6 An introduction to ethical considerations in international environmental law

Alexander Gillespie

Introduction

The purpose of this chapter is to give the reader an overview of where some of the ethical debates in international environmental law are currently found. This chapter builds upon my earlier work in this area, which is contained in *International Environmental Law, Policy and Ethics* (Gillespie, 1997). I shall be using the template from the work, in terms of all of the ethical values at play in international environmental law as the guide for the following analysis.

At the time of writing my 1997 text, I approached the issue of ethics and international environmental law, as most doctoral students do, in a very theoretical manner. Over the subsequent ten years, whilst I have had found no reason to change my mind with regard to the philosophical considerations in this area, I have been actively involved in the practice of international environmental diplomacy for both national governments and international organizations. Accordingly, my professional work has often been driven towards very practical, somewhat traditional solutions to immediate problems, and the luxuries of philosophical purities have often been remote. Accordingly, one important difference from my work in 1997 and now is the realization that although many ethical propositions for conservation may contain philosophical problems, it is still very important to pursue these, *if* conservation goals in the present can be obtained. The luxury of only pursuing the absolute correct, philosophically pure and defensible ethics in this area is one which is simply not in accordance with the amount of work that needs to be done, and the time available for the task. At this point in history, I am of the belief that necessity, more than pragmatism, should govern efforts in international environmental protection.

Nevertheless, it would be wrong to suggest that the two worlds of the theories and the practice of international environmental law do not overlap. In some areas, ethical questions are at the forefront of international discussions, although these questions tend to quickly become wrapped in nuanced language. Although such nuanced language is often necessary to blunt otherwise embarrassing political differences, the nuances can also have the effect of disguising the rich philosophical areas that the debates have originated.

In this chapter, due to limitations of space, I shall not be looking at the original debates surrounding ethics and the environment. I shall only be looking at the positive ethical debates, and I shall be omitting the criticisms where the values listed below have been used for purposes which are not necessarily conducive to environmental protection. Nor shall I be examining all of the ethical arguments in this area. The reason I shall miss some areas out, such as with regard to the ethical value of future generations, is because this argument is not disputed (and has not progressed) in any meaningful manner since it was unveiled in 1987. Rather, it has become somewhat of a touchstone, which most (if not all) treaties and formal

discussions in this area accept. I shall also not be examining religious values and the environment, as aside some debates at the 1994 Population Conference (and its subsequent review), such perspectives have not been overtly notable in the area. This is not to suggest that these values are not important nor influential. It is only to suggest that these values do not dominate the agendas in international environmental law, in the same manner as other discussions on philosophical value.

Anthropocentric values

An anthropocentric outlook is one which regards humanity as the centre of existence. The anthropocentric paradigm has been built up over thousands of years of human existence, and can be traced to the great philosophers of Antiquity, such as Protagoras, who proclaimed, 'Man is the measure of all things' (Protagoras, quoted in Rodman, 1974: 16). Or, as pivotal thinkers of the Enlightenment, such as Kant, would suggest, 'Man ... is the ultimate purpose of creation here on Earth' (Kant, 1914: 92). Such views, whereby humanity is the centre of philosophical existence, permeate the vast majority of cultural traditions. Moreover, bar a few relatively small exceptions, the anthropocentric outlook maintains a strong resonance in the twenty-first century. This is despite the fact that anthropocentricism is basically simple human chauvinism.

The paradigm in this context involves the core of beliefs that underpins the human relationship with the natural world (Murdy, 1983: 13–15, 19–20), and as a flow on, in the reasoning which ends up manifesting itself in international environmental law. For example, the 1972 Declaration of the United Nations Conference on the Human Environment reflected its anthropocentric basis in its very title. This was strengthened further with the emphasis upon protecting the environment for present and future (human) generations. Additionally, the Declaration emphasised (as Mao had done earlier) that 'of all things in the world, people are the most precious' (Stockholm Declaration, 1972: para. 7, Ch. 1). In 1987, the World Commission on Environment and Development added that, 'Sustainable development ... is a process ... that is designed to enhance both current and future potential to meet human needs and aspirations' (WCED, 1987: 46). Likewise, the 1992 Rio Declaration on Environment and Development stated, 'Human beings are at the centre of concerns for sustainable development' (Principle 1).

Although this approach was broadly reiterated at the 2002 World Summit on Sustainable Development, it was notable that the 'representatives of the world' pledged their responsibility to 'one another, to the greater community of life and to our children' (World Summit on Sustainable Development, Plan of Implementation, 2002: para. 8). The extension of ethical concern to the 'greater community of life' was, through a few small words, quite a large step in the philosophical thinking of international environmental law. It was a large step because it attempted to slightly move the paradigm of what was important, and why, away from environmental protection only being thought of in terms of what is valuable to humanity.

Although the 2002 Declaration was a notable step, the majority of philosophical discussions in this area continue to be dominated by anthropocentric justifications. That is, nations typically seek to protect the environment because of its anthropocentric value, not its values independent of humanity. There are four common forms of arguments that exemplify this approach. These are with regard to justifications based on self-interest, aesthetics, culture, and/or economics. In each of the following instances, I shall seek to show how the argument has manifested itself in key international discussions.

1. Self interest

The justification to protect the environment, because of its self-interest to humanity can be traced to the Old Testament when God commanded Noah to take all the species that were available onto the ark (Genesis 7: 8–9).[1] However, God made it quite clear that the species were saved, inter alia, so that the chosen ones would inherit a 'land in which they would lack nothing' (Deuteronomy 8: 7–9; see also Genesis 9: 1–3).

In addition to being the oldest justification for environmental conservation, it is also the most common, being utilized in most international debates, ranging from justifications to protect biodiversity, through to the need to control persistent organic pollutants. Most notably, it is in international debates where the impacts of environmental damage are most pronounced upon humans that the argument is at its strongest.

The best examples that I am aware of in this area are with regard to the international debates and law surrounding the problems of air pollution, ozone depletion and climate change. In these regimes, the primary (but by no means exclusive) ethical justifications for environmental protection are based around self-interest. For example, in the case of the law on transboundary air pollution, which is built around the 1979 Convention on Long Range Transboundary Air Pollution and its subsequent Protocols,[2] the idea that the detrimental impact of air pollution upon humans is the reason the problem must be confronted is stated in all of the instruments. For example, the 1999 Gothenburg Protocol explained that its signatories were 'aware that nitrogen oxides, sulphur, volatile organic compounds and reduced nitrogen compounds have been associated with adverse effects on human health'.

