IMPACT

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CONTENTS

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MIDALL PTY LTD V SOUTHERN MIDLANDS COUNCIL [2006] TASRMPAT 28

Tribunal looks at adopting precautionary approach in landfill decision

Lewis Shillito looks at a recent decision of the Resource Management and Planning Appeal Tribunal

Midall Pty Ltd v Southern Midlands Council [2006] TASRMPAT 28 dealt with a refusal by the Southern Midlands Council to grant a permit for a landfill operation in the rural ara of Mangalore. The proposal involved a disposal site with a footprint of approximately 1.5km^2, situated in a valley of relatively steep terrain.

As a Level 2 activity, the proposed landfill was assessed by the Board of Environmental Management in 2002. The Board concluded that 'with careful management and planning' (including conditions imposing limits on annual tonnage and periodic reviews) the proposal was acceptable. Following a subsequent reduction in the size of the proposal, the Board confirmed in 2004 that it still considered that the proposal was acceptable. Despite this assessment, the Council refused to grant a permit for the proposed landfill development on the grounds of traffic impacts, safety and amenity. The developer lodged an appeal against the refusal and a number of concerned residents joined the appeal to support Council's decision.

The Tribunal noted that the objectives of the *Environmental Management and Pollution Control Act 1994* include reducing and minimising environmental harm resulting from disposal of waste and adopting a precautionary approach when assessing environmental risk. Therefore, while recognising that there was a need for an additional waste disposal facility in southern Tasmania, the Tribunal held that the site would not be suitable for the proposed landfill unless there was reasonable assurance that pollution from the site could be controlled. This was particularly important given the location of the proposed landfill in a valley.

Having regard to the best practice guidelines set out in the *Landfill Sustainability Guide 2004*, the Tribunal was not satisfied that adequate assessment had been done to identify and manage impacts on groundwater, seismic risks and stability or the adequacy of proposed measures to divert stormwater.

The developer argued that the requirement to provide an environmental bond (to be used for remediation in the event that the landfill did cause pollution) provided a financial incentive for good environmental performance. However, the Tribunal found that there was no evidence that the amount of the surety would be sufficient to remedy any environmental harm that did occur.

The Tribunal noted that further information about the environmental impacts could be required by the Director and additional conditions imposed to manage any risks identified. However, the Tribunal noted that there were no rights of appeal in respect of conditions imposed by the Director; therefore it was appropriate for the Tribunal to consider the suitability of the site on the basis of the evidence before it. The Tribunal did not believe that the evidence currently put forward was sufficient to provide an assurance that pollution would be adequately managed. Therefore, the development proposal was rejected.

This decision confirms that a precautionary approach should be adopted when assessing development applications. It also makes it clear that the developer is responsible for providing sufficient information to satisfy the regulatory authority that environmental risks can be managed before a permit is issued.

EDO NQ Climate Change Case Update

On June 15 the Federal Court at Brisbane dismissed a case brought by North Queensland conservation group Wildlife Whitsunday involving greenhouse gas emissions from two large coal mines in Queensland, the Isaac Plains Coal Project and the Sonoma Coal Project. Justice John Dowsett found a government official acted lawfully in finding no link between the emissions from the mines and any specific damage to Australia's environment.

Australian Environment Minister Ian Campbell last year spelt out the clear threat posed by global warming saying, "global warming ... is a very serious threat to Australia." Yet to win in the Federal Court the Minister relied on a government official to downplay the threat of global warming as merely a "genuine concern". The official found no link between even enormous emissions from coal mines and any specific impact on the environment.

The greenhouse gas emissions from the two coal mines in this case will be equivalent to about 25% of Australia's total greenhouse gas emissions in a single year. The mines will produce 48 million tonnes of coal over 15 years, valued at roughly $3.5 billion.

Ian Lee, President of Wildlife Whitsunday said, "This decision shows our environmental laws aren't working properly. How can it be that the enormous greenhouse gas emissions from these mines aren't properly assessed and regulated under Australia's main environmental law?

"This is a global problem and it's ridiculous to look for a specific impact when these enormous emissions will contribute significantly to the global problem. Global warming is already having severe impacts on how we live – the prolonged drought in eastern Australia due to changed weather patterns is one example.

"Unless we act urgently to reduce emissions it is going to have catastrophic impacts on the things we treasure such as the Great Barrier Reef. We need our governments to think carefully about these impacts when assessing major projects like these coal mines. Right now that's not happening."

Wildlife Whitsunday is considering an appeal against the decision.

The Environmental Defender's Office of Northern Queensland Inc is acting for the

Wildlife Preservation Society of Queensland Proserpine / Whitsunday Branch Inc ("Wildlife Whitsunday").

For further information contact Kirsty Ruddock (Solicitor EDO-NQ) (07) 4031 4766.

EDO Collaboration with Waterkeepers Australia

The EDO Network is profiled in the latest issue of Crosscurrents, the newsletter of Waterkeepers Australia. Waterkeepers Australia is a not-for-profit organisation committed to supporting community advocates - riverkeepers and baykeepers - for protection of our waterways.

EDO Victoria and Environment Victoria were involved in the inception of Waterkeepers Australia after running rural and metropolitan workshops on Water Law in Victoria in 2002, with the assistance of The Myer Foundation and law firm Holding Redlich.

Collaboration between Waterkeepers Australia and EDO Victoria continues today through joint projects and mutual support between the organisations. Support is provided through the Waterkeepers Ecotone Experts Network and legal advice provided by the EDO to Waterkeeper groups and other environment groups.

Future collaboration will see Waterkeepers and EDO Victoria develop a statewide river project in which the EDO will contribute by developing and delivering waterway-specific workshops on Water Law and community participation in decision making.

Pulp Mill Activity in South America

Community anger and diplomatic tension is growing in relation to two proposed pulp mills on the border of Uruguay and Argentina. When completed, the mills (operated by Spanish company ENCE and Finnish company Botnia) would be the world's largest pulp production enterprise. The mills propose to use Elemental Chlorine Free technology, despite World Bank advice that this is not the least polluting technology available.

Residents on both sides of the Uruguay River are concerned about the impacts of the proposal, including degradation of water quality and quantity, air pollution and economic impacts on the tourism, fishing and recreational industries on which the communities depend. There are also concerns about the social and environmental consequences of large-scale eucalyptus plantations required to feed the mills.

Environmental and human rights groups are undertaking a wide-ranging campaign against the proposed mills. Activities have included:

- Protest rally on the Transnational Bridge, which attracted nearly 40,000 protestors
- Complaints filed with the Inter-American Commission on Human Rights and the International Finance Corporation Compliance Advisory Ombudsman
- Criminal complaints against the executive directors of ENCE and Botnia for deliberately causing environmental harm
- Submissions to principal investors regarding compliance with Equator Principles (investment guidelines). ING has since withdrawn from the project.

The mills have also become an issue of international diplomacy. The Argentine government, concerned at the lack of consultation or assessment of impacts on Argentines, has filed a complaint against Uruguay in the International Court of Justice. The complaint claims that Uruguay is breaching the Rio Uruguay Treaty, which aims to protect the environmental quality of the Uruguay River that separates the two countries.

For more information about the campaign against the Uruguay pulp mill proposal, visit
www.cedha.org.ar/en/intiatives/paper_pulp_mills

"Illegal, Unsustainable and Unbeneficial" - External Report on Logging in Papua New Guinea

A new report on the commercial logging industry in Papua New Guinea (PNG) shows that the overwhelming majority of current commercial industrial forestry operations in PNG are ecologically and economically unsustainable. The report, released in March by a leading international forestry organisation, Forest Trends found that most of the logging was in fact illegal, a fact supported by the government's own independent audits commissioned between 2000 and 2005.

The Forest Trends report, *Logging, Legality, and Livelihoods in Papua New Guinea*, summarises the findings from five independent reviews of the timber harvesting industry conducted between 2000 and 2005. The reviews were initiated by the Papua New Guinea government in response to the widely held view that forest management in PNG was not providing long-term benefits to the country or its citizens.

The findings illustrate a fundamental lack of governance and indicate that, unless this system is fixed, other schemes such as the government's current proposal to sell forest carbon, risk being equally corrupted.

The reviews were conducted by teams of independent experts, including lawyers, foresters, economists, and environmental and social scientists, following terms of reference approved by the Government and the World Bank. The review teams received unique access to official records, logging sites and company documents and were able to conduct wide-ranging interviews with industry officials, landowners and government officials.

"This report will prove to be a valuable source of objective and credible information on forest governance in Papua New Guinea, and will certainly help traders throughout the world better discriminate between legal and illegal sources of timber," said Andy Roby of the UK Timber Trade Federation. "The Government of Papua New Guinea and the World Bank are to be congratulated for sponsoring the original evaluations."

Papua New Guinea's forest industry is predominately focused on the harvesting of natural forest areas for round log exports. There is little plantation production and only a limited number of processing facilities. The sector is dominated by Malaysian-owned interests and the primary markets for raw logs are in China, Japan and Korea. Many of the logs are processed in China for consumption in Europe and North America.

