# IMPACT!

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# Living off the Coast

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# Editorial

This edition of Impact! deals with coastal and marine environments. Australia's coastline is one of its most iconic and spectacular natural features so it is no surprise that an estimated 80% of the Australian population chooses to live within 50 kilometres of the coast. As well as being breathtakingly beautiful, coastal ecosystems are also remarkably fragile and human impacts such as housing and infrastructure developments can easily interfere with their delicate balance. The damage caused by coastal development is one of the concerns of opponents to the proposed natural gas hub in the Kimberley region of Western Australia and is the subject of an article looking at the legal and environmental aspects of that controversial proposal.

The adverse impacts of development on the environment are well understood and have been regulated for some time, but what of the impacts of the environment on development? How will rising seas associated with climate change affect our coastal infrastructure and what should our response be? In light of climate change, is it time for governments to start restricting developments on the coast and start seriously considering how we intend to adapt to encroaching seas? Do we build sea walls and other structures that will protect the coast but also interfere further with natural coastal processes or do we retreat to higher ground, abandoning valuable and critical infrastructure?

In addition to the dilemma of rising seas, this edition looks at the critical issue of biodiversity conservation, and questions whether our laws are adequately protecting endangered and threatened marine species. Another article examines the little known problem of ocean acidification – a phenomenon associated with climate change that has the potential to seriously disrupt marine ecosystems and which law makers at the international and national level are only just beginning to grapple with.

Given the cultural, aesthetic and economic value of our coast, it is vitally important that coastal areas are developed with the utmost respect for the delicacy of their natural processes so that we can continue to enjoy our coastal lifestyles indefinitely. Likewise, marine resources must be harvested sustainably, with special care taken to ensure that stocks are not driven to the point of collapse as has already happened to a number of species.

The Australian Network of Environmental Defender's Offices is committed to protecting the environment through law and many of our cases have sought to protect threatened coastal and marine environments. Unfortunately, this trend is likely to continue as our coasts and oceans face continuing development and exploitation pressure and face new threats posed by climate change.

The next edition of Impact! will deal with the management of Native Vegetation in Australia. If you would like to contribute an article please email the editor jemilah.hallinan@edo.org.au or call (02) 9262 6989.

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# Much hubbub about gas

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The Kimberley region[1] of north-western Australia is often described as an 'unspolit wilderness'. It is true that only forty thousand people inhabit an area bigger than Tasmania,[2] and it remains a wilderness in scientific terms, with much of the coast's marine life acknowledged to be undiscovered or little-known. Still, this epithet ignores half a century of agriculture and mining and a century of grazing and pearling, not to mention millennia of Indigenous land use.

With vast plains cut by wild rivers, a rugged coastline littered with archipelagos, and isolated settlements connected to the outside world by dirt roads impassable in the wet season, the Kimberley is, however, *relatively* unspoilt. On a global scale, such large natural areas are now very rare, and the Kimberley stands alongside global treasures such as the Amazon rainforests, the boreal conifer forests of Alaska and Canada and the polar region of Antarctica as iconic wilderness.[3] In the Kimberley, it is still easy to be the only living soul walking on an endless beach, fishing from a boat in a turquoise bay, or gazing out from an ancient cliff top, and to see wild animals, from mud crabs and sea eagles to humpback whales and whale sharks, in their natural habitat without fearing that they are the last of their kind or are about to be shot, hooked, poisoned or run over.

Having fought off repeated attempts by the Western Australian (WA) Government to dam the Fitzroy River for irrigation or to pipe its precious water two thousand kilometers south to Perth, the Kimberley is now faced with the prospect of a large gas processing plant at its front door, with more industrial developments close behind.

## Gas

There are large deposits of natural gas in the Browse Basin, off the Bonaparte Archipelago.[4] One of these deposits, known as Ichthys, is approximately 450 kilometres north of Broome and 850 kilometres south-west of Darwin. It is estimated to contain 12.8 trillion cubic feet of gas and 527 million barrels of condensate, and is being developed by a joint venture led by the Japanese company Inpex.[5] The other major deposit is further out in the Indian Ocean around Scott Reef, and comprises the North Torosa, South Torosa, Brecknock and Calliance notional development areas. It has proven reserves of 14 trillion cubic feet of dry gas and 370 million barrels of condensate,[6] and is being developed by a consortium led by Woodside.[7] Both deposits have operational lives of over 40 years. Final investment decisions on both are expected in 2009 and production could begin by 2015.

*The construction of an onshore hub would have major environmental consequences for the immediate area.*

Two sets of facilities are required for exploitation of these gas fields. The 'upstream' facilities include wells and subsea infrastructure, floating production facilities, offshore processing facilities, pipelines, and possibly carbon dioxide geosequestration infrastructure. 'Downstream' facilities compress the gas into a much denser liquid for storage in tanks, either for shipping overseas or for transport to other Australian locations. Downstream facilities could either be on an offshore platform, or the unprocessed gas could be piped to a coastal port. In the latter case, the facilities required include liquid natural gas (LNG) cooling trains, flare towers and storage tanks.

In 2006 the idea was mooted that there should be a common gas processing hub for Browse Basin production (the 'Kimberley Hub' proposal), to prevent multiple plants despoiling the Kimberley coastline and waters, and possibly also to save the operators the cost of duplicating infrastructure.

The construction of an onshore hub would have major environmental consequences for the immediate area. Given the shallow waters and huge tidal ranges on this coast, it would require massive dredging and the construction of a loading jetty and breakwater up to four kilometres out to sea,[8] plus a deep-water channel and turning circle that would need regular dredging. There would be obvious impacts on the movements of migratory marine animals and the feeding and breeding habitats of local non-migratory species — not to mention the short-term impacts associated with construction, including blasting disturbance, increased water turbidity and frequent ship movements.

Onshore, a large exclusion zone would be required outside the plant in case of gas explosions. Beyond this zone,

housing would be required for up to 4000 construction workers, not to mention a sealed road and possibly an airstrip. Impacts include the clearing of up to 3000 hectares of native bush. Carbon emissions from the project would also be significant. The Wilderness Society estimates that the Browse gas precinct will add more than 10 million tonnes of greenhouse gases a year to the atmosphere — equivalent to two million extra cars.[9]

The WA Government has made no secret of the fact that construction of an LNG hub will also pave the way for further industrial development in the Kimberley, due to the availability of cheap gas and improved transport facilities. In a 2005 report for the WA Department of Industry and Resources titled 'Developing the West Kimberley's Resources',[10] the WA Government set out a long list of developments which might follow an LNG hub, including bauxite mining at Kalumburu, Mt Leeming and the Mitchell Plateau and lead and zinc mining at Admiral Bay. In time, other energy-hungry industries would seek to locate near the gas plant to take advantage of a reliable supply of relatively cheap energy.

## State environmental assessment

Under the Australian Constitution, States only control the ocean and sea bed up to three nautical miles offshore. The United Nations (UN) Convention on the Law of the Sea 1982 allows the Commonwealth to control marine resources seaward of this boundary up to 200 nautical miles offshore as its Exclusive Economic Zone. Although the gas would be extracted mostly from Commonwealth waters, any onshore gas processing facilities would be on WA land. State and Commonwealth approvals are therefore both required for the project.

Under Part IV of the WA *Environmental Protection Act 1986* (EP Act), where a proposal is likely to have a significant effect on the environment, it needs to be the subject of an environmental assessment. Environmental assessment documents for high-impact proposals are usually open for public comment for a period of 4–12 weeks, depending on the level of assessment which is determined by the WA Environment Protection Authority (EPA).[11] Following assessment and the receipt of public submissions, the EPA makes a recommendation to the Environment Minister whether or not to approve the proposal.[12] Unlike in other States, the WA EPA is an independent body and is not subject to direction by the Government. However, the Minister can decide to approve the project against the recommendation of the EPA.[13]

The WA Government has indicated that it wants the Kimberley Hub to be treated as a 'strategic proposal' under the EP Act. A strategic proposal is defined as a future proposal or a set of related proposals that, implemented in combination with each other, are likely to have a significant effect on the environment.[14] A strategic proposal goes through essentially the same assessment process as other proposals, allowing the proponent to obtain 'in principle' approval for a single activity or group of activities without detailed plans being drawn up. Once a strategic approval is granted, individual actions which are part of the strategic proposal (called derived proposals) do not require further assessment, unless the EPA believes that there has been a significant change in environmental factors in the time since the strategic proposal was assessed.[15]

## Federal environmental assessment

Commonwealth approval is required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) where a proposal is likely to have a significant impact on a 'matter of national environmental significance'.[16] Among the matters of relevance to the Kimberley coast are federally listed threatened and migratory species. Humpback whales, whale sharks and flatback turtles are listed as vulnerable and migratory under the EPBC Act, while the lesser frigatebird is listed as migratory. The Commonwealth Minister for the Environment, Water, Heritage and the Arts thus has the power to determine the proposal on its environmental merits – taking into account, amongst other matters, the principles of ecologically sustainable development.