This type of self-interested assertion is (as with many such comments in international law) somewhat of an understatement. That is, although such recognitions date from the early 1980s, the scientific evidence for a detrimental impact of air pollution on humanity goes back over two hundred years (Sherman, 2004: 172–80). In addition, the magnitude of the impact is phenomenal. For example, at the turn of the new century, the World Health Organization (WHO) estimated that as many as 1.4 billion (the United Nations Environment Programme put the figure at 1.6 billion) urban residents breathe air exceeding WHO guidelines on pollution. Tens of millions of these people live in the developed world. The resultant mortality estimates are between 200 000 and 570 000 each year. This figure represents between 0.4 and 1.1 per cent of total global deaths. Air pollution is a particular problem in many African and Asian cities. In 2007, the World Bank suggested that up to 750 000 people may die in China each year from air pollution-related illness. In 2004, it was estimated that close to 100 000 deaths annually in Europe are associated with long term exposure to air pollution (UNEP, 2006: 48–74; UNEP, 2002: 211; UNECE, 2004; *NZ Herald*, 5 July 2007: B3).

In a similar vein, the justification to prevent the destruction of the ozone layer is based around human self-interest. In this debate, although over-exposure to ultra-violet light due to, in large part, a depleted ozone layer, has been recognized as a distinct health problem since the 1970s, it was not until the late 1980s that clarity in the impacts on humanity, and the self-interested need to protect the ozone layer, became fully apparent. Reports confirmed that in the mid-1990s, the global incidence of melanoma was climbing by about 7 per cent per year. In 2001, the WHO reported that over 2 million non-melanoma skin cancers and 200 000 malignant melanomas occurred each year. With a 10 per cent decrease in stratospheric ozone and current trends and behaviour, an additional 300 000 non-melanoma and 4500 melanoma skin cancers could be expected worldwide. It is possible that this figure was an underestimate. In Queensland (Australia), melanoma became the most common cancer on record, in the early

1990s, with at least 1 per cent of the population (140 000 people) contracting a basal-cell or squamous cell carcinoma. About one in seven cases is fatal. By 2002, melanoma was believed to be killing about 1000 Australians per year. As of 2005, it was also killing between 250 and 300 New Zealanders per year. This figure was not surprising, given that approximately 25 per cent of all New Zealand farmers get skin cancer. In addition, a depleted ozone layer is strongly linked to a surge in age-related cortical cataracts. The WHO suggested that of the 12 million to 15 million people who go blind each year from cataracts, 20 per cent of these (approximately 3 million per year) could be due to enhanced UV exposure (Co-Chairs of the Assessment Panels, 2003; *NZ Herald*, 22 May 2006: A2).

A final example of the self-interested argument at work is the debate over the adverse effects of climatic change. The adverse effects of global warming are those which result in changes to the physical environment or biota which have significant deleterious effects on the composition, resilience, or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare (UNFCCC, 1992: Art. 1 (Definitions)). The future impacts of global warming upon humanity will depend on the speed and the magnitude of change. Although the possibility of adverse effects was first noted in the 1950s, it was not until the late 1970s and 1980s that the possibilities of 'considerable changes' of climate change that could be 'catastrophic' or result in 'major effects on the quality of life for mankind in many regions' became apparent (White, 1990; *New Scientist*, 27 October 1983: 247). The foremost example from this period was the statement from the 1988 Toronto Conference on the Changing Atmosphere which concluded, 'Humanity is conducting an enormous, unintended, globally pervasive experiment whose ultimate consequences could be second only to global nuclear war' (*New Scientist*, 7 July 1988: 24).

The United Nations Framework Convention on Climate Change (UNFCCC), which followed four years later, took a much less alarmist approach than the Toronto Conference and only noted that 'an additional warming of the Earth's surface and atmosphere may adversely affect natural ecosystems and humankind' (Preamble, para. 2). This weak recognition of adverse impacts has been largely eclipsed by subsequent statements from the Conference of the Parties[3] which suggest that the adverse impacts of climate change 'will result in significant, often adverse, impacts on many ecological systems and socio-economic sectors' (The Geneva Ministerial Declaration, 1996: Annex, para. 2). However, it has also been noted that 'considerable uncertainties still persist with regard to the assessment of the adverse effects of climate change, particularly at the regional, sub-regional and national levels' (Decision 5/CP.4 – Implementation of Article 4.8 and 4.9 of the Convention). Despite these uncertainties, as a generalization, it appears that countries with a diversified, industrial economy and an educated and flexible labour force are likely to have smaller impacts, as opposed to countries with a specialized and natural resource-based economy, especially agriculture or forestry, and a poorly developed and physical resource-dependent labour force (IPCC, 1996: 10). The direct impacts upon humanity include changes in food production and distribution, the supply and distribution of fresh water, increases in sea levels and coastal stresses (such as flooding), changed extreme weather, such as with storms, cyclones and tornadoes, and enhanced heat waves, and possibly increased levels of transmission of some diseases (IPCC, 2007a: 6; IPCC, 2007b: 5–17). For example, the 2003 heat wave in Europe was believed to have killed at least 35 000 people, with some 14 800 deaths from heat-related diseases in France alone (*New Scientist*, 18 October 2003: 7).

The figures noted above are not surprising, as it was shown that the frequency of extremely

hot days in Europe had nearly trebled between 1880 and 2005 (*New Scientist*, 11 August 2007: 5). Moreover, they may just be a harbinger of things to come. This is especially so if the earth responds in unanticipated ways to forced climate change. In the literature on climate change, this is known as 'surprise' (McGuire, 2006: 32–6). Climatic surprise includes significant slowing of the ocean circulation that transports warm water to the North Atlantic, large reductions in the Greenland and west-Antarctic ice sheets, accelerated global warming due to carbon cycle feedbacks in the terrestrial biosphere, and releases of terrestrial carbon from permafrost regions and methane from hydrates in coastal sediments. These risks may be more pronounced if the carbon more than doubles (above pre-industrial levels) in the longer term. The end result could be a dramatic catapulting of the climatic system to a new, rapid and unpleasant method of operating (IPCC, 2001: 7; Pearce, 2003: 40–3; *New Scientist*, 12 February 2005: 10). Within the official documents, the Inter-governmental Panel on Climate Change (IPCC) warned in 1990 that, despite their predictions, 'the complexity of the system means that we cannot rule out surprises' (Milne, 1990: 5). The IPCC 1996 report also emphasized the possibility of 'surprises and unanticipated rapid change' (noted in Pearce, 1995: 6). The Third Assessment Report in 2001 by the IPCC added that the potential for large-scale and possibly irreversible impacts poses risks that have yet to be reliably quantified. These possibilities are very climate scenario-dependent and a full range of plausible scenarios has not yet been evaluated. Conflicting analysis suggested that rapid climatic change, when judged from the examples of the past, was either possible or unlikely (Alley, 2004: 40–4; cf. Nielson, 2004: 6). The IPCC's Fourth Assessment Report in 2007 was more cautious in this area. That is, it suggested that 'values substantially higher than 4.5 degrees C. cannot be excluded, but agreement of models with observations is not as good for those values'. Moreover, the 2007 Report suggested that 'it is very unlikely that the meridonal overturning circulation of the Atlantic Ocean will undergo a large abrupt transition during the 21st century' (IPCC, 2007c: 16; IPCC, 2007a: 15). These conclusions, and the fact that the idea of climatic surprise was particularly downplayed in the 2007 Report, resulted in a level of criticism that they were suppressing evidence which suggested the prognosis on climate change was much worse than they portrayed (*New Scientist*, 24 November 2007: 13; Pearce, 2007b: 11; Pearce, 2007a: 10). Either way, whether humanity has to deal with 'normal' climatic change of an enhanced nature, or climatic surprise, the necessity to deal with it out of simple calculations of self-interest is obvious.

