a WTO Panel evaluate the fairness of this proposed deal?

But linking trade and environmental regimes does not involve just complex cultural and ideological discords. It may also involve substantial transaction costs. In the case of the WTO, the main costs involve the increasing cognitive,

[106] And not a result of bad faith of either party. Compare, for example, the wide gaps in the approach to nature of Jainism in India and the English Animal Welfare Movement, and the views of Judaism and Christianity.

[107] See the first *Shrimp* ruling, above n 71 para 132.

[108] Thus, for example, in *ibid*, both the US and some of the complainants (Malaysia and Thailand) were not parties to the Bonn Convention.

decisional and political burdens that cross-regime linkage is likely to impose on the administrative and judicial branches of the WTO. These branches will now have to face the challenge of administering two domains (think, for example, of the complexity of determining a breach of the obligations under the Kyoto Protocol, given the multiple options through which parties can offset their emissions, using carbon sinks, joint projects and emissions trading). These increasing burdens could severely erode the operational efficacy of these branches, with all the adverse effects such erosion may have on the functioning of the WTO and linked regime.

## H. Toward a Possible Resolution

The trade–environment dilemma is complex. It is embedded in a deeply conflicted discursive landscape, consisting of highly opposing visions regarding the relationship between nature and society. These difficulties are exacerbated by deep informational scarcities, and scientific uncertainties, as to the environmental problems facing humanity, and the complex relationship between economic development and ecological degradation.[109] In these circumstances, achieving a conclusive solution to the trade and environment conflict is not only difficult, but highly improbable. Nonetheless, it is possible to draw few policy conclusions from the foregoing discussion.

First, recognising that trade liberalisation is likely to have adverse ecological impacts means that both the global community as a whole and nation states in their independent capacity must develop strong environmental institutions, which could counteract these effects. These institutions face two key challenges: first, developing a better understanding of the environmental risks facing humanity, and the complex causal relations between economic growth and ecological degradation; and, second, designing and maintaining a regulatory network which could cope with the externalities generated by short-sighted economic development. This argument should not, however, be interpreted as allowing trade law to be indifferent to environmental concerns. The argument, frequently made by the trade community, that the trade and environmental domains should be kept separate[110] is highly misleading. It is misleading because it disregards the enduring weakness of environmental institutions (both locally, especially in

[109] Although there has been significant progress on these issues. See eg the work of the Intergovernmental Panel on Climate Change, at www.ipcc.ch.

[110] See 'Third World Intellectuals and NGOs Statement Against Linkage', a letter circulated on the Internet, and signed by several prominent economists including J Bhagwati, at www2.bc.edu/~anderson/twin-sal12.pdf

developing countries, and globally), reflecting the persistent failure of human society to deal with the ecological repercussions of economic progress.[111]

The key question, however, is how should the trade universe react to or implement this call for ecological responsibility. At a very general level this argument calls on the law to develop *ecological sensitivities*. But it is possible to point to a few more concrete actions. First, because ecological damage can be irreversible (eg, loss of bio-diversity), it is crucial to assess the possible ecological impacts of trade decisions at an early stage, before the actual decisions are made. Developing mechanisms that will enable such assessment is highly important, and there has been some progress in this direction.[112] Second, trade institutions should take into account the current asymmetry between the trade and environmental spheres. The weakness of environmental institutions—at both the local and global levels—may necessitates using trade measures (even if these are indeed second-best instruments). Finally, trade institutions should support the development of linkage modules, which could exploit the various synergies between the trade and environment domains. This idea was tentatively endorsed by the Appellate Body in the *Shrimp* decision and by other international instruments.[113]

Incorporating the foregoing proposals into the law of the WTO may require radical changes, which are likely to be deeply controversial. Neither economics nor environmental philosophy offers a precise algorithm for balancing between trade and environmental objectives that can be crystallised into the WTO rule-book. It is also unrealistic to expect the Appellate Body to lead this process of ecological sensitisation independently through a creative reading of Article XX. Such a move could generate intense opposition, both because of its incompatibility with the mercantilist culture that still influences the WTO, and because it is likely to be interpreted as an illegitimate intrusion into state sovereignty. The idea of sustainable development, which is mentioned in the preamble to the WTO Agreement, cannot provide a satisfactory anchor for such juridical-led reform,

[111] For a discussion of the weakness of transnational environmental institutions see J Whalley and B Zissimos, 'An Internalisation-based World Environmental Organisation' (2002) 25 *World Economy* 619, 620.

[112] Both the US and the EU engage in environmental review of trade agreements. In the US, the United States Trade Representative ('USTR'), following Executive Order 13141 (1999) regarding Environmental Review of Trade Agreement, published several environmental reviews of bilateral trade agreements (see www.ustr.gov/Trade_Agreements/Bilateral/Section_Index.html). The European Commission developed a methodology for Sustainability Impact Assessment ('SIA'), which was applied to the Doha Agenda, and to the EU negotiations with Mercusor/Chile (see http://europa.eu.int/comm/trade/sia/studies.htm). In considering these mechanisms, the key question is to what extent they influence the structure of the ensuing trade instrument. The global community was not able so far to develop more comprehensive mechanisms of environmental reviews. UNEP has done some work in this area (which has had, however, little influence on the WTO). See UNEP, *Reference Manual for the Integrated Assessment of Trade-Related Policies* (UNEP, 2001), and at www.unep.ch/etu/etp/acts/manpols/urlrmia.htm.

[113] Eg, in the Rio Declaration, above n 44, and Agenda 21, above n 44, see above text to nn 50–52.

since its meaning and possible applications are still the subject of deep controversies.[114] At this point, it might make more sense, therefore, to leave intact the substantive rules of the WTO (eg, Article XX), focusing instead on reforming the institutional setting in which trade–environment disputes are deliberated. This could create the necessary conditions for a gradual transformation of the WTO rule-book.