In 2008 the Commonwealth and WA Governments entered into a Strategic Assessment Agreement (SAA)[17] made under section 146 of the EPBC Act. This SAA envisages a single broad-scale assessment process designed to meet the requirements of both the State and Federal environmental statutes. This process, the first of its kind under the EPBC Act,[18] involves a comprehensive site assessment methodology and requires the Federal Government to assess the National Heritage values of the West Kimberley. Under normal circumstances the WA Government would prepare a Draft Report in accordance with the Terms of Reference which would then be placed on public exhibition. The Federal Minister for the Environment would then consider the Final Report submitted by the WA Government and either endorse the WA plan for the gas hub, or if not satisfied that it will address the impacts on matters of national environmental significance, seek modifications to the plan.

## Recent developments

Two decisions in December 2008 subverted the SAA process. The first was the announcement by Inpex that it had reached an agreement with the Northern Territory Government to pipe the gas 850 kilometres to Blaydin Point, near Darwin, for processing. The downside of this decision is that it effectively ended hopes of constructing a single onshore processing hub. The upside is that piping to Darwin eliminates the prospect of Inpex constructing a processing plant on the north Kimberley coast or on a nearby island.

The second was the WA election in September 2008 and new Premier Colin Barnett's announcement that he had unilaterally decided that the gas plant would be constructed

at James Price Point. This announcement came shortly after the Premier had declared nearby North Head Point to be his preferred site, but he appears to have changed his mind after being told by the EPA that it was too environmentally sensitive.[19] The announcement of a preferred site pre-empts the strategic assessment process which should have involved examining the cumulative impacts of the development on the whole Kimberley area, the need for the development, and alternative sites. This would be greatly preferable to a standard environmental assessment which merely looks at the localised impacts of the development and how they can be managed. Even if some kind of strategic assessment does go ahead under the existing SAA or a modified agreement it is questionable how genuinely strategic this process will be, considering that the WA Government has already committed to development at James Price Point.

If the strategic assessment process is not followed through, a separate approval for the gas plant will need to be sought under Part 3 of the EPBC Act.[20] Under Part 3, the Federal Environment Minister can refuse approval on the grounds of unacceptable impact on any of the species protected by the EPBC Act. This would prevent the proposal from going ahead.

Indigenous people also have an important part to play in this process. James Price Point is Crown land and is subject to a native title claim. The WA Government gave native title claimants a deadline by which to agree on a proposal for the gas development there, or face compulsory acquisition of the land. The WA Government and the Kimberley Land Council — acting for some, but not all, traditional custodians at James Price Point[21] announced on 15 April 2009 that they had reached an 'in principle' agreement. It is expected to result in 'compensation' to Indigenous people of up to $2 billion over 30 years.[22] However, many traditional custodians did not vote in favour of this agreement and remain strongly opposed to the development of an LNG Hub at James Price Point.

## Future legal protection

The Commonwealth is currently investigating whether a large area of the West Kimberley, including much of the coastline, should be included on the National Heritage List for its natural and Indigenous heritage values. The listing process, which takes two years, began in mid-2008. If listing occurs before Federal approval for the development is granted, the Federal Minister for the Environment would also have to consider the impact of the proposal on the National Heritage values in any assessment under the EPBC Act.[23] This would greatly reduce the probability that a large-scale industrial development would be approved in the area. A more likely scenario is that listing will occur after the decision on the hub is made, and if the hub is approved the area's heritage values would be compromised.

The SAA also raises the possibility that the West Kimberley could be added to the World Heritage List, pursuant to the *World Heritage Convention 1972*.[24] World Heritage listing

gives a site considerable international prestige and usually results in increased tourism revenue, but it also increases international scrutiny of developments on the site. A site can only be added to the List if it is nominated by the country where the site is located, and the World Heritage Committee agrees that the site is worthy of listing.

If National Heritage and/or World Heritage nomination occurs concurrently with the Federal environmental assessment process, the Federal Government may decide to exclude James Price Point from the proposed Heritage site. An example of this approach occurred with the listing of Kakadu as a World Heritage site in stages between 1981 and 1992, which excluded the allotments of land containing the Jabiluka and Ranger uranium mines. However, in the late 1990s the World Heritage Committee seriously considered placing Kakadu on the list of World Heritage in Danger because of the impact that the Jabiluka uranium mine was having on the surrounding environment.

While there is no legal requirement for the Federal Government to take *proposed* National or World Heritage listings into consideration when deciding whether to approve a proposal under the EPBC Act, the two heritage listing processes would have more credibility if they adopted as a starting point the National and World Heritage values of the entire Kimberley coastline, and considered whether the proposed industrial development was compatible with these values, rather than assuming that any heritage area will have to fit in around an LNG development on James Price Point.

## Conclusion

If a gas processing plant is built at James Price Point, the impacts on the local marine and terrestrial environments are likely to be significant. James Price Point "is recognised as a fish aggregation area, dugong feeding area and is a migratory pathway for humpback whales".[25] The WA EPA concludes that "the overall sensitivity of the marine environment is judged to be 'moderate to high'", and notes that "there are numerous registered Aboriginal heritage sites in the area".[26]

Approval may also signal the start of the industrialisation of the Kimberley, with no reason to think the result will not, in less than a generation, be much different to the massively scarred and socially troubled Pilbara region to the south.[27]

A gas plant at James Price Point will also alter forever the *idea* of the Kimberley. While the Federal Minister for Resources and Energy, Mr Ferguson apparently extols the virtues of 'business tourism' for the area,[28] how many tourists go to the Pilbara to see its mines and ports? There is no legal protection for places of the imagination but Australia, and the world, will be a poorer place if we cannot affirm that the Kimberley has an intangible value, as a unique place spared from the ravages of industrial society.

The local ecotourism industry,[29] conservation and public interest groups,[30] Broome Shire Council[31] and public figures such as singer-songwriter Missy Higgins[32] have come out in support of legal protection for the Kimberley coast. However, this opposition may count for little against the might of the State and Federal Governments and a big, well-connected company like Woodside, which plans long-term and does not appear to be put off by the global financial crisis.

On any objective assessment, no strong economic, let alone environmental, case has been made for siting the gas plant at James Price Point rather than offshore, or piping the gas to a brownfield site in the Pilbara. Still less are the proponents and their political backers advocating we reduce our dependence on fossil fuels and invest in renewable energy in the Kimberley, which is in the belt across the north with the highest solar radiation in Australia.[33]

Approval of a gas plant at James Price Point without allowing the SAA process to run its course would also be a setback for the EPBC Act and the long-overdue growth of a more strategic approach to environmental planning in Australia.

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[1] While the Kimberley stretches from Wyndham in the north-east to Broome in the south-west, it is often divided for practical and administrative purposes into the East (including the Ord River Sheme, Argyle diamond mine and Purnululu National Park) and West Kimberley. This article is concerned with the West Kimberley.

[2] WA Department of Planning & Infrastructure,2005, *WA Tomorrow Population Report No 6*. Available at http://www.planning.wa.gov.au/Publications/723.aspx

[3] See, eg, Woinarski, J., Mackey, B., Nix, H and Traill, B., 2007, *The Nature of Northern Australia: Natural values, ecological processes and future prospects*, ANU E Press. Available at http://epress.anu.edu.au/nature_na/pdf/whole_book.pdf

[4] The estimates are up to 120 trillion cubic feet. See Hawley, J, 2009, 'Pipe Dream', *Sydney Morning Herald Good Weekend*, 7 March, 20.

[5] Inpex website. Available at www.inpex.com.au.

[6] Woodside website. Available at www.woodside.com.au.

[7] Woodside website. Available at www.woodside.com.au.

[8] Worley Parsons, 2008, *Browse Onshore LNG Precinct Siting Study Site Visit Report*, WA Department of Industry and Resources. Available at www.dsd.wa.gov.au/documents/00633a10_Rev_2.pdf

[9] Hawley, J, 2009, 'Pipe Dream', *Sydney Morning Herald Good Weekend*, 7 March, 22.

[10] WA Department of Industry and Resources. 2005, *Developing the West Kimberley's Resources*. Available at http://www.ret.gov.au/resources/Documents/Industry%20Consultation/Regional%20Minerals%20Program/Developing%20the%20West%20Kimberley's%20resources/RMP_Developing_the_West_Kimberley's_Resource_Exec_Sum.pdf.

[11] (WA) *EP Act* 1986, s 40 (4), *Environmental Impact Assessment (Part IV Division 1) Administrative Procedures 2001*.

[12] (WA) *EP Act* 1986, s. 44(b).

[13] (WA) *EP Act* 1986, s. 45 (5).

[14] (WA) *EP Act* 1986, s. 37B (2).

[15] (WA) *EP Act* 1986, s. 39 B.

[16] (Cth) *EPBC Act* 1999, s. 67.

[17] Department of the Environment, Water, Heritage and the Arts, 2008, *Strategic assessment relating to the impacts of actions under the plan for the Browse Basin common user liquefied natural gas hub precinct and associated activities*. Available at http://www.environment.gov.au/epbc/notices/assessments/kimberley.html

[18] Other strategic assessments under the EPBC Act have been for fisheries under Division 2 of s146. Since the Kimberley SAA was negotiated, another SAA has been made in relation to the future urban growth of Melbourne. See http://www.environment.gov.au/epbc/notices/assessments/melbourne.html.