2. Culture

The ethical justifications surrounding debates on conservation, based upon cultural considerations, are among the most prominent philosophical debates in international environmental law. This is somewhat surprising, as prior to 1992, cultural considerations were not prominent justifications in this area.

Culture is one of the most basic elements of social order. The notion of respect for cultural diversity has been an ideational feature of treaties among European powers since the Peace of Westphalia in 1648. The recognition accorded culture continued in an inconsistent manner until World War II when overt efforts were made to eradicate cultures deemed offensive. Since then, a number of anthropologists and philosophers have argued in favour of the importance of preserving diverse cultures, especially in the face of the worst kinds of direct threats such as racial hatred, and the often indirect threats posed by development and globalization. These arguments have been addressed in part by national and international laws designed to

assist discrete cultures to survive as distinct cultural entities. These views were furthered with the 2003 Convention for the Safeguarding of Intangible Cultural Heritage,[4] and the 2005 Convention on the Protection and Promotion of the Diversity of Cultural Expressions.[5]

The interrelationship between culture and the environment is well established in both Western and non-Western traditions. It is also a notion which often forms part of the discourse surrounding indigenous peoples. Against this background, it should not be surprising that a number of international conferences and commissions have made note of the significance of the relationship between culture and environmental protection (WCED, 1987: 155). This relationship has also been recognized in the preamble of a number of international environmental laws. For example, the 2005 Convention on the Protection and Promotion of the Diversity of Cultural Expressions recognized that, 'Cultural diversity is a rich asset for individuals and societies. The protection, promotion and maintenance of cultural diversity are an essential requirement for sustainable development for the benefit of present and future generations' (Art. 2(6)).

The work of the Parties to the 1971 (Ramsar) Convention on Wetlands of International Importance is also notable in the cultural values and the environment. In particular, the Parties to the Ramsar have issued a series of Guiding Principles for Taking into Account the Cultural Values of Wetlands (Resolution 8.19, 2002: para. 19). In 2005, the Parties encouraged each other to identify and analyse further case studies of wetlands of significant cultural value, and make them widely known, thus increasing the knowledge and understanding of the relationship between cultural processes and wetland conservation and wise use. Moreover, the Parties agreed that a wetland may be considered of international importance when, in addition to its ecological values, it holds significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological function (Resolution 9.21, 2005: paras 11 and 12).

Even Particularly Sensitive Sea Areas (PSSAs) under the auspices of the International Maritime Organization (IMO) have come to embrace cultural values. For example, extrapolating from Article 211 of the United Nations Convention on the Law of the Sea (with regard to 'utilization or the protection of its resources'), the PSSA categories have come to embrace, inter alia, human dependency. The term 'human dependency' has been utilized at the IMO to support traditional subsistence and/or cultural needs of the local human population.[6] Thus, when Australia proposed an extension to an existing PSSA in 2003, the fact that the extension area (the Torres Strait) was the home to 10 000 indigenous Australians and 20 000 Papua New Guinea nationals, who depend on maritime resources for subsistence purposes, was drawn out (MEPC, 2003: MEPC. 49/WP.7: 43).

The final convention of note to deal with the cultural values of protected areas is the World Heritage Convention (WHC). The WHC, which has a dual purpose with regard to the protection of cultural heritage, has also come to place a value on cultural values of natural sites. The growth of interest in this area is most noticeable with regard to indigenous/traditional/local values in which the overlap, of both tangible and intangible values between people and the natural sites they value, is very difficult to disentangle. A good example of this is with Sacred Groves. These areas, which are increasingly under threat, contain areas of obvious biodiversity, which is protected for its cultural values, as much as its natural ones (UNESCO, 2003b: 153–8; Millennium Ecosystem Assessment, 2005: 44; *New Scientist*, 26 November 2005: 18). Thus, when the Osun-Osogbo Sacred Grove of Nigeria was inscribed on the WHC list in 2005, it was the art work to the Goddess of fertility, and a symbol for the local peoples, devel-

oped over the last forty years, which resulted in its inscription under the cultural, not the natural, criteria.[7]

The WHC has come to recognize local/traditional/indigenous cultural values associated with natural areas as part of a continuum with universal values (UNESCO, 2003a: 166). Accordingly, as the 2005 Kazan meeting concluded, 'the identification of outstanding universal value of a site needs wide participation by stakeholders including local communities and indigenous people' (Section 12.d). This conclusion was, in fact, already implicitly recognized by the WHC Committee in its existing debates (although there is a clear debate about how far indigenous/traditional/local values should be taken in the WHC deliberations). For example, with the Tongariro site in New Zealand, the Committee originally deferred its listing, until, inter alia, a new management plan was established, 'better reflecting the Maori cultural values as part of the management concept of the site' (UNESCO, 1987: CC-87/CONF.005/9: 8). Similar decisions, reflecting the need to incorporate indigenous values within the cultural values criteria, were seen with the Okapi Wildlife Reserve in Zaire and the resident Pygmy population (UNESCO, 1996: WHC-96/CONF.201/21: 47–8).

As the above paragraphs indicate, the link between cultural values and the conservation of the environment is very strong with particular regard to the consideration of indigenous peoples. For example, in 2002 the World Summit on Sustainable Development recognized both 'respect for cultural diversity' and the 'vital role of indigenous peoples' as essential elements of sustainable development (WSSD, Plan of Implementation, 2002: para. 6(e)).[8] The Intangibles Convention added that 'the importance of the intangible cultural heritage as a mainspring of cultural diversity and a guarantee of sustainable development' as practised by all communities, and indigenous communities in particular, should be remembered (Convention for the Safeguarding of the Intangible Cultural Heritage, 2003: Preamble).

The linkage between cultural diversity and sustainable development is particularly strong with regard to traditional knowledge. Traditional knowledge refers to the knowledge, innovations and practices of indigenous and local communities around the world. Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds. Traditional knowledge is mainly of a practical nature, particularly in such fields as agriculture, fisheries, health, horticulture, and forestry.