The Reviews included a study of fourteen logging projects covering a gross area of 3.17 million hectares and with a local population of over 83,000 people. In 2004 these operations produced 1.3 million cubic meters of logs with a declared export value of US$70 million. All fourteen projects were found to be operating unlawfully and the timber harvesting was not being sustainably managed.

According to the Forest Trends report, "none of these 14 projects can be defined as legal and only one project manages to meet more than half of the key criteria set for a lawful logging operation."

The findings of the reviews were presented in 63 individual reports that together provide a unique assessment of PNG's forest administration system. The reviews show that the primary governance role of the PNG Forest Authority is seriously deficient, and that there is a political vacuum with no demonstrated government interest in controlling the problems in the sector. The Forest Trends report summarises the main findings of the reviews according to the following themes:

Legality

Whilst the PNG Government and its regulatory institutions have all the necessary policies, laws and regulations to ensure that sustainable timber production can be achieved, these laws are not being enforced. "Industry is allowed to ignore PNG laws and, in fact, gains preferential treatment in many cases, while the rural poor are left to suffer the social and environmental consequences of an industry that operates largely outside the regulatory system."

Corruption is an underlying theme throughout the review reports. "Corruption has a devastating effect on the living standards in the area as well as the long-term benefits for landowners," said Kerstin Canby, Forest Trend's Program Manager for Finance and

Trade. "Basic rights of the landowners are being ignored – even abused. There are a few logging operations in the country which are deemed beneficial to both local landowners and the country, but they are lost in a sea of bad operators. The government needs to support these companies, or risks having the international community boycott all of PNG's exports."

Environmental Sustainability

According to the report, the forests are not being managed to maintain a sustained yield of timber. Basic descrip-

tions of the forest resources in the country are generally unreliable and, in some cases, wildly misleading. Annual allowable harvesting levels in individual projects have been set too high and forest areas are effectively being logged out.

Social Impacts

Whilst logging in Papua New Guinea is bringing short-term cash incomes to local resource owners, these are quickly dissipated and, in general, have not delivered lasting, long-term benefits to the community, such as permanent infrastructure and other services. Employment and other 'spin-off' benefits are usually taken by outside workers. Salaries and working conditions are generally very poor and have been officially described in one project as "modern day slavery."

In November 2005, in response to environmental concerns in the UK brought to light by Greenpeace International, member companies of the UK Timber Trade Federation agreed to immediately suspend all future contracts worth millions of dollars for Chinese plywood faced with bintangor veneer from Papua New Guinea and to investigate suitable alternative veneers from verified legal and preferably sustainable sources

Financial Aspects

Whilst current official log export prices indicate that the industry has been unprofitable for a number of years and therefore not economically viable, logging continues and companies still seek access to new forest areas. Further investigation into the financial aspects of logging in PNG is warranted. To date, no financial study has been able to exclude the continuing specter of transfer pricing given the inexplicable price gap and the 'substantial' financial incentives for companies to under-report logging values.

In addition, the Government continues to be the primary beneficiary of the forest industry, receiving US$30 million in cash revenues annually. These are not returned to local communities through services or other support. According to the report, official inspections at export only verify the quantity and description of the timber to ensure export taxes are paid, with no connection between the unlawful nature of operations in the forest and the legal documentation

that PNG wood products carry. "Thus, official export documentation merely launders the 'unlawful' timber into legitimately-produced exports accepted by governments and retailers worldwide."

While for years the World Bank and the Government of PNG were engaged in a constructive dialogue to bring about governance reform in the forest sector, in 2005 they agreed to cancel the Forestry and Conservation Project (FCP) after disbursements had been suspended for one of the longest periods in the Bank's operational history.

The Forest Trends report makes a series of recommendations to mitigate some of the key problems. These recommendations include: continued monitoring of activities in the region, the establishment of a legal fund to support legal challenges through the court system, raising awareness about land-owner rights, support to the Ombudsman Commission, best-practice reviews and international assistance to investigate potential corruption and the relationship of the timber industry to political groups.

"The system must be fixed," said Michael Jenkins, President & CEO of Forest Trends. "The nexus between the logging companies and the political elite needs to be broken. One way to do this is to help local landowners better understand their rights and to establish a legal fund so that they can be defended. Papua New Guinea's legal system does exist outside of political control and the courts have a track record of ruling against illegal logging.

"Furthermore, importers such as China have the opportunity to take a global leadership role. They should establish green public procurement policies, starting with a pilot program to ensure that wood for the 2008 Beijing Olympics comes from verified legal sources.

"The governments of several countries (notably Indonesia and Malaysia) which export high amounts of wood products to China have expressed an interest in collaborating at the customs level to ensure that illegal exports are not accepted at the importing country's borders. China should enter into a regional agreement with Indonesia and Malaysia to test such a system."

Volume I and II of the Forest Trends Report, as well as material from the Government reviews which have been made publicly available by the Government of PNG, are available on the Forest Trends website: www.forest-trends.org.

Washington, DC-based Forest Trends is an international non-profit organisation that works to expand the value of forests to society; to promote sustainable forest management and conservation by creating and capturing market values for ecosystem services; to support innovative projects and companies that are developing these new markets; and to enhance the livelihoods of local communities living in and around those forests.

The Future of Renewable Energy in Australia

Two important aspects of Australian governments' measures to address greenhouse gas emissions are adopting more energy efficient practices, and investing in renewable energies.

The recent decision of the Federal Government to refuse approval for a proposed wind farm in southern Victoria has thrown renewable energy back into the spotlight. This article examines the regulatory regime for renewable energy and whether further measures are required to support the renewable energy sector.

Mandatory Renewable Energy Targets

The Renewable Energy (Electricity) Act 2000 introduced a Mandatory Renewable Energy Target (MRET) for the uptake of renewable energy, to be administered by the Office of the Renewable Energy Regulator. The MRET imposes interim annual targets towards a goal of an additional 9,500GWh (gigawatt hours) of renewable energy per year by 2010.

Under the MRET scheme, wholesale electricity purchasers must contribute to the uptake of renewable energy proportionate to their share of the electricity market. For 2006, purchasers will have to source 2.17% of their total energy requirements from renewable sources to achieve the interim MRET target.

Accredited renewable energy generators earn Renewable Energy Certificates (RECs) for every 1MWh (megawatt hour) of renewable energy produced in one year. RECs are then bought by wholesale purchasers. At the end of each year, each wholesale purchaser must surrender enough RECs to the Regulator to satisfy its liability. Extra RECs can be kept or traded. If a company does not have enough RECs to surrender, the company will be

charged a renewable energy shortfall charge of $40/MWh.

So, a company purchasing 100,000MWh of electricity from the national grid will need to surrender 2,170 RECs for 2006. If the company is only able to surrender 1,000 RECs, the company will have to pay a $46,800 shortfall.

What is renewable energy?

The Renewable Energy (Electricity) Act 2000 provides for a wide range of renewable energy sources to be eligible for the renewable energy scheme. These include hydro, wind, solar, bagasse co-generation, wood waste, photovoltaics, fuel cells and solid waste combustion (there is a full list at s.17 of the Act.)

Data from the Business Council for Sustainable Energy indicates that 47% of renewable energy is currently produced by hydro-generation, 18% through solar hot water and 12% by wind power. In 2004, the power station producing the most RECs was the Woolnorth Bluff Point Wind Farm in northwest Tasmania. The BCSE anticipates that by 2020, wind will be the largest contributor to renewable energy.

Is the future of renewable energy threatened?

A 2004 review of the operation of the MRET, the 'Tambling Report', found that the MRET has been a significant factor in encouraging investment in the renewable energy sector. However, the report found that by 2007 there would be sufficient capacity within existing power stations to easily meet the conservative MRET, and no incentive for further investment. Therefore, the report recommended that the MRET be extended beyond 2010, within interim targets towards a goal of 20,000GWh/year by 2020.

Despite this report, and significant pressure from conservation groups and the renewable energy industry, the Federal Government has not committed to any increase in the MRET. There is also no additional funding for the development of renewable energy in the Federal budget.

Without development grants or market demand for RECs, renewable energy projects are threatened – as demonstrated by the recent withdrawal of the development application for the Heemskirk wind farm on Tasmania's west coast. Progressive growth of the renewable energy sector will be vitally important to Australia's capacity to meet greenhouse gas abatement targets. Increasing the MRET to stimulate long-term investment in renewable energy technology is essential.

CEDHA Co-founder Appointed as Secretary of the Environment in Argentina

On 27 June, Romina Picolotti, human rights advocate and founder of the Center for Human Rights and Environment (CEDHA) was named as the new chief of Argentina's Environmental Secretariat.

President Kirchner has recently announced his intention to prioritise the environment and elevate the status of the Environmental Secretariat. This paradigm shift in Argentina's position regarding the environment has generated great expectations from local environmental actors and civil society in Argentina. Picolotti will be sworn in next week by President Kirchner.

Picolotti founded CEDHA in 1999 with the objective of promoting an environmental agenda that is more closely linked with human rights, and which guarantees a healthier environment for all people but especially for vulnerable groups which suffer a disproportionate burden of environmental degradation. She was recently awarded the Sophie Prize 2006 for her innovative contribution to sustainable development.