In terms of possible institutional changes, a key step in this context should be the expansion of the organisational setting in which the trade and environment question is deliberated within the WTO (in the context of both negotiations and disputes). This should take place through the creation of deeper organisational ties between the WTO and environmental organisations, such as the United Nations Environment Programme (UNEP) and MEAs Secretariats. These changes should create a setting in which the various groups involved in this conflict could converse, and reach certain understandings (even if only local and tentative) on some of difficult dilemmas noted above. Extending the organisational relations between the two regimes can both improve the problem-solving capacities of the emerging (augmented) regime and increase its legitimacy. Broader institutional ties between the regimes could also extend the capacity of the WTO judicial and executive branches to cope with the more extensive decisional and cognitive burdens that are likely to be generated by taking more seriously the ecological impacts of trade.

The real challenge lies in developing specific institutional modules which would realise this vision. One option would be to give environmental organisations a more active role in the governance of the WTO. This role should transcend the notion of observer, which is currently discussed in the WTO. It could include, for example, giving UNEP and key MEAs' secretariats full member rights at the WTO Trade and Environment Committee and other relevant committees, and a seat at the Appellate Body in cases that involve environmental issues. Article XV(2) of the GATT, which requires the Contracting Parties to consult with the IMF in cases that involve 'problems concerning monetary reserves, balances of payments or foreign exchange arrangements, could provide a possible blueprint for the incorporation of UNEP in the WTO decision-making apparatus.

## H. The Road Ahead

There are strong grounds for concern with respect to the ecological effects of trade liberalisation. The *Shrimp* decision reflects an important first step toward establishing a more responsive trade regime, which will be sensitive to non-trade concerns. It is clear, though, that this embryonic step will not suffice. Extending the responsiveness of the WTO to ecological concerns and realising the potential for

[114] Daly, above n 18.

synergic linkage between the WTO and the environmental realm can take place only in an extended institutional space. A broader institutional network has a better chance of coping with the deep discursive frictions that characterise the trade–environment conflict, and the extensive administrative burdens associated with implementing the idea of linkage.[115]

Unfortunately—at least from the perspective of the environmental community—the bold vision of the *Shrimp* ruling has failed so far to make an impact on the WTO negotiation agenda. The environmental part of the Doha negotiation framework, introduced in the 2001 Doha Declaration,[116] is very modest in the targets it sets out, and even on these very limited targets there are still wide disagreements. There are three major items in the environmental part of the Doha declaration. The *first* item refers to the relationship between existing WTO rules and specific trade obligations set out in MEAs.[117] The negotiations on this item sought to clarify the relationship and possible tension between trade measures taken under MEAs and WTO rules. The question whether the WTO excessive enforcement capacities could be used to enforce the various environmental obligations set out in these agreements was not part of the Doha negotiation framework. The *second* item focuses on establishing procedures for regular information exchange between MEA Secretariats and the relevant WTO committees, and on granting observer status to certain MEAs.[118] More radical ideas, such as granting UNEP (or leading MEA Secretariats) a formal voice in the decision-making process within the WTO, are not part of the negotiation agenda. No agreement has been reached so far on any of these items.[119] The only item, on which there seems to be a growing consensus is the negotiations on the reduction of tariff and non-tariff barriers to environmental goods and services.[120] However, the range of products that are due to benefit from the projected reductions is limited.[121]

[115] For a similar critique, emphasising the lack of co-operation between the trade and environmental arms of the NAFTA agreement, see RA Sanchez, 'Governance, Trade, and the Environment in the Context of NAFTA' (2002) 45 *American Behavioral Scientist* 1369, 1388.

[116] Negotiated in the Fourth WTO Ministerial Conference, held at Doha, Qatar, in 2001. See further www.wto.org/english/tratop_e/dda_e/dda_e.htm.

[117] *Ibid*, Art 31(i).

[118] *Ibid*, Art 31(ii).

[119] For a detailed description of the status of the negotiations prior to the Sixth Ministerial Conference in Hong Kong (Dec 2005), see the Committee on Trade and Environment special session's report to the Trade Negotiations Committee, TN/TE/12, 20 July 2005.

[120] Doha Declaration, above n 117, Art 31(iii).

[121] While the negotiations are still going on as this chapter is being written, the focus, so far, has been on end-use products and services (see the paper by New Zealand, TN/TE/W/6, and the recent Secretariat report, TN/TE/R/11). The main beneficiaries of the proposed cut would be the developed countries—the main exporters of green technology and services. A broader definition of 'green' goods, which would also have embraced products made through 'green' production methods, including, for example, organic agricultural products and sustainable forest products, could have had a greater ecological impact and would have enabled developing countries to reap some of the economic benefits of these cuts (for a tentative move in this direction see, the EU proposal, TN/TE/W/47).

The deep frictions underlying the trade and environment conflict ensure that this conflict will continue to be the subject of wide-ranging debate. While it is possible to imagine various 'middle grounds', which can provide partial solutions to this conflict, such solutions continue to face deep challenges. The frequent use of 'green' rhetoric by political and economic leaders (manifested, for example, in the frequent invocation of the notion of 'sustainability') is, in that sense, misleading because it masks the deep cultural and ideological gaps that continue to divide the global society with respect to the relationship between society and nature. These gaps, which are embedded in a cosmopolitan society that is increasingly controlled by financial drives, and indulgent consumerist culture,[122] will continue it seems, to block substantial progress in resolving this conflict.

[122] See L Cohen, *A Consumers' Republic: The Politics of Mass Consumption* (Alfred A Knopf, 2003).