Traditional knowledge is valuable not only to those who depend on it in their daily lives, but also to multiple aspects of modernity. This is especially so when traditional knowledge is combined with biodiversity. In such regards, many contemporary widely used products, such as plant-based medicines and cosmetics, as well as certain practices such as agriculture, and even some forms of industry (such as with non-wood forest products) are based on traditional knowledge. As such, traditional knowledge can make a significant contribution to sustainable development, in terms of both conservation and sustainable use of biodiversity. However, despite the value of such indigenous practices to conservation, communities and commerce, in many instances the knowledge has been wrongfully appropriated. For example, in 2004, in a report of 762 randomly selected US patents related to medicinal plants, 49 per cent were based on traditional knowledge, yet there was no international system to protect the rights of the indigenous communities that provided the information in the first place (Leahy, 2004: 15).

Although the importance of such practices is noted in a number of international documents and forums, including, inter alia, the 1992 Rio Declaration (Principle 22) and Agenda 21 (Ch. 35, para. 7(h)). Ten years later the 2002 WSSD added the request that all Parties should,

> Subject to national legislation, recognize the rights of local and indigenous communities who are holders of traditional knowledge, innovations and practices, and, with the approval and involvement of the holders of such knowledge, innovations and practices, develop and implement benefit-sharing mechanisms on mutually agreed terms for the use of such knowledge, innovations and practices.

and

> Promote the effective participation of indigenous and local communities in decision and policy-making concerning the use of their traditional knowledge. (WSSD, Plan of Implementation, 2002: Para. 44(l) and (j))

Despite such recognitions, the primary convention through which meaningful implementation of the above goals can be given actions is the CBD. Accordingly, it is with the CBD that the rights of indigenous and local communities have the strongest standing in international law. This standing is given, most directly, by Article 8(j) of the Convention. This stipulated that each Contracting Party shall, as far as possible and as appropriate,

> Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

Article 10 of the CBD, on the Sustainable Use of Components of Biological Diversity, added that each Contracting Party shall, as far as possible and as appropriate,

> Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements [and] Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced. (Section 10(c) and (d))

Despite such recognition in both the preamble and other overlapping articles in the CBD, such as Article 10 above, it is Article 8(j) which is seen essentially to encompass indigenous and local considerations. As such, Article 8(j) is recognized by the Parties to the CBD as one of its cross-cutting themes and the topic has come to occupy a considerable amount of attention at meetings, both directly and indirectly. The indirect linkages are notable with regard to particular areas of the CBD which are inching towards conclusion, such as the development of an access and benefit-sharing regime.

3. Economic values

Economic values are another dominant ethical justification for the protection of nature. These justifications can be seen in the background of a number of international environmental agreements. For example, with the international debates on climate change, depending on the magnitude of the warming (Giles, 2007: 14), then it may make strong economic sense to miti-

gate the emission of greenhouse gas emissions now, and not in the future. For example, the 2007 IPCC report suggested that it is very likely that all regions will experience either declines in net benefits or increases or net costs for rises in temperature greater than about 2 to 3 degrees. While developing countries are expected to experience larger percentage losses, global mean losses could be 1 to 5 per cent GDP for 4 degrees C of warming (IPCC, 2007a: 6). Likewise, the well-publicized (English) Stern Report estimated that due to the magnitude of possible impacts, the economic costs of climate change could be 20 times higher than the costs of solving the problem. In particular, he estimated that investing 1 per cent of global GDP in combating climate change over the next 50 years (to stabilize greenhouse gas concentrations) would be considerably less than the estimated cost of $4 trillion to the global economy (*New Scientist*, 4 November 2006: 7).

Despite such notable figures, it is not within the UNFCCC that the debate about the economic values of the environment is strongest. That place is reserved for the CBD, which obliges each Contracting Party, as far as possible and as appropriate, to adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity (CBD, 1992: Art. 11). Accordingly, the Parties to the CBD have undertaken a number of studies on the economic valuation of biodiversity, and have encouraged all the signatories to ensure adequate incorporation of 'market and non-market values of biological diversity into plans, policies and programmes' at both local, regional and international levels, where appropriate (Recommendation II/9: 47; Decision VI/15: 179, Annex I; Recommendation VII/9: 75).

The core of such thinking is that all biological resources should reflect their Total Economic Value (TEV), and perverse incentives, which distort that value, should not be encouraged. The TEV is the cumulative economic value of all aspects of biodiversity, not just the obvious consumptive value. The end result for much biodiversity and its related ecosystems is that its TEV should lend itself to economic justifications for conservation, not blunt utilization (Parlange, 1999: 42–5). For example, the TEV of a forest is not just the value of its extracted timber, but rather, its value as selectively and sustainably extracted timber, in addition to the economic values of non-timber forest products, biodiversity, genetic information, forest land conversion, watershed protection, carbon storage and sequestration, tourism and creational values, amenity values, option values and existence values.

The only international organizations which have attempted to take a broader view of economic value are UNESCO's Man and the Biosphere regime (Seville Strategy Objective 1.1. Seville + 5 Recommendations; Recommendation No. 6, MAB, 2000: 13), and most notably, the Ramsar Convention. In the Ramsar, despite the fact that wetlands of international importance are recognized as possessing multiple values, their economic values have traditionally been downgraded, if not invisible, in planning decisions. This is despite the fact that 'wetlands may, directly or indirectly, have a potential value exceeding that obtained from transforming them into other types of land' (Recommendation 1.6, 1980). Given the diversity of values of wetlands, the Ramsar Parties have consistently recommended that in cases of large-scale wetland transformation, 'the decision is not taken until an assessment of all the values involved has been made' (Recommendation 1.6, 1980). The question of 'all values' was furthered when the Ramsar Parties identified suggested that the quantification of both direct (monetary) and indirect (non-monetary) values of wetlands be taken fully into account in the planning and conservation of wetlands. Only when the two values are combined (and economic disincentives to their conservation are removed) can the 'true values of wetlands'

be meaningfully considered in management decisions (Resolution 8.4, 2002: Principle 2; Resolution 7.16, 1999).