[19] See, eg, ABC Kimberley WA, 2008, 'Premier dismisses EPA's comments', *ABC Online*, 19 December. Available at http://www.abc.net.au/news/stories/2008/12/19/2451678.htm?site=kimberley.

[20] Unless the Minister has made a section 33 declaration that the action does not need approval under Part 9 of the Act.

[21] The man widely regarded as the senior lawman of the land at James Price Point, Goolarabooloo elder Joseph Roe, is still refusing to sign the access deal. See ABC News, 2009, 'Stakeholders to sign gas hub agreement', *ABC Online*, 24 April. Available at http://www.abc.net.au/news/stories/2009/04/24/2551848.htm.

[22] See ABC News, 2009, 'Stakeholders to sign gas hub agreement', *ABC Online*, 24 April. Available at http://www.abc.net.au/news/stories/2009/04/24/2551848.htm.

[23] (Cth) *EPBC Act 1999*, s. 15B.

[24] Full title: *Convention Concerning the Protection of the World Cultural and Natural Heritage*. Under Article 9.3 of the WHC, 'The inclusion of a property in the World Heritage List requires the consent of the State concerned'.

[25] Wilderness Society, 2009, 'James Price Point – A special part of the Kimberley coast threatened by fossil fuel (LNG) industry'. Available at http://www.wilderness.org.au/articles/james-price-point-2013-a-special-part-of-the-kimberley-coast-threatened-by-fossil-fuel-lng-industry)

[26] WA Environmental Protection Authority, 2008, *Kimberley LNG Precinct: Review of potential sites for a proposed multi-user liquefied natural gas processing precinct in the Kimberley region*, referring to Northern Development Taskforce, 2008, Site Evaluation Report Part B, WA Department of Industry and Resources

[27] See, eg, 'The Money Pit', *Four Corners*, ABC TV, 14 August 2008. Available at http://www.abc.net.au/4corners/content/2008/s2336326.htm.

[28] Mr Ferguson apparently extolled the virtues of business tourism in a visit to Broome on 7 February 2009. See, 2009, 'Martin Ferfuson Drops into Broome', *Save the Kimberley Blog*, 20 February. Available at http://savethekimberley.com/blog/?paged=2

[29] Eg, the newly formed Save the Kimberley http://www.savethekimberley.org.au.

[30] These include Environs Kimberley, the Conservation Council of WA, the Wilderness Society, the Australian Conservation Foundation, WWF-Australia and GetUp.

[31] Banks, A 2008, 'Broome council votes no to gas hub, wants options explored', *The West Australian*, 19 December. Available at http://www.thewest.com.au/default.aspx?MenuID=77&ContentID=113973.

[32] ABC News, 2009, 'Higgins sings the blues over Kimberley gas plan', *ABC Online*, 11 March. Available at http://www.abc.net.au/news/stories/2009/03/11/2512748.htm.

[33] See the Bureau of Meteorology's Solar Radiation Map. Available at http://www.bom.gov.au/sat/solrad.shtml.

# Sink or swim?: An assessment of the legal responses to rising seas

Gillian Duggin, Assistant Policy Officer, NSW Environmental Defender's Office[1]

## Introduction

It is widely acknowledged that Australia will be one of the most severely affected developed nations by climate change, especially in relation to the impacts on our coast. Given estimations that approximately 80% of our population resides within 50 kilometres of the coast,[2] a robust approach from governments to implement measures to adapt to climate change impacts, including sea level rise, is essential.

Media attention on climate change policy is currently focused heavily on mitigation options for reducing greenhouse gas emissions, particularly with the ongoing debate about the Federal Government's emissions trading scheme, the Carbon Pollution Reduction Scheme (CPRS). Given that there will be some unavoidable consequences of climate change that any mitigation actions will not halt, there needs to be a more concerted approach taken by governments in Australia to adapting to climate change. This is particularly the case where sea level rise is concerned.

To date, there has been no comprehensive legislation passed in any Australian State or Territory addressing adaptation measures for sea level rise, although some attempts have been made to incorporate considerations of future climate change impacts in coastal policies and planning documents.

The recent release by the NSW Government of its 'Draft Sea Level Rise Policy Statement' (NSW Draft SLR Policy) is a clear example of a 'half-hearted' approach by government to sea level rise, and one that does not adequately and comprehensively address the full range of likely impacts of sea level rise.

Using the NSW Draft SLR Policy as a case study, and reviewing policy responses in a number of other States, this article considers the inadequacy of current government policy responses to sea level rise, and suggests that the best way to address this lack of cohesion would be the development of a Federal framework to ensure that a holistic and consistently robust approach is taken across Australia.

## The impacts of sea level rise on Australia's coast

The Intergovernmental Panel on Climate Change (IPCC) released its Fourth Assessment Report in 2007 which predicts that global sea levels will rise between 18 and 59 centimetres by 2100.[3] It is important to note that the most recent science indicates that the 'worst case' IPCC scenario trajectories are already being realised. Therefore, sea level rise is likely to be even greater than the IPCC current assessments.

Low lying coastal systems are naturally the most vulnerable to sea level rise. Damage to coastal infrastructure and housing is predicted, which will have a direct impact on coastal settlements due to forced relocations. Coastal ecosystems, particularly more fragile ones such as wetlands and coral reefs, will also undoubtedly be damaged, and potentially destroyed. Inundation and flooding as a result of rising sea levels are likely to exacerbate existing restraints on freshwater resources, as groundwater and other freshwater sources are increasingly salinised.[4]

These physical impacts will lead to social and economic impacts, particularly on activities such as agriculture, tourism, and fisheries, as well as more individual impacts on households, when properties are damaged or inundated due to rising seas, forcing relocation.

The IPCC, in its Fourth Assessment Report noted that:

> *"By 2050, ongoing coastal development and population growth in some areas of Australia and New Zealand are projected to exacerbate risks from sea level rise and increases in the severity and frequency of storms and coastal flooding".*[5]

Thus, current population patterns and growth will in turn enhance the risks already posed by sea level rise.

## NSW Draft Sea Level Rise Policy Statement: An adequate response?

In early 2009 the NSW Government released a Draft Sea Level Rise Policy Statement for public comment. It also released an associated 'Technical Note: Scientific Basis of the 2009 Sea Level Rise Benchmark' (Technical Note). The development of a NSW Government policy on sea level rise was long overdue.

The main feature of the NSW Draft SLR Policy is the prescription of 'planning benchmarks' which, although having no statutory or regulatory force, are adopted to "provide guidance to support consistent consideration of

sea level rise impacts, within applicable decision-making frameworks".[6]

The planning benchmarks are to be periodically reviewed to permit revision to reflect updated information. Although the NSW Government determined the current benchmark figures[7] in accordance with existing IPCC predictions (as set out in the Technical Note), the most recent science[8] indicates that the 'worst case' IPCC scenario trajectories are being realised, and that there "is a significant risk that many of the trends will accelerate, leading to an increasing risk of abrupt or irreversible climatic shifts".[9] This unfortunately suggests that the current planning benchmark figures are already outdated.

The balance of the NSW Draft SLR Policy constitutes broad commitments to continue with existing levels of government assistance, including funding assistance to local councils to help them prepare studies assessing coastal flooding and hazard risks, community support through emergency management and the provision of information on sea level rise projections and the likely impacts of sea level rise. It also specifically clarifies that the NSW Draft SLR Policy is not intended to preclude 'appropriate coastal development,' even on land that is projected to be affected by sea level rise.

The NSW Government's approach is flawed in the way that it adopts little more than a 'business as usual' approach, through its reiteration of its intention to continue with the support it currently provides to local councils and the community. It provides scant leadership and guidance for affected stakeholders, which is so necessary in the context of climate change, and does not establish any comprehensive 'plan of action' to guide the NSW Government to adequately address sea level rise.

Most glaringly, a number of essential matters that should be addressed in any policy document about sea level rise are either fleetingly referred to or omitted; in particular, considerations of biodiversity and public health impacts. Although the adoption of a sea level rise planning benchmark in the NSW Draft SLR Policy is useful for the relative certainty it provides to stakeholders,[10] it does not provide a comprehensive policy on sea level rise.

## How the NSW Draft SLR Policy fits with other relevant law and policy in NSW

There are few legislative provisions in NSW that require sea level rise (and other climate change impacts) to be considered. Neither the NSW *Coastal Protection Act 1979*, nor the NSW *Environmental Planning and Assessment Act 1979*, both of which govern development in the coastal zone, contain specific reference to climate change.

The *NSW Coastal Policy 1997* contains an objective to recognise and consider the potential effects of climate change in the planning and management of coastal development. The *NSW Environmental Planning and Assessment Regulation 2000* requires consent authorities to take the *NSW Coastal Policy 1997* into consideration when determining a development application.[11] This means that when a consent authority is considering a proposed development in the coastal zone, they must, in addition to all other considerations, take the potential effects of climate change into account. However, the requirement to consider climate change does not amount to much in terms of outcomes, as the consideration of climate change is but one of a number of considerations that must be taken into account and it is given no more importance than those other factors. Furthermore, sea level rise is not specifically referred to so it is not guaranteed that this particular impact of climate change needs to be considered.