Following an internship with CEDHA undertaken by Pepe Clarke, EDO Programs Director, in 2002, the EDO has maintained a relationship with CEDHA via our joint Human Rights and Environment Internship Project.

For more information about CEDHA, see www.cedha.org.ar.

australian network of environmental defender's offices

Inquiry into Australia's National Parks, Conservation Reserves and Marine Protected Areas

In March this year ANEDO lodged a comprehensive submission to the Senate's Inquiry into Australia's national parks, conservation reserves and marine protected areas. An excerpt from the submission is printed below. For the full submission or more information generally please contact: Rachel Walmsley, Policy Director EDO NSW, (02) 9262-6989 rachel.walmsley@edo.org.au

Introduction

The Australian Network of Environmental Defenders' Offices Inc (ANEDO) welcomes the opportunity to provide comment to the Senate Inquiry into Australia 's national parks, conservation reserves and marine protected areas.

Australia has a long history of recognising the values of natural and wilderness areas through the creation of national parks and protected areas. In the tradition of most western nations, the development of national parks initially began with the objectives of conserving scenic and recreational values in close proximity to urban centres. However, throughout the twentieth century, there has been an increasing awareness in the need to protect land and ecosystems for their biodiversity values and for their natural and cultural heritage values. ANEDO strongly supports the creation of protected areas, both terrestrial and marine, for a range of values and objectives. We note that the continued creation and maintenance of sanctuaries and wildlife corridors will become increasingly important in planning for long term impacts of climate change.

Creation of protected areas may be ineffectual in the absence of committed resources for ongoing management. ANEDO recommends an increased allocation of resources from the Commonwealth and States.

As well as insufficient resources for ongoing management of protected areas, there are a number of other threats to the protection of the values of these areas. These include certain permitted activities such as mining in terrestrial parks and fishing in marine parks; encroachment and impacts of activities adjacent to parks; and the impacts of invasive species on native flora and fauna.

The introduction of the World Heritage Convention and the Convention on Biological Diversity (CBD), both of which Australia is party to, has encouraged Australia to designate vast tracts of land as protected areas, either as world heritage sites or national parks. The management of Australia 's natural resources and the protection of the environment generally have traditionally been within the purview of the States. The Commonwealth has historically been content to maintain this arrangement, only intervening in strategic cases and otherwise seeking to foster a cooperative approach. In recent years, the Commonwealth has become more interventionist in relation to nationally significant environmental matters. The Environment Protection and Biodiversity Conservation Act 1999 currently gives effect to many of Australia's international obligations, including the aforementioned treaties.

Recommendations

The recommendations of this submision can be summarised as follows:

- ANEDO recommends a review be undertaken across jurisdictions to determine whether any conservation areas need upgrading to park status. There should be clear protocols in place to provide that downgrading of status, for example from wilderness or park to recreation, must not occur except in exceptional circumstances.
- ANEDO recommends that resources be directed to the creation of additional marine park areas with clear objectives which translate into no-take zones. To ensure that these areas achieve their conservation objectives, resources must also be directed to compliance and enforcement of the no-take zones.
- ANEDO recommends that in relation to World Heritage properties, the EPBC Act 1999 should operate on the outstanding universal value and preservation of the integrity of the properties listed under the Convention, rather than consideration solely of particular listed values. The EPBC Act 1999 should be amended to facilitate implementation of the World Heritage Convention's Operational Guidelines. The Australian World Heritage management principles should be considered potential actions under the Act and should be rewritten as to operate on the outstanding universal value and preservation of the integrity of the World Heritage properties. A definition of World Heritage property should be inserted in the dictionary to the Act, and Section 12 be amended to ensure protection arising from the Act is comprehensively property-based, rather than simply values-based.
- ANEDO supports increased funding to encourage conservation on private land adjacent to reserves, or on private land constituting corridors between reserves. There needs to be resources directed at reviewing integration and coordination of off-park initiatives.
- Amendment of Management Plans on an ad hoc basis to permit new developments periodically has the potential to significantly undermine the management planning process and purpose. ANEDO supports entrenched legislative processes for management planning that require public participation and consultation as well as Federal assessment where appropriate. Management planning processes need to be reviewed in order to reduce delays and make plans more readily available to the public.
- ANEDO submits that there needs to be a review of Commonwealth activities in state marine areas and improved coordination of prohibitions

Continued on page 13...

Chief Judge Brian Preston Defines the Precautionary Principle

PRESTON CJ HAS PROVIDED A CLEAR AND THOROUGH EXAMINATION OF THE PRECAUTIONARY PRINCIPLE IN THIS CASE, WHICH CONCERNED THE EFFORTS OF HORNSBY SHIRE COUNCIL AND RESIDENTS TO PREVENT CONSENT BEING GIVEN TO A MOBILE PHONE TOWER. IT IS THE FIRST DETAILED EXPLANATION OF THE PRECAUTIONARY PRINCIPLE GIVEN BY A NSW LAND AND ENVIRONMENT COURT JUDGE. RELEVANT EXCERPTS ARE PROVIDED BELOW. THE ENTIRE JUDGEMENT IS AVAILABLE FROM WWW.LAWLINK.NSW.GOV.AU.

The precautionary principle explored

126 A number of decisions in this Court have established that the precautionary principle is to be considered in making determinations of development applications under the EPA Act: Carstens v Pittwater Council (1999) 111 LGERA 1 at 25; Hutchison Telecommunications (Australia) Pty Ltd v Baulkham Hills Shire Council [2004] NSWLEC 104 (26 March 2004), [26]; BGP Properties Pty Ltd v Lake Macquarie City Council (2004) 138 LGERA 237 at 262 [113]-[114]; B T Goldsmith Planning Services Pty Ltd v Blacktown City Council [2005] NSWLEC 210 (1 July 2005) at [73]; Port Stephens Pearls Pty Ltd v Minister for Infrastructure and Planning [2005] NSWLEC 426 (15 August 2005) at [54]; Providence Projects Pty Ltd v Gosford City Council [2006] NSWLEC 52 (17 February 2006) at [68], [76] and [108]; and Gales Holdings Pty Ltd v Tweed Shire Council [2006] NSWLEC 85 (27 February 2006) at [56]-[61].

127 However, there has not yet been, in the decisions of this Court, a detailed explanation of the precautionary principle or the procedure for application of it. Hence, it is necessary to refer to other sources of information on the precautionary principle, including judicial decisions of other jurisdictions and the academic literature on the precautionary principle. Drawing on these sources, the following guidance can be offered on the concept of the precautionary principle and its application.

Conditions precedent or thresholds to application of the precautionary principle

128 The application of the precautionary principle and the concomitant need to take precautionary measures is triggered by the satisfaction of two conditions precedent or thresholds: a threat of serious or irreversible environmental damage and scientific uncertainty as to the environmental damage. These conditions or thresholds are cumulative. Once both of these conditions or thresholds are satisfied, a precautionary measure may be taken to avert the anticipated threat of environmental damage, but it should be proportionate: N de Sadeleer, Environmental Principles: From Political Slogans to Legal Rules, Oxford University Press, 2005 at p. 155.

Threat of serious or irreversible damage

129 Two points need to be noted about the first condition precedent that there be a threat of serious or irreversible environmental damage. First, it is not necessary that serious or irreversible environmental damage has actually occurred – it is the threat of such damage that is required. Secondly, the environmental damage threatened must attain the threshold of being serious or irreversible.

130 Threats to the environment that should be addressed include direct and indirect threats, secondary and long-term threats and the incremental or cumulative impacts of multiple or repeated actions or decisions. Where threats may interact or be interrelated (for example where action against one threat may exacerbate another threat) they should not be addressed in isolation: see "Guidelines for applying the precautionary principle to biodiversity conservation and natural resource management", R Cooney and B Dickson (eds) Biodiversity and the Precautionary Principle, Risk and Uncertainty in Conservation and Sustainable Use, Earthscan, 2005 at p. 302, Guideline 6.

131 Assessing the seriousness or irreversibility of environmental damage involves consideration of many factors: see, for example, the suggested process of analysis in A Deville and R Harding, Applying the Precautionary Principle, Federation Press, 1997 at pp. 25-31; and the discussion in N de Sadeleer, Environmental Principles: From Political Slogans to Legal Rules, Oxford University Press, 2005 at pp. 163-165. The factors might include:
(a) the spatial scale of the threat (eg local, regional, statewide, national, international);
(b) the magnitude of possible impacts, on both natural and human systems;
(c) the perceived value of the threatened environment;
(d) the temporal scale of possible impacts, in terms of both the timing and the longevity (or persistence) of the impacts;
(e) the complexity and connectivity of the possible impacts;
(f) the manageability of possible impacts, having regard to the availability of means and the acceptability of means;
(g) the level of public concern, and the rationality of and scientific or other evidentiary basis for the public concern; and
(h) the reversibility of the possible impacts and, if reversible, the time frame for reversing the impacts, and the difficulty and expense of reversing the impacts.