One of the most obvious manifestation of direct economic value with regard to environmental conservation is tourism (Adams (ed.), 1964: 98–128). Tourism is one of the economic powerhouses of the modern global economy. In 2002, tourism was producing 4.4 per cent of global GDP, and employed around 200 million people globally. It is expected that this number will grow in the future. This growth in numbers is particularly noticeable with nature tourism (Wilkie, 1999: 332–8). For example, tourist numbers increased by 130 per cent between 1996 and 2001 (to 40 000 per year) to Svalbard, in Norway, one of the key polar bear habitats (CAFF, 2002: 10–11). Even in isolated Antarctica, close to 30 000 visitors reach its shores each year (Final Report of the Twenty-ninth Antarctic Treaty Consultative Meeting, 2006: para. 145). Moreover, key international institutions, such as the Global Environment Facility (GEF), have actively encouraged such growth. This encouragement can be seen in 76 GEF projects with eco-tourism components, encompassing 542 protected areas (and supported by over USD 500 million in GEF financing) (GEF, 2005: 29). Such tourism is generating vast amounts of revenue, and this revenue is often a powerful justification for the conservation of the environment. Consider, in the mid-1990s, that nature tourism and visits to national parks in Costa Rica were estimated to generate over USD600 million per annum. By 2001, this figure was over 1 billion (IUCN, 2002b: 24), and by 2004, this figure had trebled to 3 billion (Toepfer, 2004: 1). Australia's top eight national parks were estimated to be bringing in AUD 2 billion per year (SBSTTA, 2003: UNEP/CBD/SBSTTA/9/INF/3: 25), with about a quarter of this sum coming just from the Great Barrier Reef (IUCN, 2002b: 25). In terms of highest economic worth of an individual site, the Yosemite site in the United States generates approximately USD1.3 billion per year (IUCN, 2002a: 11). In poorer countries, the revenue from protected areas, or key species within them, can be pivotal (Wilkie, 1999: 339–45). For example, in the Congo (prior to the civil war), gorilla-watching operations were generating over USD1 million per year in tourist income (IUCN, 2002b: 25). By 2001, the whale-watching industry was worth an estimated USD1351 billion per year, and whale-watching was being practised in 65 countries, attracting more than 9 million participants per year (Hoyt, 2001: 3). In some small countries, such as Tonga, whale-watching has become the single most important tourist attraction. In 2003, within Australia more than 1.6 million visits were made to watch whales. This is more than double previous numbers five years earlier (IFAW, 2004: IWC/56/16; Orams, 1999). Likewise, within New Zealand, more than 425 000 visitors and locals went whale watching in 2004, generating a total expenditure related to whale-watching tourism of NZD 120 million (IFAW, 2005: 4–5). Even remote protected areas, with few visitors, like Auyuittuq National Park in Canada, with only 500 visitors per year, still obtained USD175 000 from the process (CAFF, 2002: 29).

4. Aesthetics

The aesthetic value of nature is a well-recognized justification for its protection. This idea, although commonly linked to animal species, is more commonly found with regard to protected areas. The idea that protected areas may have a high aesthetic value is well recognized in the philosophical literature (Gillespie, 1997; Godfrey-Smith, 1979: 309–19), and in the preambles of a number of international agreements (Gillespie, 2007: chapter 4). However, the Convention for the Protection of the World Cultural and Natural Heritage (WHC) is the only convention to have developed a specific jurisprudence in this area. The launching point into the discussion of

aesthetic values comes from the WHC appreciation of 'natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic ... point of view' and/or 'natural sites or precisely delineated natural areas of outstanding universal value from the point of view of ... natural beauty' (WHC, 1972: Art. 2). This section of the WHC has been interpreted to allow for the inscription of sites that 'contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance' (UNESCO WHC Operational Guidelines, 2002: para. 44(iii)).

Despite the relative simplicity of this criterion, this category has been controversial to apply, as it is very difficult to measure. That is, whereas 'superlative natural phenomena' can be objectively measured and assessed, such as with the tallest mountain, the deepest canyon, the largest cave etc., 'exceptional natural beauty' is harder to assess. Indeed, apart from some broad principles, the World Heritage Committee has continually expressed caution in this area. The broad principles are that the aesthetics criterion is only applied to areas (and not species), and that natural aesthetics should not have a human influence. Accordingly, Venice and its lagoon, as well as Mont-Saint Michel and its bay (Pressouyre, 1992: 24), were rejected under this aesthetics category.

The foremost example of this caution was their recommendation that the aesthetic criterion should only be used in conjunction with other criteria, and singularly, only in exceptional circumstances (UNESCO, 1996b: WHC-96/CONF.202/INF.9: 3). This approach has been consistently applied, and more often than not, the aesthetic considerations of a site are listed in conjunction with other criteria. Nevertheless, a number of sites have been listed as world heritage sites, after fulfilling only the aesthetic criteria. These include the Belovezhskaya Forest of Belarus and Poland, three sites in China (Jiuzhaigou Valley, Huanglong Area and Wulingyaun), Sagarmartha in Nepal and Kilimanjaro in Tanzania. Aside from these listings, solitary under the auspices of aesthetic criteria, the more common approach is to list sites of spectacular aesthetic qualities, in conjunction with other listing considerations. This approach, whereby aesthetic concerns are linked with other criteria, has involved listings from all around the world, ranging from the Pyrenees in France (UNESCO, 1997: WHC-97/CONF.208/17: 39), through to India (with its valley of flowers) (Decision 29 COM 8B.14, 2006).

Non-anthropocentric values

Although anthropocentric values within international environmental law and policy are dominant, over the last decade, the growth of non-anthropocentric values has become very obvious. This is with regard to what is known as humane considerations, life values, and the values of the ecosystem. In each of these three areas, the primary justification in seeking to implement them is not directly related to humanity. That is, the values are sought primarily for the benefits they bring to non-human considerations (although humanity may also benefit).

1. Humane considerations

Humane values are those related to the objective to reduce the pain inflicted upon animals. Humane considerations do not necessarily seek to abolish the killing of animals, but rather, they seek the mitigate the cruelty with which it is done. Within international environmental law, humane values may be divided into three areas. The first area relates to international regimes, which have a large coverage. The second relates to the area of international law dealing with indiscriminate capture and the overlap of humane concerns. Finally, there is a series of species-specific examples.

The necessity to find 'appropriate' culling methods is a common feature of international wildlife law. This became very clear at the 2004 COP of the CBD, when the Principles and Guidelines for the Sustainable Use of Biodiversity were adopted. In addition to recognizing that non-consumptive use was a legitimate option for countries, they specifically recognized that when optimizing benefits from biodiversity, 'more efficient ethical and humane use of wild fauna and flora, within local and national contexts' should be promoted (UNEP/CBD/COP/7/L17). This decision followed on, unsurprisingly, from the IUCN Sustainable Use principles, which specify that any sustainable use should, inter alia, provide for the protection of wild animals from avoidable cruelty and suffering (IUCN, 1990: Recommendation 18.24).

With regard to treaties which deal with more specific issues (as opposed to the more generic principles that evolve from the CBD), the infusion of humane considerations into the ambit of 'appropriateness' can be seen with regard to the management of the species upon and around Antarctica. This process began with the 1964 Agreed Measures for the Conservation of Antarctic Fauna and Flora (reprinted in Austen and Richards, 2000: 3–10), and continued with the 1991 Protocol on Environmental Protection to the Antarctic Treaty. With regard to the issuing of permits, as well as strong considerations given to the status of the populations at hand, it is also necessary to utilize 'non-lethal techniques where appropriate'. Moreover, 'all taking of native mammals and birds shall be done in the manner which involves the least degree of pain and suffering practicable' (Art. 3(5) and (6)).