The only strategic action identified by the *NSW Coastal Policy* is that "appropriate planning mechanisms will be considered for incorporating sea level change scenarios set by the Inter-governmental Panel on Climate Change".[12] In addition, *State Environmental Planning Policy 71 – Coastal Protection* requires consideration of coastal processes and hazards (which arguably includes sea level rise). Finally, the new standard template for council Local Environmental Plans, which all councils in NSW must adopt by 2011, includes a clause that will require councils to consider matters including sea level rise when determining development applications.[13] However, these provisions by no means ensure that sea level rise is consistently required to be considered in respect of all development applications.

In the absence of corresponding changes in NSW planning laws and policies to ensure that all decision-makers take account of sea level rise when determining development applications, the Draft NSW SLR Policy is an incomplete response from the NSW Government.

The NSW Department of Environment and Climate Change (DECC), which publicly consulted on the NSW Draft SLR Policy, reportedly received over 100 submissions on the policy and is expecting to have the policy finalised towards the end of 2009.[14] It therefore remains to be seen whether the NSW Government will strengthen its position in respect of sea level rise. This may be further clarified when the Department of Planning releases guidelines to assist local councils, as foreshadowed by the NSW Draft SLR Policy.

## Have other States done any better?

The above discussion highlights the increasingly confused and complex regulation and management of the coastal zone in NSW, including in respect of particular issues such as sea level rise. It is therefore pertinent to consider whether any other States have performed better in this regard.

A review of relevant policies in other Australian States reflects the ad hoc nature of governmental responses to sea level rise. Set out below is a sample of some of these measures.

### *Queensland*

Queensland has included in its overarching coastal policy, the *State Coastal Management Plan*,[15] specific principles relating to adaptation to climate change. Principle 2.2.1 acknowledges the impacts of climate change as a result of changes such as sea level rise, and stipulates that planning should address these potential impacts of climate change by adopting a hierarchy of approaches: avoid, planned retreat, accommodate, and protect. Decision-makers assessing development applications under the *QLD Integrated Planning Act 1997* are to have regard to the State Plan.

### *Victoria*

The recently released *Victorian Coastal Strategy 2008*, established under the *Vic Coastal Management Act 1995*, establishes a management framework for Victoria's coast.[16] Part 2.1 addresses planning for climate change, and specifies that a benchmark of not less than 0.8 metres by 2100 should be implemented. Policy principles established by the Strategy include that development should be avoided in low-lying coastal areas, and that planning and management responses and adaptation strategies should be prioritised for vulnerable areas, such as "protect, redesign, rebuild, elevate, relocate and retreat". It also specifically notes that the precautionary principle is the policy approach adopted by the Strategy.

### *Western Australia*

The current *State Coastal Planning Policy 2003*[17] for WA adopted a sea level rise benchmark in line with predictions of the Third Assessment Report of the IPCC, which predicted a change of 0.38 metres (from the year 2000 to 2100) – a figure that is now clearly out of date. However, these setback figures are only guidelines to be "applied to each case on its merits".[18] The objectives of the Policy include ensuring that the location of coastal facilities and development "takes into account coastal processes including….sea level rise".[19] It states that a coastal planning strategy and/or foreshore development plan should be prepared to support development proposals on the coast, and should take into account coastal processes and sea level change and set out requirements for development setbacks, amongst other things.[20] The WA Planning Commission is believed to be reviewing this policy.

### *South Australia*

South Australia's Coast Protection Board adopted a policy[21] in 1992 that established that development should not be approved where building sites are lower than a height determined in accordance with a 0.3 metres sea level rise, to 2050. It also states that development should not be approved unless capable of being protected or raised to withstand a further 0.7 metres of sea level rise. These positions have been taken up and incorporated into plans and strategies by State and local government. While a number of other policies have since been adopted by the SA Government, these figures have not been altered by other policy documents.[22]

## Issues raised by the States' policy approaches

While this review only focuses on the overarching coastal policies that apply in these States,[23] it demonstrates that at least in some cases, a more considered approach has been taken than in NSW. For example, some policies recognise a variety of available options such as planned retreat, and protection measures. This is reflected, for example, in the Victorian and Queensland approaches. While the NSW Draft SLR Policy explicitly states that it is not intended to preclude development on land to be affected by sea level rise, by contrast the *Victorian Coastal Strategy* is explicit in stating that development should be avoided in low-lying coastal areas.

What is also evident is that the planning benchmarks in each State, even when allowing for variability in predictions of sea level rise in different regions, are markedly different. There is clearly inconsistency in approaches.

Further, few States, if any, have legislated mandatory requirements to take specific actions in response to sea level rise, for example, by imposing mandatory requirements on decision-makers to refuse development applications if they are likely to be affected by sea level rise. The responses all take the form of overarching policy statements made by each State government, with limited emphasis on practical guidance for implementation.

This review suggests that governments in Australia to date have failed to adopt comprehensive legislative or policy responses to sea level rise. In part, this is likely to be a result of the uncertainty that haunts the science and policy implications of climate change, and potentially the vested interests of commercial property developers that pressure State governments to weaken their stance.[24] The result is an insufficient approach to the challenges posed by sea level rise, leaving serious questions as to how coastal communities will cope with the long term challenges that it presents.

This is also problematic in the context of growing concerns of local councils and their calls for greater assistance to address climate change,[25] with the growing spectre of litigation around sea level rise and other climate change impacts. The past few years have seen a number cases across various States in which arguments have been raised relating to the impacts of climate change on coastal development.

Particularly noteworthy are *Aldous v Greater Taree City Council*[26] of which a central issue (although unsuccessfully argued) was the impact of climate change induced coastal erosion on a proposed beachside property, *Gippsland Coastal Board v South Gippsland Shire Council*[27] in which the Victorian Civil and Administrative Tribunal found that "sea level rise and the risk of coastal inundation were relevant matters

for councils to consider in appropriate circumstances"[28] and *Northcape Properties v District Council of Yorke Peninsula*[29] in which the South Australian Supreme Court found that coastal erosion due to climate change was a sufficient basis to support the refusal of a coastal development application.

Academic opinion also suggests that councils could potentially owe a duty of care to proponents when approving development applications in coastal areas that are at risk from climate change.[30] If this is the case, then it is possible that these councils could face future negligence claims from people who have suffered loss as a result of sea level rise impacting on their developments.

There is ample scientific information and evidence that, at a minimum, enables State governments to understand the likely impacts of climate change and more specifically what rising sea levels will do. However, the ad hoc and often conflicting approaches and figures adopted by various State governments lead to greater uncertainty and a lack of cohesion that can only be detrimental to ensuring an adequate response to the long-term and far-reaching challenges it presents.

Thus, in the context of the serious impacts that sea level rise is predicted to have on Australia's coasts, together with the inadequate responses of State governments around the country and the growing concerns of local councils as to how to grapple with the issue at the local level, a clear need for leadership and an increased focus on appropriate legal and policy approaches is required.

## A federal response?

While recognising the inherently variable and localised impacts of sea level rise and the need for approaches that can flexibly respond to local needs, one way to address the ad hoc approach to an issue faced by all States in Australia is for the Federal Government to take the lead on this issue. Indeed, the *Victorian Coastal Strategy* explicitly states that one proposed action is to "work through national and State processes to develop consistent national benchmarks for coastal vulnerability assessments".[31]

A Federally coordinated approach may remove the pressure of vested interests that arise in the context of the planning system and that may be preventing State governments from making strong policy choices about sea level rise. It would also recognise that sea level rise poses threats to nationally significant coastal ecosystems such as the Great Barrier Reef, and would reflect the Federal Government's central role in climate change policy. This is particularly significant considering its obligations under the *United Nations Framework Convention on Climate Change* (UNFCCC), which include implementing measures to facilitate adequate adaptation to climate change, and specifically to develop and elaborate appropriate and integrated plans for coastal zone management, amongst other things.[32]

The Federal Department of Climate Change (DCC), through its 'Climate Change Adaptation Program',[33] is already undertaking research on adaptation measures to assist coastal communities, with a view to better informing decision-makers to help them understand the likely impacts of sea level rise on communities, particularly local councils. However, this does not extend to leading with any policy or legislative framework to guide decision-makers to implement sea level rise adaptation action.

Therefore, the best way to address these conflicting issues could be through a national approach, either by framework legislation or a national coastal policy which could direct the preparation of sea level rise adaptation plans for all coastal areas. Alternatively, it could extend more broadly to constitute uniform laws for management of the coastal zone. This could be negotiated through the Council of Australian Governments (COAG).

Such a framework should contain, at a minimum, consideration of the impacts of sea level rise on biodiversity, public health and infrastructure, as well as community assistance for the social and economic impacts of sea level rise, and emergency management plans. It should establish a guiding framework for adaptation strategies and responses to be implemented at the local level in accordance with local conditions, including a hierarchy of planning options commencing with a policy of planned retreat. It should also require the mandatory consideration by decision-makers of sea level rise impacts in planning decisions. It should also provide funding to assist local governments with implementation.

This approach would provide sufficient flexibility to ensure local government authorities can tailor their sea level rise actions to local variables, yet would provide the much sought-after guidance and leadership required on this issue for the variety of stakeholders and coastal communities that are starting to be, and will increasingly be affected by sea level rise in the future.