132 The assessment of whether the threats are serious or irreversible will be enhanced by broadening the range of professional expertise consulted and seeking and taking into account the views of relevant stakeholders and rightholders. The former is important because of the inter-disciplinary nature of the questions involved. The latter is important because different judgments, values and cultural perceptions of risk, threat and required action play a role in the assessment process: see "Guidelines for applying the precautionary principle to biodiversity conservation and natural resource management" in Appendix A to R Cooney and B Dickson (eds) Biodiversity and the Precautionary Principle, Risk and Uncertainty in Conservation and Sustainable Use, Earthscan, 2005 at p. 301, Guideline 4; and A Deville and R Harding, Applying the precautionary principle, Federation Press, 1997 at p. 26.

133 The assessment involves ascertaining whether scientifically reasonable (that is, based on scientifically plausible reasoning) scenarios or models of possible harm that may result have been formulated: World Commission on the Ethics of Scientific Knowledge and Technology, The Precautionary Principle, UNESCO, Paris, 2005 at p. 31.

134 The threat of environmental damage must be adequately sustained by scientific evidence. As was held in Monsanto Agricoltura Italia v Presidenza del Consiglio dei Ministri, European Court of Justice, Case C-236/0 (13 March 2003) at [138]:
"not every claim or scientifically unfounded presumption of potential risk to human health or the environment can justify the adoption of national protective measures. Rather, the risk must be adequately substantiated by scientific evidence".

135 In Daubert v Merrell Dow Pharmaceuticals 509 US 579 (1993) at 589-590; 125 L Ed 2d 469 (1993) at 481, the United States Supreme Court held that in a case involving scientific evidence, the evidence must pertain to scientific knowledge. The adjective "scientific" implies a grounding in the methods and procedures of science and the word "knowledge" connotes more than subjective belief or unsupported speculation. The requirement that expert evidence pertain to scientific knowledge establishes a standard of evidentiary reliability.

136 In Gabcikovo-Nagymaros (Hungary v Slovakia) [1997] ICJ Rep 7, the International Court of Justice held that Hungary had not established that there existed a state of necessity justifying the suspension of its treaty obligations with the former Czechoslovakia. A state of necessity has to be occasioned by an essential interest of the State and the interest must have been threatened by a grave and imminent peril (a concept equivalent to a threat). The International Court of Justice did not accept that Hungary had established the objective existence of a grave and imminent peril and hence a component element of a state of necessity was absent. The Court noted:
"The word 'peril' certainly evokes the idea of 'risk'; that is precisely what distinguishes 'peril' from material damage. But a state of necessity could not exist without a 'peril' duly established at the relevant point in time; the mere apprehension of a possible 'peril' could not suffice in that respect": at [54].

137 Determining the existence of a threat of serious or irreversible environmental damage does not involve, at the stage of assessing the first condition precedent, any evaluation of the scientific uncertainty of the threat. That evaluation comes in the following steps of analysis.

138 If there is not a threat of serious or irreversible environmental damage, there is no basis upon which the precautionary principle can operate. The precautionary principle does not apply, and precautionary measures cannot be taken, to regulate a threat of negligible environmental damage: N de Sadeleer, Environmental Principles: From Political Slogans to Legal Rules, Oxford University Press, 2005 at p. 163.

139 This was the conclusion in Alumino (Aust) Pty Ltd v Minister administering the Environmental Planning and Assessment Act 1979 (NSW) [1996] NSWLEC 102 (29 March 1996) where the evidence established that the development could be operated in a way which would not have any significant environmental consequence: at pp. 15-16. So too in Hutchison Telecommunications (Australia) Pty Limited v Baulkham Hills Shire Council [2004] NSWLEC 104 (26 March 2004), where compliance of a development with the relevant standard for the protection of public health and safety by a significant margin meant that there was no threat of serious or irreversible damage to public health and safety from the development, and hence no basis on which to apply the precautionary principle: at [27].

Scientific uncertainty

140 The second condition precedent required to trigger the application of the precautionary principle and the necessity to take precautionary measures is that there be "a lack of full scientific certainty". The uncertainty is as to the nature and scope of the threat of environmental damage: Leatch v National Parks and Wildlife Services (1993) 81 LGERA 270 at 282.

141 Assessing the degree of scientific uncertainty also involves a process of analysis of many factors: see A Deville and R Harding, Applying the Precautionary Principle, Federation Press, 1997 at pp. 31-37. The assessment of the degree of uncertainty might include consideration of the following factors:
(a) the sufficiency of the evidence that there might be serious or irreversible environmental harm caused by the development plan, programme or project;
(b) the level of uncertainty, including the kind of uncertainty (such as technical, methodological or epistemological uncertainty); and
(c) the potential to reduce uncertainty having regard to what is possible in principle, economically and within a reasonable time frame.

142 One issue that the formulation of the precautionary principle raises is how much scientific uncertainty must exist. On a literal reading, the threshold is crossed whenever there is a lack of "full" scientific certainty. Yet, such a literal interpretation of the principle would render this condition meaningless.

143 Certainly, "full" scientific certainty as to the threat of environmental damage would be an unattainable goal: Nicholls v Director-General of National Parks and Wildlife (1994) 84 LGERA 397 at 419. It is impossible to be completely certain about the threats of environmental damage: C Barton, "The status of the precautionary principle in Australia: Its emergence in legislation and as a common law doctrine" (1998) 22 Harvard Environmental Law Review 509 at 518.

144 It cannot be unequivocally stated that a particular phenomenon will never cause adverse effects. This is because a null hypothesis can never be proven through processes of inductive logic. Indeed, this point is made in the Australian Standard RPS3 at p. 41. Karl Popper, the eminent scientific philosopher, has also explained why it is impossible to prove, with certainty and finality, a scientific theory. No matter how many positive instances of a generalisation are observed, it is still possible that the next instance will falsify it. However, a sound and reliable scientific theory will be one which, while being capable of being falsified, has been put to the test and has resisted falsification whenever it is put to the test: see K Popper, Conjectures and Reputations, 5th ed, Routledge, London, 1989, p 37 and Daubert v Merrell Dow Pharmaceuticals 509 US 579 (1993) at 593; 125 L Ed 2d 469 (1993) at 482-483. See also B J Preston, "Science and the Law: Evaluating evidentiary reliability" (2003) 23 Australian Bar Review 263 at 271, 280-282 and 287.

145 Once it is accepted that the threshold is something less than full scientific certainty, the question becomes how much less? Or turning the question around, how much scientific uncertainty need there be as to the threat of environmental damage before the second condition precedent to trigger application of the precautionary principle is fulfilled?

146 Cordonier Segger and Khalfan suggest that the magnitude of environmental damage is usually inversely proportionate to the likelihood of risk in order for precaution to be triggered. That is to say, where the relevant degree or magnitude of potential environmental damage is greater, the degree of certainty about the threat is lower. They suggest that for a formulation of the precautionary principle which uses the threshold of "serious or irreversible" environmental damage, the correlative degree of certainty about the threat is "highly uncertain of threat". This would contrast with a formulation of the precautionary principle which sets a lower degree of potential harm such as "potential adverse effects", where the correlative degree of certainty about the threat would be higher, namely "highly certain of threat": M-C Cordonier Segger and A Khalfan, Sustainable Development Law: Principles, Practices and Prospects, Oxford University Press, 2004 at pp. 145-146.

147 The World Commission on the Ethics of Scientific Knowledge and Technology, in its 2005 report on the precautionary principle, postulated that one of the conditions that must be present for the precautionary principle to apply is that "considerable scientific uncertainty must exist": World Commission on the Ethics of Scientific Knowledge and Technology, The Precautionary Principle, UNESCO, Paris, 2005 at p. 31.

148 de Sadeleer posits a threshold test of "reasonable scientific plausibility," or where a threat or risk of environmental damage is considered scientifically likely. de Sadeleer explains his test of reasonable scientific plausibility as follows:
"That condition would be fulfilled when empirical scientific data (as opposed to simple hypothesis, speculation, or intuition) make it reasonable to envisage a scenario, even it if does not enjoy unanimous scientific support.
When is there 'reasonable scientific plausibility'? When risk begins to represent a minimum degree of certainty, supported by repeated experience. But a purely theoretical risk may also satisfy this condition, as soon as it becomes scientifically credible: that is, it arises from a hypothesis formulated with methodological rigour and wins the support of part of the scientific community, albeit a minority.
The principle may consequently apply to all post-industrial risks for which a cause-and-effect relationship is not clearly established but where there is a 'reasonable scientific plausibility' that this relationship exists. This would be particularly appropriate for delayed pollution, which does not become apparent for some time and for which full scientific proof is difficult to assemble": N de Sadeleer, Environmental Principles: From Political Slogans to Legal Rules, Oxford University Press, 2005 at p. 160.

See also A Deville and R Harding, Applying the Precautionary Principle, Federation Press, 1997 at p. 33.