Humane considerations are also clearly evident within the 1973 Convention on International Trade in Endangered Species of Flora and Fauna (CITES). This Convention, with its strong focus on the humane treatment of animals which are subject to international transport, is supported by a number of other national, regional and international instruments detailing humane considerations in international transport. For example, trade should only be conducted with the intention of 'minimiz[ing] the risk of injury, damage to health or cruel treatment' (CITES, 1973: Art. III(4)(b); see also CITES, 1973: Art. III(5)(c), III(2)(c), IV(2)(c), IV(5)(b), IV(6)(b) and VIII(3)).

A strong linkage between indiscriminate capture and humane considerations is also apparent with stipulations that every attempt should be made to keep wrongly captured individuals alive, and not harm them in the process of releasing them. As a practice, placing by-caught fish back into the ocean (especially when still alive) is a well-established principle that may be traced in a number of agreements to the beginnings of the twentieth century (Gillespie, 2005: chapter 4). With regard to non-target species, such as turtles and small cetaceans, this area of international law has developed rapidly in the last 20 years. Accordingly, the obligation to carefully replace captured sea turtles can be found in the 1996 Inter-American Convention for the Protection and Conservation of Sea Turtles (Art. IV(2)(h)). With regard to cetaceans, the 1998 Agreement on the International Dolphin Conservation Program[9] has the development of 'techniques for the rescue and safety of dolphins' which are caught as by-catch. Amongst the many requirements for this are the methods designed to avoid killing or 'injuring' dolphins in the course of releasing such trapped cetaceans (Art. 5(b), Annex VIII(3)(d)).

With regard to large-scale terrestrial management regimes, similar principles relating to an overlap between the prevention of indiscriminate capture and humane considerations are clearly evident. This process began with the 1900 Convention Designed to Ensure the Conservation of Various Species of Wild Animals in Africa, which prohibited the utilization

of various snares and traps for the capture of land animals and the use of poison to capture fish (Rüster and Simma (eds) 1990: Volume IV, 1605). Similar prohibitions were repeated (and expanded) for subsequent regional conservation agreements in Africa and in Asia over the following decades. Within the European region, the 1979 Berne Convention on the Conservation of European Wildlife and Natural Habitats prohibited a number of means and methods of killing, capture and other types of exploitation. The complementary EC Council Directive on the Conservation of Natural Habitats and of Wild Fauna also prohibits a number of indiscriminate and/or unduly cruel hunting methods (Convention on the Conservation of European Wildlife and Natural Habitats, 1979: Art. 16 and Annex VI; Council Directive 92/43/EEC, 1992).

The strongest example of the overlap between indiscriminate capture mechanisms and humane considerations is that of leghold traps. Ethical concerns in this area date back to the second half of the nineteenth century, although it was not until the twentieth century that some European countries sought to control this killing and capturing method. By the end of the twentieth century these prohibitions were not only European wide, the Community was also seeking to prohibit importation into the region of products made from animals caught in such traps or by other means that do not meet 'internationally agreed humane trapping standards' (EC Regulation No. 35/97, 1997: Preamble). This law was to run parallel with standards being propagated by the International Standards Organization, which was, at that point, attempting to formulate an agreed upon standard. However, when the ISO attempts ran into difficulties, and following individual States seeking to ban the importation of furs from animals caught in leghold traps, the EC initiated agreements with individual nations regarding humane trapping methods. Two agreements, one between the EC, Canada and Russia, and the substantially equivalent (but slightly different) agreement between the EC and the United States (the EC-US Agreement, Agreed Minute and Side Letter Relating to Humane Trapping Standards, 1998: 534) emerged from these negotiations. The Agreement with Canada and the Russian Federation (Agreement on Humane Trapping Standards, 1998: 532) is very specific in its prescriptions of actual trap standards by which parties must abide. The Agreement begins by recalling 'their deep commitment to the development of international humane trapping standards'.

The humane killing of seals was of great concern in the 1980s in Europe (Wilkins, 1997: 68–74). As the European Community reacted, their emphasis was clearly upon the subject (young and baby seals) of the hunt, which were the recipients of aesthetically disturbing (and arguably inhumane) culling methods. Moving more into international law, it is possible to suggest that humane killing of this species, when they need to be culled, is now the required norm. This norm can be seen in the 1976 Convention on the Conservation of North Pacific Fur Seals (reprinted in Kiss, 1993: 460), the 1972 Convention for the Conservation of Antarctic Seals (Art. 3(1) reprinted in Austen and Richards, 2000: 134–42) and the 1990 Agreement on the Conservation of Seals in the Wadden Sea (Art. VI(2), reprinted in Austen and Richards, 2000: 292).

With regard to birds, the prohibition of both indiscriminate and inhumane killing of birds began in a bilateral sense with the 1875 Declaration for the Protection of Birds Useful to Agriculture, which outlawed the use of poison and narcotics to catch birds (reprinted in Rüster and Simma (eds.), 1990: Volume IV, 1561). Additional hunting methods were restricted with the 1902 Convention on Birds Useful to Agriculture. The 1950 International Convention for the Protection of Birds stipulated that certain methods were prohibited which

would cause mass killing of birds 'or to cause them unnecessary suffering'. With such considerations in mind, it then proceeded to list a series of prohibited methods and added the particularly cruel use of 'blinded decoy birds' (Art. 5; reprinted in Austen and Richards, 2000: 118–21). Similar principles and restrictions on hunting methods were followed by the 1970 Benelux Convention Concerning Hunting and the Protection of Birds (Art. 4), the 1979 European Council Directive on the Conservation of Wild Birds (European Council Directive 79/409/EEC, 1979: Art. 5(d), 8(1) and Annex IV) and the 1995 Agreement on the Conservation of African-Eurasian Migratory Waterbirds (Annex 3, Action Plan 2(1)(1), Points 4(1)(5) and (8)).

A later international document, which adds a new dimension to bird agreements and the necessity to avoid both indiscriminate capture and humane treatment, is the Food and Agricultural Organization's International Plan of Action for Reducing Incidental Catch of Seabirds in Long-line Fisheries.[10] This Plan stipulated that 'If despite the precautions, seabirds are incidentally caught, every reasonable effort should be made to ensure that birds brought onboard alive are released alive and that when possible hooks should be removed without jeopardizing the life of the birds'.

This type of approach was later reinforced in the Agreement on the Conservation of Albatross and Petrels. This Agreement stipulated that when dealing with these species which could not be rescued, 'Humane killing, by duly authorised persons, to end the suffering of seriously injured or moribund albatrosses or petrels shall not constitute deliberate taking or harmful interference'. The key word is 'humane'. Likewise, in the accompanying Action Plan, when dealing with non-native species, and the need to remove or eradicate them, it was suggested that such measures 'should satisfy to the extent feasible, humane and environmental considerations' (Agreement on the Conservation of Albatrosses and Petrels, 2006: Art. III(5), Action Plan 1(4)(2)).