## Conclusion

The focus of debate about climate change policy has to date largely been on mitigation options. However, equal attention must be paid to adapting to unavoidable climate change, which includes sea level rise.

In mid- 2007, Professor Bruce Thom noted:

> *"At the moment one cannot expect strong leadership from federal or State governments in assisting regional or local bodies better manage the Australian coast to meet the challenges of climate change which scientists will continue to work on".*[34]

Perhaps with the change of Federal government in 2007, which has positioned itself as taking a more resolute approach to acting on climate change, the potential for a federally coordinated approach to sea level rise may be a plausible option. What is clear is that coherent, consistent and robust policy choices must be made now, to ensure that the long term impacts of sea level rise are taken into account in accordance with a precautionary approach. This

is imperative to meet the challenges presented to Australia by one of the looming impacts of climate change.

[1] This paper is based on work undertaken by the EDO NSW in preparing its submission to the NSW Government on its Draft Sea Level Rise Policy Statement.

[2] See Department of Climate Change (DCC) website: http://www.climatechange.gov.au/impacts/coasts.html#research (Accessed 22/5/09)

[3] This comes from the International Scientific Congress on Climate Change held on 10 – 12 March 2009 in Copenhagen, see: 'Key messages from the Congress' released by the ISCCC: http://climatecongress.ku.dk/newsroom/congress_key_messages, 12 March 2009

[4] IPCC 4th Assessment Report, Summary for Policymakers, available at: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf (accessed 25/5/09), and information contained on the DCC website, above n2.

[5] IPCC 4th Assessment Report, Summary for Policymakers at p11. Available at: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf (accessed 25/5/09)

[6] NSW Department of Environment and Climate Change 2009, *NSW Draft Sea Level Rise Policy*. Available at: http://www.environment.nsw.gov.au/resources/climatechange/09125DraftSLRpolicy.pdf (accessed 22/5/09)

[7] An increase above 1990 mean sea levels of 40cm by 2050 and 90cm by 2100.

[8] Coming from the International Scientific Congress on Climate Change held on 10 – 12 March 2009 in Copenhagen. See: University of Copenhagen Climate Office, 2009 'Key messages from the Congress' *Climate Congress* 12 March. Available at: http://climatecongress.ku.dk/newsroom/congress_key_messages

[9] See University of Copenhagen Climate Office, 2009 'Key messages from the Congress,' *Climate Congress* 12 March. Available at: http://climatecongress.ku.dk/newsroom/congress_key_messages,; see also Wilkinson, M 2009 'Beautiful one year flooded the next', *Sydney Morning Herald*, 23 March. Available at http://www.smh.com.au/environment/global-warming/beautiful-one-year-flooded-the-next-20090322-95mg.html

[10] It is also necessary to note that the Draft NSW SLR Policy indicates that the Department of Planning will be preparing guidelines on how sea level rise should be considered in land use planning and development approval decisions by councils. However, it is not clear when these will be prepared.

[11] *Environmental Planning and Assessment Regulation 2000*, cl. 92 (1)(a)(ii).

[12] NSW Coastal Policy 1997, Paragraph 2.2.2

[13] However, 'major projects' are assessed under Part 3A of the *Environmental Planning and Assessment Act 1979* and will not be subject to this requirement.

[14] Department of Environment and Climate Change NSW 2009, *Combating Sea Level Rise*. Available at http://www.environment.nsw.gov.au/ec/index.htm

[15] Available at http://www.epa.qld.gov.au/register/p00607ac.pdf

[16] Available at http://www.vcc.vic.gov.au/2008vcs/home.htm

[17] Available at http://www.planning.wa.gov.au/Plans+and+policies/Publications/139.aspx

[18] WA State Coastal Planning Policy 2003, Paragraph A, Schedule One.

[19] WA State Coastal Planning Policy 2003, Paragraph 4.

[20] WA State Coastal Planning Policy 2003, Paragraph 5.2.

[21] The 'Coastline: Coastal erosion, flooding and sea level rise standards and protection policy 1992'.

[22] Australian Network of Environmental Defender's Offices 2008, *Submission on the inquiry into climate change and environmental impacts on coastal communities*, EDO website. Available at: http://www.edo.org.au/policy/climatechange_coastal080610.pdf

[23] A common theme in each State is a myriad of coastal policies and strategies creating a confusing context for coastal zone management.

[24] ABC News 2009, 'Developers urge revision of sea level predictions', *ABC Online*. 15 May. Available at: http://www.abc.net.au/news/stories/2009/05/15/2571172.htm

[25] For example, Local Government and Shires Association 2009, 'Councils seek help in preparing for climate change. Available at: http://www.lgsa.org.au/www/html/2950-13-may-2009-councils-seek-help-in-preparing-for-climate-change.asp?intSiteID=1

[26] (2009) NSWLEC 17.

[27] (2008) VCAT 1545.

[28] Ruddock, K 2009, 'Factoring climate change and sea level rise into planning and infrastructure decisions?', *NSW Sustainable Development Conference 2009*, 12 May 2009.

[29] (2008) SASC 57.

[30] NSW Environmental Defender's Office 2008,'Coastal Councils and Planning for Climate Change' *Sydney Coastal Councils*. Available at: http://www.sydneycoastalcouncils.com.au/SydneyCoastalCouncilsGroupInc.NSWAustralia.htm, This paper refers to various articles including McDonald, J.& England, P 2007, 'A Risky Climate for Decision-Making: The Legal Liability of Development Authorities for Climate Change Impacts,' *QELA Conference*, Kingscliff, May 2007; Lipman, Z. & Stokes, R 2003,'Shifting Sands – the Implications of Climate Change and a Changing Coastline for Private Interests and Public Authorities in Relation to Waterfront Land', *Environmental & Planning Law Journal*, vol 20 p. 406.

[31] Action 'b', see: http://www.vcc.vic.gov.au/2008vcs/part2.1climatechange.htm

[32] UNFCCC, Article 4(1) Paragraphs (b) and (e). Available at: http://unfccc.int/resource/docs/convkp/conveng.pdf

[33] http://www.climatechange.gov.au/impacts/nccap/index.html

[34] Thom, B 2007 'Climate Change and the Coast: the Institutional Challenge,' *Climate Change Forum, Department of Primary Industries & Southern Rivers Catchment Management Authority*, 19-20 June.

# Ocean acidification: The other CO2 problem[1]

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## Introduction

On 14 May over 70 states, including Australia, adopted the Manado Oceans Declaration,[2] the culminating text of the inaugural World Ocean Conference, which was held in Manado, in North Sulawesi. The Declaration recognised that one of the greatest environmental threats to the oceans is the process of acidification driven by oceanic uptake of carbon dioxide (CO2) from the atmosphere. The Declaration solemnly recites that "progressive acidification of ocean water and increasing temperature will have negative impacts on marine biota, particularly shell-forming organisms, their dependent species, and coral reef structure and function".

The Manado Oceans Declaration is intended to spur action in December at the Copenhagen climate conference on a post-Kyoto agreement that will address the threats posed by climate change and acidification to the marine environment. However, progress on this front will not be easy. While the chemistry behind ocean acidification is straightforward, it poses a problem of environmental law and policy as diabolical as climate change. The fundamental difficulty is the fragmented governance structure – there are multiple regimes with potential application, but none which cover the field in a comprehensive way, and several which are in apparent tension, if not outright conflict, with an overriding objective to reduce the progressive acidification of the oceans.

## Chemistry of ocean acidification

The world's oceans comprise one of the largest natural reservoirs of carbon and act as a buffer for changes in atmospheric CO2.[3] Between 1800 and 1994 the oceans absorbed about one-third of the CO2 released from all human activities.[4] As atmospheric concentrations of CO2 increase a larger quantity of CO2 is taken up by seawater, and over the next few millennia the oceans will absorb approximately 90% of CO2 emitted into the atmosphere.[5]

Ocean acidification is causing profound changes to the carbon chemistry of the oceans. When CO2 dissolves in the oceans it reacts with water (H2O) to form carbonic acid.[6]

*"Ocean acidification will exert profound and highly adverse impacts on ocean species and ecosystems"*

The pre-industrial pH[7] of the oceans was around 8.1, but this has already declined by 0.1 and ocean pH may fall by up to 0.5 units by 2100 if CO2 emissions from human activities continue along current trends.[8] The hydrogen ions released in the formation of carbonic acid combine with carbonate ions in seawater to form bicarbonate, thereby removing substantial amounts of carbonate from the water. There is already a 10% decline in carbonate concentrations compared to pre-industrial levels,[9] and by 2100 the decline is likely to be in the order of 50%.[10]

## Consequences for marine organisms and ecosystems

Ocean acidification will exert profound and highly adverse impacts on ocean species and ecosystems[11] as many marine organisms and animals, such as molluscs, corals, echinoderms, foraminifera and calcareous algae, require calcium carbonate to make shells and plates.[12]

At particular risk may be coral reef-building organisms.[13] On current emissions trends, ocean carbonate saturation

levels could drop below those required to sustain coral reef accretion by 2050.[14] And the development and survival of other marine calcifying organisms such as molluscs, crustaceans and some phytoplankton will also be affected. Given that many of these organisms form the basis of diverse ocean ecosystems, the consequences of reduced calcification cannot be underestimated.