149 If there is no, or not considerable, scientific uncertainty (the second condition precedent is not satisfied), but there is a threat of serious or irreversible environmental damage (the first condition precedent is satisfied), the precautionary principle will not apply. The threat of serious irreversible environmental damage can be classified as relatively certain because it is possible to establish a causal link between an action or event and environmental damage, to calculate the probability of their occurrence, and to insure against them. Measures will still need to be taken but these will be preventative measures to control or regulate the relatively certain threat of serious or irreversible environmental damage, rather than precautionary measures which are appropriate in relation to uncertain threats: A Deville and R Harding, Applying the Precautionary Principle, Federation Press, 1997 at p. 31 and 34; J Cameron, "The precautionary principle: Core meaning, constitutional framework and procedures for implementation" in R Harding and E Fisher (eds), Perspectives on the Precautionary Principle, Federation Press, 1999, p. 29 at p. 37; and N de Sadeleer, Environmental Principles: From Political Slogans to Legal Rules, Oxford University Press, 2005 at pp. 74-75 and 158.
Shifting of the burden of proof

150 If each of the two conditions precedent or thresholds are satisfied – that is, there is a threat of serious or irreversible environmental damage and there is the requisite degree of scientific uncertainty – the precautionary principle will be activated. At this point, there is a shifting of an evidentiary burden of proof. A decision-maker must assume that the threat of serious or irreversible environmental damage is no longer uncertain but is a reality. The burden of showing that this threat does not in fact exist or is negligible effectively reverts to the proponent of the economic or other development plan, programme or project.

151 The rationale for requiring this shift of the burden of proof is to ensure preventative anticipation; to act before scientific certainty of cause and effect is established. It may be too late, or too difficult and costly, to change a course of action once it is proven to be harmful. The preference is to prevent environmental damage, rather than remediate it. The benefit of the doubt is given to environmental protection when there is scientific uncertainty. To avoid environmental harm, it is better to err on the side of caution.

152 The function of the precautionary principle is, therefore, to require the decision-maker to assume that there is, or will be, a serious or irreversible threat of environmental damage and to take this into account, notwithstanding that there is a degree of scientific uncertainty about whether the threat really exists: see J Cameron and J Aboucher, "The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment" (1991) 14 Boston College International and Comparative Law Review 1 at 22; B Boer, "Implementing Sustainability" (1992) 14 Delhi Law Review 1 at 17; B A Weintraub, "Science, International Environmental Regulation, and the Precautionary Principle: Setting Standards and Defining Terms" (1992) 1 NYU Environmental Law Journal 173 at 204-207; W Gullett, "Environmental Protection and the 'Precautionary Principle': A Response to Scientific Uncertainty in Environmental Management" (1997) 14 Environmental Planning Law Journal 52 at 59-60; C Barton, "The status of the precautionary principle in Australia: Its emergence in legislation and as a common law doctrine" (1998) 22 Harvard Environmental Law Review 509 at 519 and 549-551; D Farrier, "Factoring biodiversity conservation into decision-making processes: The role of the precautionary principle" in R Harding and E Fisher (eds), Perspectives on the Precautionary Principle, Federation

Press, 1999, p. 99 at pp. 107-110; Conservation Council of South Australia v Development Assessment Committee and Tuna Boat Owners Association (No. 2) [1999] SAERDC 86 (16 December 1999) at [24]-[25]; M Parnell, "Southern Bluefin Tuna Feedlotting: ESD, the Precautionary Principle and Burden of Proof" (1999) 9 Journal of International Wildlife Law and Policy 334; Tuna Boat Owners Association of SA Inc v Development Assessment Commission (2000) 110 LGERA 1 at 6[27]-7[30]; Vellore Citizens Welfare Forum v Union of India AIR 1996 SC 2715 at 2720 [11] – 2721; AP Pollution Control Board v Prof. M V Bayadu AIR 1999 SC 812 at 821 [27]-[39]; Narmada Bachao Andolan v Union of India AIR 2000 SC 3751 at 3803[15]-3804; and M-C Cordonier Segger and A Khalfan, Sustainable Development Law: Principles, Practices and Prospects, Oxford University Press, 2004 at pp. 144 and 150.

153 An illustration of this function of the precautionary principle can be found in Providence Projects Pty Ltd v Gosford City Council [2006] NSWLEC 52 (17 February 2006) in which there was scientific uncertainty as to whether a proposed development would cause serious or irreversible environmental damage to a threatened ecological community, the Umina Coastal Sandplain Woodland (UCSW). This scientific uncertainty stemmed from uncertainty as to whether the threatened ecological community was widely distributed over the site. The function of the precautionary principle was to shift the burden of proof in relation to this question. Bignold J held:
"The application of the precautionary principle in the present case justifies an approach which avoids the risk of serious or irreversible environmental damage by assuming the existence of the wide distribution of UCSW over the development site": at [77].

154 It should be recognised that the shifting of the evidentiary burden of proof operates in relation to only one input of the decision-making process – the question of environmental damage. If a proponent of a plan, programme or project fails to discharge the burden to prove that there is no threat of serious or irreversible environmental damage, this does not necessarily mean that the plan, programme or project must be refused. It simply means that, in making the final decision, the decision-maker must assume that there will be serious or irreversible environmental damage. This assumed factor must be taken into account in the calculus which decision-makers are instructed to apply under environmental legislation (such as s 79C(1) of the EPA Act). There is nothing in the formulation of the precautionary principle which requires decision-makers to give the assumed factor (the serious or irreversible environmental damage) overriding weight compared to the other factors required to be considered, such as social and economic factors, when deciding how to proceed: D Farrier, "Factoring biodiversity conservation into decision-making processes: The role of the precautionary principle" in R Harding and E Fisher, Perspectives on the Precautionary Principle, Federation Press, 1999 at p. 108.

155 This was the conclusion in Greenpeace Australia Ltd v Redbank Power Company Pty Ltd and Singleton Council (1994) 86 LGERA 143 where Pearlman J held at 154 that:
"The application of the precautionary principle dictates that a cautious approach should be adopted in evaluating the various relevant factors in determining whether or not to grant consent; it does not require that the greenhouse issue should outweigh all other issues".

Precautionary principle invokes preventative anticipation

156 The precautionary principle permits the taking of preventative measures without having to wait until the reality and seriousness of the threats become fully known: Pfizer Animal Health SA v Council of the European Union [2002] ECR II–3305 (11 September 2002), European Court of First Instance (11 September 2002) at [139]; 15 Journal of Environmental Law 372 at 378; Monsanto Agricoltura Italia v Presidenza dei Consiglio dei Ministri, European Court of Justice, Case C-236/01 (13 March 2003) at [111]. This is the concept of preventative anticipation: T O'Riordan and J Cameron, "The History and Contemporary Significance of the Precautionary Principle" in T O'Riordan and J Cameron (eds), Interpreting the Precautionary Principle, Earthscan Publications, 1994, p. 12 at p. 17; and P Sands, Principles of International Environmental Law, 2nd ed, Cambridge University Press, 2003 at p. 269.

Zero risk precautionary standard inappropriate

157 The precautionary principle should not be used to try to avoid all risks. As the United States Supreme Court said in Industrial Union Department, AFL-C10 v American Petroleum Institute 448 US 607 (1980) at 656 (1980); 65 L Ed 2d 1010 (1980) at 1064:
"Some risks are plainly acceptable and others are plainly unacceptable".

158 A zero risk precautionary standard is inappropriate: see Analysis on Pfizer Animal Health SA v Council of the European Union by W Th Douma (2003) 15 Journal of Environmental Law 394 at 401. The Advocate General, in his opinion in National Farmers' Union v Secretary Central of the French Government, European Court of Justice, Case C-241/01 (2 July 2002) at [76] stated:
"the precautionary principle has a future only to the extent that, far from opening the door wide to irrationality, it establishes itself as an aspect of the rational management of risks, designed not to achieve a zero risk, which everything suggests does not exist, but to limit the risks to which citizens are exposed to the lowest level reasonably imaginable".

See also EFTA Surveillance Authority v Norway, European Free Trade Association (EFTA) Court, Case E-3/00 (5 April 2001) at [32].

159 Rationality dictates that the precautionary principle and any preventative measure cannot be based on a purely hypothetical approach to the risk, founded on mere conjecture which has not been scientifically verified: Pfizer Animal Health SA v Council of the European Union [2002] ECR II–3305 European Court of First Instance (11 September 2002) at [145]; (2003) 15 Journal of Environmental Law 372 at 378 and EFTA Surveillance Authority v Norway, European Free Trade Association (EFTA) Court, Case E-3/00 (5 April 2001) at [29]. Rather, a preventative measure may be taken only if the risk, although the reality and extent of the risk have not been "fully" demonstrated by conclusive scientific evidence, appears nevertheless to be adequately backed up by the scientific data available at the time when the measure was taken: Pfizer Animal Health SA v Council of the European Union [2002] ECR II–3305, European Court of First Instance (11 September 2002) at [145]; (2003) 15 Journal of Environmental Law 372 at 379; and Monsanto Agricoltura Italia v Presidenza de Consiglio dei Ministri,

European Court of Justice, Case C236/01 (9 September 2003) at [113].

160 de Sadeleer expresses this approach in the following passage:
"Adherence to the adage 'when in doubt, do nothing' should not overshadow the complementary wisdom that 'there's such a thing as being too careful'. To avoid having the best become the enemy of the good, the [precautionary] principle's field of application must exclude those risks characterised as residual, that is, hypothetical risks resting on purely speculative considerations without any scientific foundation. Speculation, conjecture, intuition, warnings, denunciations, or implications should not suffice in and of themselves to justify an attitude of precaution": N de Sadeleer, Environmental Principles: From Political Slogans to Legal Rules, Oxford University Press, 2005 at p. 158.