The final example of humane killing objectives in international environmental law concerns the International Whaling Commission (IWC). In this forum, the objective to reduce both pain and time to death for hunted cetaceans goes back to the 1958 Second United Nations Conference on the Law of Sea, which suggested that the killing of all marine life should be done with the intention of sparing them suffering 'to the greatest extent possible' (UN Doc. A/CONF.13/L.56, 1958). Since this point, most of the countries within the IWC have attempted to find ways to reduce the time to death for whales caught in either commercial or subsistence whaling. The foremost advance with improving the primary killing methods of commercial whaling began in the mid-1970s with the development of an alternative to the explosive (cold grenade) harpoon.[11] Its replacement, the penthrite grenade, has also been consistently improved since the mid-1980s, and the percentage of instantaneous deaths has increased to 45 per cent in all commercial hunts utilizing this weaponry (IWC/55/Rep 5: 9). In a supplementary manner, the secondary methods used for killing whales have also been improved. This is most notable with the progressive phasing out of the electric lance, which after over one hundred years of use was shown to be increasing, not decreasing, pain before death.[12]

Another area where advances have been made with primary killing methods has been with small cetaceans. The decision that humane considerations should be brought to bear on the killing of small cetaceans dates from 1980. The foremost example of this overlap was the Pilot whale hunt in the Faeroe Islands, which evoked very strong international concern, for the following 15 years, due to the use of the gaff and the spear before being (domestically)

outlawed in the mid-1990s. However, exactly how far the alternative – a new type of knife inserted into the blowhole – is effective in reducing time to death remains a matter of debate (Humane Society, 2003: 13).

The last area of note with regard to the IWC and humane killing is subsistence ('aboriginal') hunting. In this area, due to a desire to maintain traditional practices, attempts at reducing pain and time to death are often, despite good intentions, negated and relatively long deaths result, on average, of between 30 to 60 minutes (although it can be less or more), depending on the subsistence hunt in question. For example, with the indigenous take off Greenland in 2003, the average time for a minke whale to die was 14 minutes, and the average time for a fin whale was 114 minutes. The worst case was 720 minutes.[13]

2. *Existence values*

The ethical obligation to protect something because it is alive is restricted to one particular area – and that is with regard to if it is endangered, and at risk of becoming extinct. Extinction of life is a very real risk for a number of species. For example, the 2006 Red List of Endangered Species listed 16 119 animal and plant species in danger of extinction, including 1 in 8 birds, 1 in 4 mammals and 1 in 3 amphibian species (Graham-Rowe, 2006: 10). The 2007 Red List increased the number to 16 306: 25 per cent of mammals, 12 per cent of birds, 33 per cent of amphibians, and 70 per cent of known plants (*SPECIES*, 2007: 23). Despite such large numbers at risk, the recognition of the importance to protect all species has been slow to evolve in international environmental law. The first general precedents in this area (although they were not international law as such) came with the 1980 World Conservation Strategy and the 1982 World Charter for Nature. The World Charter for Nature emphasised that 'the genetic viability on the Earth shall not be compromised; the population levels of all life forms ... must be at least sufficient for their survival' (World Charter for Nature, 1982: Principle 2). Although these two documents provided a good beginning, mandates in the form of somewhat fuller international law directives had to wait until the 1992 Earth Summit, and the formation of the CBD.

Surprisingly, the explicit recognition that species should not be allowed to become extinct was not to be found in any general international instrument until the dawn of the twenty-first century. This was somewhat ironic, as this objective was obviously implicit, as Conventions such as the CITES were clearly predicated upon the realization that, 'wild fauna and flora ... are an irreplaceable part of the natural systems of the Earth which must be protected ...'. Accordingly, the Convention sought to limit trade in any species which may 'endanger their survival' (CITES, 1973: Art. II). Similar goals were reiterated in, inter alia, the Convention on Migratory Species (CMS). However, the objective of preservation of endangered species is implicit, not explicit – although all the mechanisms within the CMS (and similar agreements) aim at conserving species which are threatened with extinction (Art. III(4)(c)).

This approach changed with the CBD, and the adoption of what is known as the '2010 target'. 'Targets' are currently in vogue within international environmental law and policy. The most notable international targets in this area are those developed by the United Nations, and their Millennium Development Goals. In particular, Millennium Goal 7 seeks to ensure environmental sustainability by 2015 (UNEP/CBD/COP/7/L9). As a stepping stone towards the 2015 target, it was proposed that the CBD develop an interim 2010 target, which would be linked to a series of focal areas and subsidiary goals (Recommendation IX/13: 111). Accordingly, in 2002, the Parties to the CBD adopted a Strategic Plan for the Convention.

Significantly, the Parties committed themselves[14] to a more effective and coherent implementation of the three objectives of the Convention and 'To achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth' (Decision VI/26, 2002).

The 2010 target was subsequently endorsed at the WSSD. Two years later the CBD Parties adopted a framework to facilitate the assessment of progress towards the 2010 target. The 2010 target includes seven focal areas and a series of complementary 'indicators' for assessing progress towards the 2010 target at the global level, and its subsidiary targets. The first focal area is the protection of the components of biodiversity. The second focal area is the promotion of sustainable use (and consumption) and the third focal area is addressing threats to biodiversity (Decision VII/30, 2004). Although the CBD deals generically, the 2010 target has been picked up by other international environmental regimes such as the CMS (Resolution 8(7), 2005), and CITES. Accordingly, the goal to prevent species from becoming extinct has been entrenched in most of the primary instruments in this region. Moreover, as the CBD and the associated treaties come to establish their indicators and robust ways to measure progress in this area, it is likely that the values of existence will be brought to the forefront in international environmental law.

3. Ecosystem values

The last category of values worthy of note are so-called 'ecosystem values'. These values are derived from the conservation goal of focusing upon what is good for the overall ecosystem, rather than only upon an individual species within it. There has been significant growth in thinking about conservation in terms of the ecosystem, as opposed to only small components. This focus is, in part, due to the increasing recognition that to examine only one part of a situation may not be conducive to efficient protection. This change in approach is manifest with a number of oceanic regimes, where the focus has increasingly shifted from managing just one species, to attempting to manage the ecosystem in question and balance the needs of all of the species and patterns in that ecosystem. Accordingly, a whole range of new tools, such as much broader scientific views of what is under management, the precautionary principle, and mechanisms to deal with indirect catch are brought into play (Gillespie, 2005: chapter 8).