## Addressing ocean acidification: Implications of regime complexity

In contrast to climate change, where there is the possibility of mitigation, adaptation and even geoengineering solutions to increase uptake of CO2 on land or in the seas, or otherwise to cool the planet,[15] ocean acidification can be effectively addressed only by mitigating CO2 emissions or drawing them down into terrestrial biomass. With ocean acidification there is also limited capacity to adapt, although reducing other stressors on certain ecosystems will be of assistance. Nor are there any effective engineering solutions on the horizon – over 13 billion tonnes of limestone would need to be deposited in the oceans annually to buffer current CO2 emissions, with potentially drastic ecological impacts.[16]

With the effects of ocean acidification expected to become severe by 2100 without deep reductions in greenhouse gas emissions,[17] it is beyond question that emissions must be reduced as quickly as possible. What remains in question, however, is the extent to which this goal is achievable in the current 'regime complex' potentially applicable to ocean acidification. The term 'regime complex' describes the contemporary phenomenon of proliferation of highly specialised international environmental (and other) regimes, which overlap and sometimes operate in tension.[18] The regime complex when it comes to ocean acidification is very complicated indeed, thanks to the welter of treaties that have relevance to the problem.

## Climate regime

As ocean acidification is often mentioned in the same breath as climate change it might be thought that the climate change regime, established by the *1992 United Nations Framework Convention on Climate Change* (UNFCCC) and its *1997 Kyoto Protocol*, would have direct application to the phenomenon, especially as the regime seeks to address atmospheric concentrations of CO2, which is the main driver both of climatic change and changing oceanic chemistry.

Article 2 of the UNFCCC provides that the ultimate objective of the climate regime is to achieve the stabilisation of atmospheric greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system. However, while the 'climate system' is defined to mean the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions, it is clear that oceans are only a subject for concern insofar as they are an integral component of the *climate* system (as the great ocean conveyor belt – the thermohaline current – is).[19]

Not only is the UNFCCC ambivalent on ocean acidification, it also contains provisions that run counter to efforts to constrain it. Article 4(1)(d) requires all parties to promote sustainable management, and promote and cooperate in the conservation and enhancement of sinks and reservoirs of all greenhouse gases, which include oceans. Parties are thereby encouraged to enhance the passive capacity of the oceans to absorb CO2, and can even be read as encouraging 'active' ocean sequestration of CO2 through processes such as ocean fertilisation.

This problem was remedied to some extent by the *Kyoto Protocol* which sets quantitative emission reduction and limitation targets for industrialised state parties for six greenhouse gases (CO2, CH4, N2O, HFCs, PFCs, SF6). To meet their commitments, parties may count removals by terrestrial sinks only (afforestation, reforestation and deforestation).[20] Oceans are not recognised as sinks for meeting commitments, nor for generating certified emissions reductions (Clean Development Mechanism), emission reduction units (Joint Implementation) or assigned amount units (Emissions Trading). the *Kyoto Protocol* does not, however, rule out a voluntary market for credits from ocean sinks, and several companies are exploring ways of sequestering CO2 in the water column.

## Marine pollution regimes

The structural limitations of the climate regime, in so far as ocean acidification is concerned, prompt the question whether other regimes more directly concerned with the oceans may effectively embrace the phenomenon.

The international regulatory framework for environmental protection in marine areas within and beyond national jurisdiction is dominated by broad principles of environmental protection, such as those contained in Part XII of the *1982 United Nations Convention on the Law of the Sea* (LOS Convention), punctuated by denser patches of regulation where states have negotiated at global and regional levels on specific issues such as dumping.[21]

### *1972 London Convention and1996 London Protocol*

The objective of these two agreements, which operate in parallel, is to prevent the pollution of the sea by dumping of waste or other matter liable to create hazard to human health or harm living resources and marine life. There have been some important developments within the dumping regime which have recognised the acidification effects of CO2.

The dumping regime has developed in such a way as to allow sub-seabed but not water-column sequestration of CO2. In November 2006, at the First Meeting of the Contracting Parties, amendments to the *1996 London Protocol* were adopted, permitting the storage of CO2 under the seabed[22]

(amendments which have now been implemented in Australia through Commonwealth legislation[23]).

These allow for regulation of sub-seabed sequestration of CO2, with CO2 streams from carbon capture processes added as a waste that may be considered for dumping. The amendments have been supplemented by 'Specific Guidelines for Assessment of Carbon Dioxide Streams for Disposal into Sub-Seabed Geological Formations' adopted by the Contracting Parties at their Second Consultative Meeting in November 2007.[24]

Specific acknowledgement of the potential risk of ocean acidification can be found in various resolutions and statements of concern adopted by the parties to the dumping regime which have noted that large-scale ocean iron fertilisation may have negative impacts on the marine environment and human health,[25] and disallowed ocean fertilisation activities other than for legitimate scientific research.[26]

### *1995 Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities*

As the vast majority of CO2 enters the oceans via passive uptake from the atmosphere it is possible to characterise CO2 as one of the largest forms of land-based marine pollution, which constitutes the vast majority (around 80%) of pollutants entering the oceans.

In 1995, 108 states and the European Community adopted the 'Global Programme of Action for the Protection of the Marine Environment from Land-based Activities' (GPA). Adopting a 'soft law' approach, the GPA is designed to guide national and regional authorities in devising and implementing sustained action to prevent, reduce, control and eliminate marine degradation from land-based activities.

Chapter V of the GPA suggests that states develop national programmes of action to address marine pollution from terrestrial sources. As ocean acidification is a form of marine degradation caused by land-based activities, the GPA arguably has a role to play in facilitating national and regional programmes of action in relation to preventing ocean acidification. However, while the GPA sets specific targets for nine source categories,[27] which cover a majority of land-based marine pollutants, carbon emissions from land-based sources currently fall outside the established categories.

While the potential role of the GPA in studying and addressing climate change impacts on coastal and freshwater ecosystems remains uncertain,[28] one positive indication of the rising awareness of ocean acidification within the GPA regime is the *Beijing Declaration on Furthering the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities*, which was adopted at the second intergovernmental review meeting of the GPA in 2006.[29] In the preamble to this Declaration, the vulnerability of coastal communities to the effects on the marine environment of ocean acidification resulting from land-based activities is explicitly acknowledged.

### *Regional Responses*

Although ocean acidification is a global environmental problem that requires global action, early action may be possible on a regional basis, especially through the United Nations Environment Programme's 'Regional Seas Programme' (RSP), which remains the key mechanism for the regional implementation of the principles that find expression in the GPA.

The RSP covers 18 regions of the world and aims to reduce the degradation of the world's seas by encouraging comprehensive cooperative efforts and specific actions by states which share those waters. A regional regime associated with, but formally outside, the RSP which has been most active in the area of ocean acidification is the *1992 Convention for the Protection of the Marine Environment of the North East Atlantic* (OSPAR Convention).

Article 2(1)(a) of the OSPAR Convention imposes a wide-ranging obligation on state parties to "take all possible steps to prevent and eliminate pollution". Pollution is defined broadly in the Article 1(d) of the OSPAR Convention, as it is in the LOS Convention, as "the introduction by man, directly or indirectly, of substances or energy into the maritime area which results, or is likely to result, in hazards to human health, harm to living resources and marine ecosystems, damage to amenities or interference with other legitimate uses of the sea". As ocean acidification is a process that is caused by the indirect introduction by humankind of CO2 into the ocean and is likely to result in harm to maritime ecosystems, it clearly falls within the definition of pollution, and enlivens the Article 2(1)(a) obligation of prevention.

This interpretation of the Convention is buttressed by the requirement for the parties to apply the precautionary principle[30] and by recent practice within the regime in connection with climate change and acidification. Climate change is one of seven designated work areas of the OSPAR Commission, and in 2006 the Commission delivered a report on ocean acidification that included a detailed consideration of its effects on the marine environment.[31] The Commission has also had to respond to acidification issues in addressing proposals for oceanic carbon capture and storage (CCS) and has adopted decisions to ensure environmentally safe storage of carbon dioxide streams in geological formations pursuant to 'OSPAR Guidelines for Risk Assessment and Management'[32] and to prohibit placement of CO2 on or above the seabed in the water-column.[33] These decisions illustrate that while the Commission is committed to using CCS as part of its strategy for reducing atmospheric CO2 emissions, it is also aware of the need to ensure the process does not contribute to ocean acidification. Importantly, the Commission has stressed that CCS is only one item in the package of measures that will be needed to reduce CO2 emissions.[34]

## Atmospheric pollution regimes

Ocean acidification is not the first 'litmus test' posed for international law. Acid rain was one of the earliest transboundary environmental problems to receive sustained international attention, initially on a bilateral and much later on a regional scale. The principle that no state has the right to use, or permit the use, of its territory in such a way as to cause serious injury by pollution in the territory of another, which was originally applied in the *Trail Smelter Case*[35] ultimately found expression in Principle 21 of the *1972 Declaration of the United Nations Conference on the Human Environment* (which was substantially repeated in Principle 2 of the *1992 United Nations Declaration on Environment and Development*).