Degree of precaution required

161 The type and level of precautionary measures that will be appropriate will depend on the combined effect of the degree of seriousness and irreversibility of the threat and the degree of uncertainty. This involves assessment of risk in its usual formulation, namely the probability of the event occurring and the seriousness of the consequences should it occur. The more significant and the more uncertain the threat, the greater the degree of precaution required: A Deville and R Harding, Applying the Precautionary Principle, Federation Press, 1997 at p. 37; and J Cameron, "The precautionary principle: Core meaning, constitutional framework and procedures for implementation" in R Harding and E Fisher, Perspectives on the Precautionary Principle, Federation Press, 1999, p. 29 at pp. 37-38; and Commission on Environmental Law of IUCN (the World Conservation Union), Draft International Covenant on Environment and Development, 3rd ed., Environmental Policy & Law Paper No. 31, Rev. 2, 2004 at p. 45.

162 Prudence would also suggest that some margin for error should be retained until all the consequences of the decision to proceed with the development plan, programme or project are known. This allows for potential errors in risk assessment and cost-benefit analysis. Potential errors are weighted in favour of environmental protection. Weighting the risk of error in favour of the environment is to safeguard ecological space or environmental room for manoeuvre: T O'Riordan and J Cameron, "The History and Contemporary Significance of the Precautionary Principle" in T O'Riordan and J Cameron (eds), Interpreting the Precautionary Principle, Earthscan Publications, 1994, p. 12 at p. 17; and C Barton, "The status of the precautionary principle in Australia: Its emergence in legislation and as a common law doctrine" (1998) 22 Harvard Environmental Law Review 509 at 520.

163 One means of retaining a margin for error is to implement a step-wise or adaptive management approach, whereby uncertainties are acknowledged and the area affected by the development plan, programme or project is expanded as the extent of uncertainty is reduced: M D Young, "The precautionary principle as a key element of ecologically sustainable development" in R Harding and E Fisher, Perspectives on the Precautionary Principle, Federation Press, 1999, 127 at 140.

164 An adaptive management approach might involve the following core elements:
" monitoring of impacts of management or decisions based on agreed indicators;
promoting research, to reduce key uncertainties;
ensuring periodic evaluation of the outcomes of implementation, drawing of lessons, and review of adjustment, as necessary of the measures or decisions adopted; and
establishing an efficient and effective compliance system": see "Guidelines for applying the precautionary principle to biodiversity conservation and natural resource management" in Appendix A to R Cooney and B Dickson (eds), Biodiversity and the Precautionary Principle, Risk and Uncertainty in Conservation and Sustainable Use, Earthscan, 2005 p. 304, Guideline 12.

165 An adaptive management approach was required in Port Stephens Pearls Pty Ltd v Minister for Infrastructure and Planning [2005] NSWLEC 426 (15 August 2005). Talbot J held that application of the precautionary principle required that consent should only be granted if there was a monitoring regime that would detect emerging adverse impacts and enable the appropriate regulatory authority to require them to be addressed if and when they emerged: at [58]. See also Tuna Boat Owners Association of SA Inc v Development Assessment Commission (2000) 110 LGERA 1 at 8[35].

Proportionality of response

166 The precautionary principle embraces the concept of proportionality. The concept of proportionality is that measures should not go beyond what is appropriate and necessary in order to achieve the objectives in question. Where there is a choice between several appropriate measures, recourse should be had to the least onerous measure and the disadvantages caused should not be disproportionate to the aims pursued.

167 In applying the precautionary principle, measures should be adopted that are proportionate to the potential threats. A reasonable balance must be struck between the stringency of the precautionary measures, which may have associated costs, such as financial, livelihood and opportunity costs, and the seriousness and irreversibility of the potential threat: see "Guidelines for applying the precautionary principle to biodiversity conservation and natural resource management" in Appendix A to R Cooney and B Dickson (eds), Biodiversity and the Precautionary Principle, Risk and Uncertainty in Conservation and Sustainable Use, Earthscan, 2005 at p. 304, Guideline 10.

168 The European Commission states in its Communication on the Precautionary Principle:
"Measures based on the precautionary principle must not be disproportionate to the desired level of protection and must not aim at zero risk, something which rarely exists": European Commission, Communication from the Commission on the Precautionary Principle, 2000, part 6.3.1.

169 Considerations of practicability need to be taken into account: see the definition of the precautionary principle which requires "careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment" in s 6(2)(a)(i) of the Protection of the Environment Administration Act 1991. One consideration of practicability is the cost of precautionary measures.

170 There must be proportionality of response or cost effectiveness of margins of error to show that the selected precautionary measure is not unduly costly: T O'Riordan and J Cameron, "The History and Contemporary Significance of the Precautionary Principle" in T O'Riordan and J Cameron, Interpreting the

Precautionary Principal, Earthscan Publications, 1994, p. 12 at p. 17; and National Farmers Union v Secretary General of the French Government, European Court of Justice, Case C-241/01, (Opinion of the Advocate General) at [78].

171 The cost consequences of increasing levels of precaution must be evaluated. As O'Riordan notes:
"There are some dangers with getting too carried away with the application of precaution at any cost. In the absence of comparative risk assessment, the consequences of curtailing potentially beneficial activity and creating another set of unforeseeable risks for an unprepared society could be greater than proceeding step by step with prudent precaution": T O'Riordan "The Precaution Principle in Environmental Management" in R Ayres and U E Simonis (eds), Industrial Metabolism: restructuring for sustainable development, UN University Press, 1994.

See also A Deville and R Harding, Applying the Precautionary Principle, Federation Press, 1997 at pp. 43-44; and J Cameron "The precautionary principle: Core meaning, constitutional framework and procedures for implementation" in R Harding and E Fisher (eds), Perspectives on the Precautionary Principle, Federation Press, 1999, p. 29 at p. 42.

172 The selection of the appropriate precautionary measures to regulate the identified threat of serious or irreversible environmental damage with its identified uncertainty, requires assessment of the risk-weighted consequences of various options: see the definition of the precautionary principle in s 6(2)(a)(ii) of the Protection of the Environment Administration Act 1991. The available options to address the threat should be identified and the likely consequences of these options and of inaction should be assessed: see "Guidelines for applying the precautionary principle to biodiversity conservation and natural resource management" in Appendix A to R Cooney and B Dickson (eds), Biodiversity and the Precautionary Principle: Risk and Uncertainty in Conservation and Sustainable Use, Earthscan, 2005 at p. 303.

173 The process of assessment of the risk-weighted consequences of options for precautionary measures has been suggested to involve a form of cost-benefit analysis with risk aversion assumed: see generally, R Posner, Catastrophe: Risk and Response, Oxford University Press, 2004; C Gollier, B Jullien, N Treich, "Scientific progress and irreversibility: an economic interpretation of the 'Precautionary Principle'"(2000) 75 Journal of Public Economics 229; and R v Secretary of State for Trade and Industry; Ex Parte Duddridge, UK Queens Bench Division, Farquharson LJ and Smith J (4 October 1994); (1995) 7 Journal of Environmental Law 224 at 230; [1995] Env LR 151.

174 However, there are difficulties in the application of the traditional form of cost-benefit analysis used in economics. First, traditional cost-benefit analysis tends to squeeze out qualitative soft values in favour of quantifiable hard values: see L Tribe, "Ways not to think about Plastic Trees: New Foundations for Environmental Law" (1974) 83 Yale Law Journal 1315; and N de Sadeleer, Environmental Principles: From Political Slogans to Legal Rules, Oxford University Press, 2005 at p. 199. This is what occurred in Leatch v National Parks and Wildlife Service (1993) 81 LGERA 270 at 286, where environmental factors were not included in the cost-benefit analysis.

175 Secondly, traditional cost-benefit analysis has difficulty in correctly internalising all externalities in the context of uncertainty. There are no simple or comprehensive rules in economic analysis for integrating risk and uncertainty into decision-making: see D Pearce, "The Precautionay Principle and Economic Analysis" in T O'Riordan and J Cameron (eds), Interpreting the Precautionary Principle, Earthscan Publications, 1994 at p. 140; and N de Sadeleer, Environmental Principles: From Political Slogans to Legal Rules, Oxford University Press, 2005 at p. 170. There is a difficulty in translating risks into monetary equivalents: C R Sunstein, "Cost-Benefit Analysis and the Environment" (2005) 115 Ethics 351 at 369 and 384; and C R Sunstein, Laws of Fear: Beyond the Precautionary Principle, Cambridge University Press, 2005, pp.7 and 131.