Despite the growth of the 'ecosystem approach' in fisheries, it is even more noticeable when dealing with problems of a truly global magnitude, such as with the ozone layer, or climatic change. For example, with the ozone layer, it became apparent in the late 1980s that the original models aimed at predicting future losses of ozone were inadequate, so a new approach was adopted. The new mechanism was known as Chlorine Loading Potential (CLP). CLP is a conservative measure of the amount of stratospheric chlorine that may be available to destroy ozone. The core thinking of the CLP model was based around the exact point at which the chlorine in the stratosphere starts to destroy the ozone layer. Once this scientific point was established (chlorine above 2.0 parts per billion) (Litfin, 1994: 131), then the ecological bottom line in the negotiations could begin. That is, any chlorine about 2.0 ppb was above what the ecosystem of the ozone layer could sustain without damage. As such, the good of the ecosystem became the bottom line in all debates that followed.

A very similar process has been followed with climatic change. For example, the 1992 UN FCCC states clearly,

> The ultimate objective of this Convention and any related legal instruments the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner. (UNFCCC, 1992: Art. 2)

Despite the clarity of such statements, that the protection of the climate ecosystem is the goal of the international law in this area, exact determination (in terms of either carbon concentration or overall temperature increases) of where the level for 'dangerous anthropogenic interference with the climate system' is, has proved difficult (Parry et al., 1996: 1–6). Nevertheless, the unofficial view is typically that a change of 2.0°C is the point that temperatures should not be allowed to raise above, and 3.0°C could be the 'tipping point' before positive feedbacks start to occur and feed on themselves, thus accelerating the global warming process (*New Scientist*, 19 August 2006: 7). The 2.0°C target, when translated into CO_2 concentration, would suggest that the goal is to prevent the concentration from going over 550 ppm; 550 ppm is an effective doubling of the CO_2 concentration from the pre-industrial level, as well as being a substantive increase on the 360 ppm CO_2 concentration at the end of the twentieth century (*New Scientist*, 24 February 2007: 4). To achieve this goal, eventually global emissions of greenhouse gases will probably have to be less than 50 per cent of the levels of the late 1990s. If such a goal were accepted, then the absolute limit of what was tolerable in the atmosphere acts as the baseline for discussions on what greenhouse gas reductions are actually required to protect the ecosystem (*New Scientist*, 10 March 2001: 3).

A final example of the ecosystem approach is also evident with the control of air pollution. This evolved out of the 1980s when the United Kingdom argued that there was no scientific justification for making the same reductions of pollutants for all countries, as the ecological situation for each country was different. Soon after, it was agreed that the best way forward for negotiations in this area would be to work out the ecological limits for each ecosystem, before it became irreversibly damaged by air pollutants, and make the necessary reductions accordingly within an effect-orientated scientific equation. This flexible approach meant that, instead of requiring a set percentage reduction in emissions, policy-makers should set reduction targets based on the effects of pollutants on different environments, or the critical loads (CL) that they could cope with. Critical loads (which proved very difficult to work out) provide policy-makers with a more precise idea of the relationship between the largest sources of pollution and the most sensitive environments, thereby allowing them to focus on making emission reductions which are based on an ecological bottom line (UNECE, 1991).

Conclusion

This chapter has attempted to portray what dominant philosophical values are currently operating within international environmental law. In doing so, it has sought to provide examples of where these values are, and some of the debates associated with them. Collectively, international environmental law operates in a maze of anthropocentric and non-anthropocentric values. Often these values overlap both within and between regimes. Sometimes they conflict, but conflicts are relatively rare.

Although anthropocentric values are more common than non-anthropocentric ones, there is no one dominant philosophical value that towers above all the areas of international envi-

ronmental law. Non-anthropocentric values are also becoming particularly noticeable across a large range of topics. Once more, there is no dominant non-anthropocentric value in this setting either. However, what is obvious in international environmental law is that the debates about the philosophical value of the environment are not novel. In the space of 20 years, debates which were once the province of exclusive philosophy journals have moved to the core of many of the most high profile international regimes that are seeking to resolve some of the most pressing difficulties of the twenty-first century.

Notes

1. For a fuller discussion of religious environmental ethics, see Gillespie (1997: chapters 5 and 6).
2. In more detail, these Protocols are: Protocol on Long-term Financing of Co-operative Programme for Monitoring and Evaluation of the Long Term Transmission of Air Pollutants in Europe; the 1985 Helsinki Protocol to the LRTAP on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at Least 30%; Protocol to the 1979 Convention on Long Range Transboundary Air Pollution Concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes; Protocol to the 1979 Convention on Long-range Transboundary Air Pollution Concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes (1991); Protocol on Further Reduction of Sulphur Emissions (1994); The Gothenburg Multi-effects Protocol. These Protocols are accessible at http://www.unece.org/env/lrtap/protocol/99multi.htm (last visited on 12 April 2008).
3. Action taken by the COP at the First Part of its Sixth Session (FCCC/CP/2000/5/Add.2, 2001). Personal Observations of the Chair.
4. This is available from http://www.unesco.org/culture/ich/index.php (last visited on 12 April 2008).
5. This is also available from UNESCO. See CLT-2005/CONVENTION DIVERSITE-CULT Rev.
6. See for instance the following: Annex 6, 'Guidelines for the Designation of Special Areas under MARPOL 73/78 and Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas'; MEPC, 2001: MEPC 46/23, sections 4.4.12–4.4.15.
7. The site was inscribed on the World Heritage List under cultural criteria ii, iii, and iv.
8. The 'vital role' quote comes from paragraph 25 of the Johannesburg Declaration on Sustainable Development.
9. See in more detail: http://www.oceanlaw.net/texts/aidcp.htm (last visited 10 April, 2008).
10. Available at http://www.oceanlaw.net/texts/faoseabird.htm (last visited on 10 April 2008).
11. When commercial whaling was at its peak, the whalers used 90 mm cannons that fired an explosive harpoon. Although this may have been successful with the larger whales, when the hunts moved to the smaller whales, this method was far too powerful as harpoons often passed right through minke whales without exploding. The first response to this problem was the cold harpoon, which had a non-explosive head, whose main purpose was to secure the whale, so that it could be brought alongside the vessel before being dispatched via a secondary method. This commonly led to very protracted deaths. As such, the penthrite harpoon was developed, which is essentially a new type of explosive harpoon fired from a 75 mm cannon.
12. The choice of either a large calibre rifle, a second harpoon or an electric lance depends on 'the situation'; see Government of Japan (2000: IWC/52/WKM&AWI 10).
13. In Denmark, the average time to death for Minke whales is 16 minutes, and for Fin whales 28 minutes. Only 15 per cent of Minke, and 17 per cent of Fin whales achieve instant death (IWC/53/WKM & AWI: Agenda Item 3(1); Greenland Home Rule Government, 2004: IWC/56/7; Report of the Workshop on Whale Killing Methods and Associated Welfare Issues: IWC/55/Rep 5).
14. CBD Parties are also invited to develop their own targets in both domestic and regional contexts.

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