In the Northern Hemisphere a sophisticated regime now operates to regulate transboundary air pollution resulting in environmental problems such as acid rain and localised ozone pollution under the *1979 Convention on Long-Range Transboundary Air Pollution*. This convention, which was negotiated within the United Nations Economic Commission for Europe, has Pan-European and North American membership. It is a framework convention supplemented by eight protocols, including several instruments that set specific targets for reducing the acidification effects of atmospheric pollution from sulphur and nitrogen oxide emissions.

The *1985 Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes* sought to reduce sulphur emissions by at least 30% while the *1994 Protocol on Further Reduction of Sulphur Emissions* introduced critical loads for sulphur that are not to be exceeded, and incorporated into the regime contemporary concepts of environmental management including the precautionary principle. More ambitious still is the *1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone* which sets 2010 ceilings and national emissions standards for four pollutants: (sulphur, NOx, VOCs and ammonia). Importantly Article 2 of the Protocol identifies a key aim of the instrument as being to ensure that a critical load of acidity is not exceeded, including in marine environments. In this respect it provides an important example of an instrument that establishes an acidity threshold in the environment and is a potential template for the devising of a similar standard as regards ocean acidification. Once fully implemented, this most recent protocol should ensure that Europe's sulphur emissions will be cut by more than 63%, and the area in Europe with excessive levels of acidification will be reduced from 93 million hectares (in 1990) to 15 million hectares (including both marine and coastal zones).[36]

## Biodiversity conservation regimes

### *Convention on Biological Diversity*

The *1992 Convention on Biological Diversity* (CBD) has three main goals: the conservation of biodiversity, the sustainable use of the components of biodiversity and the fair and equitable sharing of benefits arising from the commercial and other utilisation of genetic resources.[37]

Several provisions of the CBD are specifically relevant to a response to ocean acidification. Article 6 of the CBD requires parties to develop national biodiversity strategies and action plans, and to integrate these into broader national plans. Article 7 requires parties to identify and monitor processes and categories of activities that have, or are likely to have, adverse impacts on the conservation and sustainable use of biological diversity and monitor their effects.

At the ninth meeting of the Conference of the Parties held in Bonn in 2008, two decisions were made which included reference to ocean acidification. In the first, made in the context of a decision concerning ocean fertilisation, the parties requested the Executive Secretary to compile and synthesise information on interactions between acidification, climate change and multiple nutrient-loading as possible threats to biodiversity during the in-depth reviews of the programmes of work on inland water and marine and coastal biodiversity.[38] In the second decision, the Conference of the Parties requested that available scientific information on ocean acidification and its impacts on marine biodiversity and habitats be compiled, synthesised and made available for consideration at a future meeting of the Subsidiary Body on Scientific, Technical and Technological Advice prior to the tenth meeting of the Conference of the Parties.[39]

These decisions evidence an intention on the part of parties to the CBD to consider the problem of ocean acidification in the near future. However, it is doubtful whether any of the provisions of the CBD could be used to impose a clearly-defined obligation on states parties to limit their CO2 emissions by reference to the impact of these emissions on acidity levels in the oceans.

### *Convention on the Conservation of Antarctic Marine Living Resources*

Similar to the LOS Convention, the CBD operates side-by-side with a host of regimes adopted before and after the global regime that seeks to protect biodiversity through the conservation of specific habitats or species, including the marine environment. The *1980 Convention on the Conservation of Antarctic Marine Living Resources* (CCAMLR) is an important example of the latter which, as part of the Antarctic Treaty System, has as its aim "the conservation of Antarctic marine living resources",[40] including "the populations of fin fish, molluscs, crustaceans and all other species of living organisms".[41]

The effects of ocean acidification are likely to be most pronounced in the colder waters of the Southern Ocean, especially given the importance of pteropods and krill to the Southern Ocean food chain. However, despite the obvious threat that ocean acidification poses to the *raison d'être* of CCAMLR, the problem has attracted very limited examination within the meetings of the CCAMLR Commission and Scientific Committee. There are only occasional references to the phenomenon,[42] and it has not been used as a justification for the adoption of conservation measures for krill or for other species whose exploitation is regulated under CCAMLR.

## Conclusion

International environmental law has tended to develop in a highly sectoral fashion. Regimes have been spawned to address specific environmental problems, such as particular sources and types of pollution, rather than to address environmental governance in a holistic and integrated manner having regard to the reality of ecological interdependence.[43] As a consequence there is today not only a surfeit of environmental regimes but also a scarcity of coordination, as many regimes operate largely independently, and sometimes even inconsistently, with one another.

This assessment applies with particular force to the problem of ocean acidification. The phenomenon is by every measure as serious as climate change in terms of environmental degradation and the threat it poses to global food security. However precisely because of its cross-cutting character it exists in a legal 'twilight zone' indirectly regulated by many regimes, but directly by none. The challenge for effective global governance of ocean acidification is not the creation of a new regime (which is politically unachievable) but rather to ensure that existing regimes operate in a complementary, mutually-reinforcing, manner. Ultimately the responsibility lies with the Australian Government, and other states parties to multiple environmental regimes, to ensure that international environmental law works harmoniously to address this 'other $CO_2$ problem'.

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[1] This short note reports ongoing research on the governance of ocean acidification supported by a grant from the Sydney Law School Legal Studies Scholarship Fund.

[2] Available at http://www.indonesia-ottawa.org/information/files/manado%20ocean%20declaration.pdf (accessed 21 May 2009).

[3] SCOR/IOC, 'The Ocean in a High $CO_2$ World' (2004) 17 *Oceanography* 72 at 72.

[4] C L Sabine et al., 'The oceanic sink for anthropogenic $CO_2$' (2004) 305 *Science* 367.

[5] SCOR/IOC, above n3 at 72.

[6] J C Orr et al., 'Anthropogenic Ocean Acidification Over the Twenty-First Century and its Impact on Calcifying Organisms' (2005) 437 *Nature* 681.

[7] pH refers to the 'potential for hydrogen' and is a measure of the acidity or alkalinity of a solution.

[8] Royal Society, *Ocean Acidification Due to Increasing Atmospheric Carbon Dioxide* (2005) at vi. See also Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis: Summary for Policymakers - Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007) at 18.

[9] O Hoegh-Guldberg et al., 'Coral Reefs Under Rapid Climate Change and Ocean Acidification' (2007) 318(5827) *Science* 1737.

[10] B Rost & U Riebsell, 'Coccolithaphores and the Biological Pump: Responses to Environmental Changes' in Hans R Thierstein & Jeremy R Young (eds) *Coccolithophores: From Molecular Process to Global Impacts* (2004) at 116.

[11] IOC, *Monaco Declaration* (2008) at 2.

[12] Royal Society, above n8 at 2.

[13] Wil Burns, 'Anthropogenic Carbon Dioxide Emissions and Ocean Acidification' in R A Askins, G D Dreyer, G R Visgilio & D M Whitelaw (eds) *Saving Biological Diversity* (2008) at 190.

[14] Hoegh-Guldberg et al., above n9 at 1740.

[15] See generally James Lovelock, *The Vanishing Face of Gaia: A Final Warning* (2009) at 92-104.

[16] Antarctic and Climate Ecosystems Cooperative Research Centre, *Position Analysis: $CO_2$ Emissions and Climate Change: Ocean Impacts and Adaptation Issues* (2008) at 11.

[17] Royal Society, above n8 at vi.

[18] Kal Raustiala and David G Victor, 'The Regime Complex for Plant Genetic Resources' (2004) 58 *International Organization* 277, 278. See also D W Drezner, 'The Power and Peril of International Regime Complexity' (2009) 7 *Perspectives on Politics* 65-70.

[19] UNFCC, Article 1(3).

[20] Kyoto Protocol, Article 3.3.

[21] Robin Warner, 'Preserving a Balanced Ocean: Regulating Climate Change Mitigation Activities in Marine Areas beyond National Jurisdiction' (2007) 14 *Australian International Law Journal* 99 at 103.

[22] IMO Doc LC-LP.1/Circ.5 (27 November 2006).

[23] *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) (amended pursuant to *Offshore Petroleum Amendment (Greenhouse Gas Storage Act 2008* (Cth)).

[24] IMO Doc LC/SG-$CO_2$ 2/WP.1 (24 April 2007).

[25] IMO Doc LC-LP.1/Circ.14 (13 July 2007).

[26] Resolution LC-LP.1 (31 October 2008).

[27] The nine categories are sewage, persistent organic pollutants, radioactive substances, heavy metals, oils, nutrients, sediments, litter and physical alterations and destruction of habitats (para 21(b)).

[28] D L VanderZwaag & A Powers, 'The Protection of the Marine Environment from Land-Based Pollution and Activities: Gauging the Tides of Global and Regional Governance' (2008) 23 *The International Journal of Marine and Coastal Law* 423 at 439.

[29] UNEP, *Reports of the Second Session of the Intergovernmental Review Meeting on the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities*, Annex V, UNEP/GPA/IGR.2/7 (2006).

[30] Article 2(2)(a).

[31] OSPAR Commission, *Effects on the Marine Environment of Ocean Acidification Resulting from Elevated Levels of $CO_2$ in the Atmosphere* (2006).

[32] OSPAR Decision 2007/2 on the Storage of Carbon Dioxide Streams in Geological Formations.