176 One solution suggested is to combine economic and non-economic measures by way of multi-criteria analysis. Multi-criteria analysis is a tool for integrating different types of monetary and non-monetary decision criteria. It deals with situations where decisions must be made taking into account multiple objectives, which cannot be reduced to a single dimension. Usually, multi-criteria analysis is clustered into three dimensions: the ecological, the economic and the social. Within each of these dimensions certain criteria are set so that decision-makers can weigh the importance of one element in association with other elements. Monetary values and cost-benefit analysis measures can be incorporated as one of the criteria to be considered, and weighted against the other criteria in decision-making: L Emerton, M Greig-Gran, M Kallesoe and J MacGregor, "Economics, the Precautionary Principles and Natural Resource Management: Key Issues, Tools and Practices" in R Cooney and B Dickson (eds), Biodiversity and the Precautionary Principle: Risk and Uncertainty in Conservation and Sustainable Use, Earthscan, 2005, p. 253 at p. 265.

177 The selection of the appropriate precautionary measures must involve examining both sides of the ledger: the costs associated with the project, process or product (which tends to increase the degree of precaution) as well as the benefits of the project, process or product (which tends to decrease the degree of precaution commensurate with realising the benefit). As Sunstein notes:
"Advocates of precaution often emphasise the costs associated with a product or process, without seeing that it may have benefits as well; and sometimes those benefits involve the environment itself. Why should regulators examine only one side of the ledger?" C R Sunstein, "Cost - Benefit Analysis and the Environment", (2005) 115 Ethics 351 at 366.

See generally C R Sunstein, Laws of Fear: Beyond the Precautionary Principle, Cambridge University Press, 2005.

178 In assessing the proportionality of a precautionary measure, consideration needs to be given to non-targeted risks that might arise. Efforts to eliminate all of the targeted risks might cause other adverse consequences. One adverse consequence may be that in addressing ever smaller target risks, the importance of countervailing risks relative to the target risks is likely to grow: F B Cross, "Paradoxical Perils of the Precautionary Principle" (1996) 53 Washington and Lee Law Review 851 at 860, 898, 906, and 924; and N de Sadeleer, Environmental Principles: From Political Slogans to Legal Rules, Oxford University Press, 2005 at pp. 171-172.

Precautionary principle does not necessarily prohibit development

179 The precautionary principle, where triggered, does not necessarily prohibit the carrying out of a development plan, programme or project until full scientific certainty is attained: P Stein, "A cautious application of the precautionary principle" (2002) 2 Environmental Law Review 1 at 10; Vertical Telecoms Pty Ltd v Hornsby Shire Council [2002] NSWLEC 172 (10 August 2000) at [68]; Telstra Corporation Limited v Pine Rivers Shire Council & Ors [2001] QPELR 350 at 380-381 [119]; BGP Properties Pty Ltd v Lake Macquarie City Council (2004) 138 LGERA 237 at 262 [114]; A Deville and R Harding, Applying the Precautionary Principle, Federation Press, 1997 at 44; and M D Young "The precautionary principle as a key element of ecologically sustainable development" in R Harding and E Fisher, Perspectives on the Precautionary Principle, Federation Press, 1999, p. 127 at p. 138. See also Greenpeace Australia Ltd v Redbank Power Company Pty Ltd and Singleton Council (1994) 86 LGERA 143 at 154-155; and Port Stephens Pearls Pty Ltd v Minister for Infrastructure and Planning [2005] NSWLEC 426 (15 August 2005) at [56].

180 If the precautionary principle were to be interpreted in this way, it would result in a paralysing bias in favour of the status quo and against taking precautions against risk. The precautionary principle so construed would ban "the very steps that it requires": C R Sunstein, Laws of Fear: Beyond the Precautionary Principle, Cambridge University Press, 2005 at pp. 4, 14 and 26. It must be recognised that "precautions against some risks almost always create other risks": C R Sunstein, supra at p. 53.

181 The solution is to assess the risk-weighted consequences of various options and select the option that affords the appropriate degree of precaution for the set of risks associated with the option.

Precautionary principle in context of other ESD principles

182 The precautionary principle is but one of the set of principles of ecologically sustainable development (highlighted earlier in the judgment). It should not be viewed in isolation, but rather as part of the package. This means that the precautionary measures that should be selected must not only be appropriate having regard to the precautionary principle itself, but also in the context of the other principles of ecologically sustainable development including inter-generational and intra-generational equity and the conservation of biological diversity and ecological integrity: see A Deville and R Harding, Applying the Precautionary Principle, Federation Press, 1997 at p. 43. In some circumstances these other principles may strengthen the case for precautionary action, while in others the precautionary principle may need to be weighed against the other principles as well as other human rights such as food, water, health and shelter: see "Guidelines for applying the precautionary principle to biodiversity conservation and natural resource management" in Appendix A to R Cooney and B Dickson (eds), Biodiversity and the Precautionary Principle: Risk and Uncertainty in Conservation and Sustainable Use, Earthscan, 2005 at p. 301, Guideline 2.

Inquiry into Australia's national parks, conservation reserves and marine protected areas (continued from page 6)

in order to more effectively achieve conservation outcomes.

- ANEDO strongly supports increased funding to explore and implement measures to control and eradicate invasive species in natural areas. Funding should also be made available to assist landholders to control feral species on land adjacent to protected areas. Eradication plans should be publicly available and take into account the impacts of control actions on both the target species and native species.
- ANEDO submits that revocation must only occur in exceptional circumstances, and does not support revocation to facilitate commercial developments in parks or wilderness areas. If there is no alternative to revocation, there must be clear protocols in place including large offset ratios of compensatory reservation.
- ANEDO submits that the Commonwealth needs to shoulder more responsibility for the creation, management and resourcing of national parks and protected areas, in order to more fully meet obligations under international conventions.
- ANEDO submits that the Commonwealth and State governments should cooperatively develop strategic long term transboundary plans to help mitigate the effects of climate change, including the establishment of biolinks.
- ANEDO submits that there are gaps undermining an effective comprehensive, adequate and representative reserve system. These gaps include: inadequate creation of freshwater reserves, establishment of co-management regimes, and in relation to wilderness.
- ANEDO submits that there are a number of international Conventions that provide a mandate for Australia to pursue aquatic protected areas and which could also facilitate the conservation of wild rivers. The NRS Directions paper identified the need for further work to describe and map the full range of freshwater ecosystems at an appropriate scale and to develop appropriate criteria and protection mechanisms for reserves. ANEDO submits that this work should be undertaken as a matter of priority.
- ANEDO strongly supports increased use of joint management models for protected areas. Recognising the fundamental role that traditional owners should have in stewardship and managing culturally significant areas, ANEDO submits that the co-management models used by the Commonwealth and NSW be considered for application in other jurisdictions.
- As previously submitted by ANEDO, the EPBC Act should require wilderness areas, defined as NWI 12+ lands that are within formal reserves, to be new matters of national environmental significance.

ANEDO recommends that State of the Park reporting requirements be introduced in all Australian jurisdictions, based on the New South Wales model.

International legal frameworks for climate change and biodiversity

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Introduction

Australia has many globally significant ecosystems that are likely to be affected by climate change. This paper provides an overview of key ecosystems at risk from climate change and the international legal framework which gives rise to obligations to protect natural ecosystems from the impacts of climate change. The paper contends that current steps being taken by the Australian Government are unlikely to prevent serious biodiversity and ecosystem degradation. Greater integration of biodiversity and climate change polices is urgently needed.

Impacts of Climate Change: Case Study of World Heritage Areas

World Heritage properties provide a good barometer of the risks of climate change to natural ecosystems as they represent places that States have identified as having outstanding universal values worthy of special protection. If these properties are under threat from climate change, serious attention must also be paid to places and ecosystems that do not benefit from the same level of protection.

The impacts of climate change on some of Australia's most significant ecosystems and iconic sites can be summarized as follows:

The Great Barrier Reef ('GBR')

Scientists predict that climate change will have major impacts on coral reef biodiversity. Increases in bleaching events may increase coral mortality, decrease coral reproduction, decrease reef productivity and growth, and cause changes to community structure. Substantial impacts on birds, fish and marine mammals is expected.

The Wet Tropics

The likely impacts of climate change on terrestrial biodiversity within the Wet Tropics World Heritage Area would be very serious and could be catastrophic under some scenarios. The predicted impacts of climate change will be particularly acute for the Wet Tropics because the current climatic ranges of local endemic species are generally restricted. Even moderate levels of warming, well within the envelope defined by the International Panel on Climate Change ('IPCC') have the potential to pose serious threats to biodiversity.

Kakadu

The topography of the wetlands in the Kakadu region makes it especially vulnerable to climate change impacts. The authors of the ecosystem assessment in the IPCC Third Assessment Report argue that these wetlands could "be all but displaced if predicted sea-level rises of 10–30 cm by 2030 occur and are associated with changes in rainfall in the catchment and tidal/storm surges." A rise in sea levels will result in saltwater intrusion and shoreline erosion, with the loss of some coastal mangroves, extensive loss of paperbark trees in the wetland, and ultimately replacement of freshwater wetlands by saline mudflats.

International Legal Obligations relating to Climate Change and Biodiversity

The two main international agreements that address climate change and biodiversity are the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol and the Convention on Biological Diversity (CBD). The Ramsar Convention and World Heritage Convention are also relevant.

UNFCCC

The objective of the UNFCCC is to stabilize greenhouse gas emissions to prevent dangerous anthropogenic interference with the climate system. Parties to the UNFCCC are obliged to (Article 4.1):

- monitor emissions, sinks and impacts of climate change;
- formulate, implement, publish and regularly up-date national and regional programmes to mitigate climate change;
- promote sustainable management and promote and cooperate in the conservation and enhancement of sinks and reservoirs of greenhouse gases;
- cooperate in preparing for adaptation to the impacts of climate changes; and
- promote and cooperate in research into the climate system.

Further obligations on developed countries to mitigate climate change are provided at Article 4.2. Article 4.8 requires parties to consider actions to meet the needs and concerns of developing country Parties arising from the adverse effects of climate change or of implementing response measures.

Kyoto Protocol

The Kyoto Protocol seeks to strengthen the UNFCCC by committing Annex 1 countries to individual, legally binding targets to limit or reduce their greenhouse gas emissions. Those targets equate to a reduction of approximately 5% between 2008 and 2012 relative to 1990 emissions. The Kyoto Protocol came into force on 16 February 2005.

Australia and the United States are not Parties to the Kyoto Protocol. However, they have both committed to policies that seek to address climate change.

Convention on Biological Diversity

The objectives of the CBD are the conservation, sustainable use and equitable sharing of the benefits of biodiversity. Parties are required, as far as possible and as appropriate, to (Article 8):

c) Regulate or manage biological resources important for the conservation of biological diversity…;

d) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;…

k) Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations.

The CBD also requires parties to adopt policy and procedural measures to promote conservation and sustainable use of biodiversity.

Ramsar Convention

The objective of the Ramsar Convention is "the conservation and wise use of wetlands by national action and international cooperation." State parties are required to designate sites for the Ramsar List of Wetlands of International Importance.

Australia has 64 Ramsar sites, including Kakadu National Park, Ashmore Reef Nature Reserve, Blue Lake, Eighty Mile Beach and the Macquarie Marshes.

World Heritage Convention

The World Heritage Convention creates a framework for global cooperation to preserve cultural and natural heritage of "outstanding universal value."

States have collective and individual obligations under Part II of the World Heritage Convention (Articles 4, 5, 6 and 7), which include identifying, conserving and protecting cultural and natural heritage and transmission to future generations. States must not take any deliberate measures which may directly or indirectly damage cultural or natural heritage.

If a World Heritage Property requires a major conservation programme, assistance can be sought from the World Heritage Committee. The Committee is required to establish and publish an up-to-date List of World Heritage in Danger (Article 4). Properties are listed as 'in Danger' at the discretion of the Committee and may be listed without the support of the State in which the property is located.

The World Heritage Committee is required to develop and adopt, as far as possible and in consultation with the State Party, a programme for corrective measures for any property on the List of World Heritage in Danger. Annual reviews of the listing determine whether additional conservation measures are required, or whether to remove the property from the list or from World Heritage list entirely (i.e. if the property has lost those characteristics which determined its inclusion in the World Heritage List.)

There are sixteen World Heritage sites in Australia, all but one of which are natural or mixed (natural/cultural) sites. In 2004, non-governmental organisations petitioned the World Heritage Committee to include the GBR on the List of World Heritage in Danger.

Linkages between the UNFCCC, CBD, Ramsar & World Heritage Conventions

Connections between the climate change regime of the UNFCCC, and CBD, Ramsar and World Heritage Conventions, have been the subject of much recent discussion at COPs and elsewhere.

Convention on Biological Diversity

In 2003, a report prepared by members of the CBD Ad hoc Technical Expert Group on Biological Diversity and Climate Change recognised the "clear opportunity to implement mutually beneficial activities" that take advantage of the synergies between the UNFCCC, the Kyoto Protocol and the CBD.

A further report prepared in 2005 by the CBD Ad hoc Technical Group on Adaptation noted that climate change is already affecting many ecosystems and called for urgent adaptation activities to slow the rate of biodiversity loss.

Synergies between the climate change and biodiversity regimes are apparent in obligations placed on parties to both the UNFCC and CBD, including to:

- ensure that future activities of the UNFCCC are consistent with and supportive of the conservation and sustainable use of biological diversity;
- more fully integrate climate change objectives in key areas of national sustainable development strategies such as biodiversity; and
- take measures to minimise the adverse effects on the quality of the environment of projects or measures undertaken by Parties to the UNFCCC to adapt to climate change, including the adoption of assessment and evaluation processes.

Ramsar Convention

Similarly, there have been a number of resolutions made at recent COPs to the Ramsar Convention that consider climate change.

Wetlands are important for climate change mitigation, and are also particularly vulnerable to the impacts of climate change and rising sea levels. This was acknowledged by the 8th COP in Resolution VIII.3, Climate change and wetlands: impacts, adaptation, and mitigation. The Resolution called upon Parties to "manage wetlands so as to increase their resilience to climate change and extreme climatic events." States that have not yet ratified the Kyoto Protocol were strongly urged to do so.

World Heritage Convention

In Decision 29 COM 7B.a, 5, the World Heritage Committee called upon Parties to "consider the potential impacts of climate change on world heritage properties within their management planning and take early action in response to these potential impacts". The decision expressly recognised that impacts of climate change are affecting many, and are likely to affect many more, World Heritage properties in the years to come.

The Working Group of Experts on World Heritage and Climate Change held in March 2006 provided an opportunity to identify the threats climate change poses to World Heritage properties, and to move forward with recommendations about ways to mitigate those threats. The EDO and other non-governmental organisations lobbied the working group to that end.

The Expert Working Group will advise the World Heritage Committee that climate change is a clear threat to World Heritage properties and that it has already impacted upon a number of those properties. Unfortunately the Expert Working Group was reluctant to address the need to decrease greenhouse gas emissions on the basis that there are other international frameworks, namely the UNFCCC, that deal with that issue.

At its meeting in July 2006, the World Heritage Committee will consider the petition for five sites, including the GBR World Heritage Area, to be placed on the World Heritage in Danger List. The petitions make the case, using scientific and legal reasoning, that the outstanding universal values that each property was listed for are in serious and imminent danger of being lost as a result of climate change. Acceptance of the petitions would send a strong message that climate change is having a significant impact on globally significant ecosystems.

Australian Government management responses

Australia's Greenhouse Policy and its decision not to ratify the Kyoto Protocol have been widely canvassed in other papers and critiques. The focus of this section is on the Government's policy in relation to addressing biodiversity impacts.

Australia is a party to the UNFCCC, CBD, Ramsar and World Heritage Conventions.

The Department of Environment and Heritage (DEH) has developed a National Biodiversity and Climate Change Action Plan 2004-2007 which has the broad objectives of:

(a) gathering and disseminating knowledge about climate change projections and impacts;

(b) minimizing impacts upon biodiversity (through risk assessment and incorporating climate change considerations into management planning and monitoring regimes); and

(c) incorporating knowledge and harm minimization strategies into natural resource management.

Australia has also initiated a National Climate Change Adaptation Programme to help prepare governments, vulnerable industries and communities for the consequences of climate change. The programme focuses on assisting business and industry to cope with the effects of climate change, such as loss of tourism to the GBR or reduced agricultural capacity due of water shortages. Adverse ecosystem impacts are taken as a given and the issue of natural adaptation of ecosystems is not really considered.

At a Federal level, the integration of climate change considerations into national sustainable development strategies and decision making processes has not yet occurred. Aside from reducing greenhouse gas emissions, there are many steps that could be taken to address the impacts of climate change on natural ecosystems, including:

- entrenching the need for environmental impact assessment to consider the greenhouse gas emissions of projects, and the effect upon vulnerable ecosystems, through amendments to the Environment Protection and Biodiversity Conservation Act 1999 (C'th);
- valuing the ecosystem services of Ramsar wetlands and coastal zones;
- ensuring that future land use planning considers climate change impacts; and
- increasing the size of protected areas and providing corridors for species movement to improve adaptation to climate change.

Australian NGO response

NGOs have been acutely aware of the impact that climate change will have on biodiversity in Australia, in particular on sites such as Kakadu and the GBR. In 2004 Greenpeace and CANA obtained advice from the Global Law Centre that Australia is in breach of international law, in particular Articles 4 and 5 of the World Heritage Convention, by failing to "do all it can, to the utmost of its own resources" to ensure the protection of the GBRWHA from the risk of climate change. These groups have been lobbying the international community and the World Heritage Committee to put pressure on the Australian government to reconsider its stance on climate change issues.

The GBR petition for 'In Danger' listing by the World Heritage Committee is being strongly resisted by the Australian government. If the petition is successful, it will draw significant attention to the need to address the impacts of climate change on the coral reef ecosystems of the GBR and hopefully increase awareness of climate change impacts more generally.

Conclusion

To protect Australia's many globally significant ecosystems from the impacts of climate change, there is a real need for integrated biodiversity and climate change policies. The secretariats and parties involved in the UNFCCC, CBD, Ramsar and World Heritage Conventions are beginning to see synergies in the work that they do and, therefore, are developing complimentary programmes. This level of cooperation between Federal and State agencies is only just beginning to occur in Australia. Further cooperation and co-ordinated strategies need to be developed without delay.

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