[33] OSPAR Decision 2007/1 to Prohibit the Storage of Carbon Dioxide Streams in the Water Column or on the Sea-Bed.

[34] OSPAR Commission, above n31.

[35] *Trail Smelter Case (Canada/United States of America)* (1938 and 1941) 3 RIAA 1911.

[36] Elli Louka, *International Environmental Law: Fairness, Effectiveness and World Order* (2006) at 381.

[37] CBD, Article 1.

[38] COP IX/16 *Biodiversity and Climate Change*, UNEP/CBD/COP/DEC/IX/16 (9 October 2008).

[39] COP IX/20 *Marine and Coastal Biodiversity*, UNEP/CBD/COP/DEC/IX/20 (9 October 2008)

[40] CCAMLR, Article 2(1).

[41] CCAMLR, Article 1(2).

[42] For example SC-CAMLR-XXVI *Report of the Twenty-Sixth Meeting of the Scientific Committee* (22-26 October 2007) at 204; CCAMLR XXVI *Report of the Twenty-Sixth Meeting of the Commission* (22 October – 2 November 2007) at 82.

[43] See generally Tim Stephens, *International Courts and Environmental Protection* (2009) at 1-16.

# Killing the 'men in the grey suits': Australia's shark (fin) fisheries

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*"…the sea again is empty,*
*Night has come as silently as the man*
*in the pale gray suit."*[1]

## Declining shark populations

Respectfully, even affectionately known in Australia as the 'man in the grey suit', the shark sparks fascination and fear in people the world over. Never the most loved of creatures, (if their brutal mating techniques are anything to go by they don't even think much of each other), ironically sharks are now being loved to death as increasing numbers of people discover the dubious delight of shark fin soup.

The summer shark attacks around Australia led to a frenzy of media activity, with all manner of supposed 'experts' readily proclaiming that shark numbers were on the rise and that they were even in 'plague proportions'. The need to attract an audience means that truth is often the first casualty in the media and when reporting on sharks, playing on people's deep-seated fears and prejudices is an easier sell than searching out the truth. However, it is often said that truth is stranger than fiction and in this case the truth is certainly more interesting as it takes us into the murky world of overfishing and environmental vandalism, both illegal and government sanctioned.

Despite claims from some quarters of large shark populations, scientists estimate that 90% of all large predatory fish, including sharks, have disappeared from the oceans since the 1950s.[2] Such severe population declines have led the International Union for Conservation of Nature (IUCN)[3] to list numerous shark species as threatened with extinction. The most recent publication of the organisation's Red List sees more sharks than ever assigned a 'threatened' category.[4] Worldwide, this means sharks are in deep trouble.

In Australian waters also, shark populations are far from healthy and there is compelling evidence of significant declines in a number of species from Queensland to Western Australia (WA).[5] In NSW, the beach meshing program, for all the environmental damage it continues to cause through the indiscriminate killing of any marine animal that has the misfortune to swim into one of the nets, has at least provided us with a clear indication that shark populations are a shadow of what they once were.[6] The NSW Minister for Primary Industries, Ian Macdonald, who is responsible for overseeing the beach meshing program recently announced that the number of sharks caught in the nets per month in the Sydney region has dropped from an average

of 88 when the program was initiated in the 1930s, to 6 per month at present.[7]

Serious depletion of any animal or plant species is a cause for concern both ethically (if the cause is human pressure) and environmentally. There are important and wide ranging ecological implications of removing large numbers of keystone species, such as sharks, from an ecosystem.[8] A keystone species is one whose existence plays a vital role in maintaining the health of its environment. Removing a keystone species has enormous flow-on effects on every other living thing in a given ecosystem. Complex food webs have already been directly altered in areas where fishing has reduced shark numbers. The normal functioning of these food webs is essential for fisheries to be maintained, something made abundantly clear by the collapse of scallop fisheries off the USA's east coast following sustained shark overfishing. The scallop collapse has been attributed to increased numbers of cownose rays, key scallop predators whose numbers were previously kept in check by larger shark species before the sharks were overfished. In its simplified version, fewer sharks equals more rays equals fewer scallops.[9] Life in the oceans has evolved over millions of years with sharks at the top of food webs. This delicate balance is severely disrupted when sharks are overfished.

## Key threats to sharks

Once, the major fishing threat to sharks was the possibility of ending up as bycatch. Fishing gear that is used to target tuna or swordfish, for example, also catches large numbers of non-target species such as sharks which are then either discarded (bycatch) or retained. Either way, the shark is likely to die. While bycatch remains a significant problem for many marine species, sharks are now increasingly sought after in their own right. While this targeting of sharks can be both legal and illegal, there is one common driver for all fisheries focused on large sharks – fins. In Australia, the flesh may be worth between $1 and $3 per kilogram to shark fishers. The fins, on the other hand, can fetch well over $100 per kilogram. With such disparate values between body parts, it is unsurprising that the practice of finning, whereby the fins are cut off a shark (which will often still be alive) and the rest of the animal (again, often still alive but condemned to a lingering death) is discarded at sea, is commonplace in many jurisdictions and in international waters. Although Australia has outlawed finning, the fact remains that the fins so favoured in Asia for shark fin soup, are now driving unsustainable shark fisheries in this country.

Illegal fishing wipes out tens of thousands of sharks from Australian waters each year.[10] Indonesian vessels have fished certain areas within the Australian Exclusive Economic Zone (EEZ) for centuries so, under a 1974 memorandum of understanding, they continue to be granted access to an area off northern Australia known as the 'MoU box'. However, with stocks of many species already severely depleted by overfishing in Indonesian waters, increasing numbers of Indonesian vessels are moving into Australian waters. Controlling fisheries and containing fishing to the agreed area within Australia's EEZ has become more challenging and illegal, unreported and unregulated (IUU) fishing has now spread across Australia's northern waters.[11]

Meanwhile, Australia's legal shark fisheries are depleting remaining shark populations. A common approach in fisheries management is to reduce fish populations in order to achieve the maximum sustainable yield (MSY).[12] A simplified explanation of MSY is that fish populations or stocks that are reduced to lower levels than they would naturally be if left unfished, reproduce faster as there is less competition for food. The theoretical result is that more fish can be caught for an indefinite period of time, increasing profitability and ensuring the future of the stock. However, achieving MSY is a precarious balancing act fraught with ecological risk[13] so the wisdom of pursuing such a policy, especially with sharks, is questionable, as they are slow-growing, late to mature and produce few young. These biological peculiarities make them more akin to marine mammals than other fish in that their populations grow or recover extremely slowly. Furthermore, large sharks have few, if any, natural predators and the sudden introduction of a highly organised and effective predator is not something millions of years of evolution have prepared them for. The result is that sustainable management of shark fisheries is decidedly more challenging than for most fish species.[14]

## NSW – A case study in shark fisheries (mis)management

Critically, in order for shark fisheries to have a chance of being effectively managed, whether the aim is MSY or not, scientists need to have a good idea of how many sharks there are to be managed. In NSW, this vital knowledge is lacking and yet the commercial catch of whaler sharks rose from an annual average of 165 tonnes between 1997/1998 and 2005/2006 to 440 tonnes in 2006/2007.[15] Compounding the lack of information about shark numbers generally is the lack of information recorded about the types of sharks that are caught. The sharks caught off NSW are not identified by species name and the whaler shark catch figures are in reality catch figures for at least seven separate species. This is comparable to commercially hunting lions, leopards and cheetahs despite marked declines in their numbers, and then officially recording the catch as 'cat – unspecified'.

The steady rise in shark catches alarmed those who are tasked with managing NSW fisheries, with the Department of Primary Industries (DPI) stating, "specific and immediate action should be implemented to reduce the high risk to these species".[16] The "specific and immediate action" involved imposing a quota intended to reflect 'historical' catch levels of sharks in the Ocean Trap and Line Fishery (OTLF) of around 60 tonnes per year. However, negotiations between the fishing industry and DPI resulted in a 60 tonne mixed shark quota[17] and a further 100 tonne quota specifically

for sandbar sharks. The 100 tonne sandbar quota is the result of industry pressure rather than any scientific evidence and it is no coincidence that sandbar sharks have an extremely high fin to body mass ratio (big fins, small body) and are, therefore, highly sought after.[18] The quota also relies on the assumption that sandbar sharks, a species already shown to be vulnerable to over exploitation,[19] can withstand 100 tonnes per year of fishing pressure while all other species combined can withstand a total quota of 60 tonnes. Ultimately, the whole concept of negotiated quotas is problematic. Renowned marine scientist, Daniel Pauly has commented that "you don't negotiate with people that you have to regulate at the same time. I've never been in a situation where I could negotiate with a policeman for going over eighty miles per hour. So whether you're speeding on the highway or taking too many fish in the ocean, it shouldn't be open for negotiation: you need to be stopped".[20]

Queensland too has its own problems with shark fishing. A recent independent review, commissioned by the Federal Minister for the Environment, of the East Coast Inshore Fin Fish Fishery expressed concern at the lack of knowledge and precaution demonstrated in the management of the shark fishery.[21]

Shark fisheries the world over have followed a now familiar pattern: initially, scientific knowledge and exploitation rates are low; then exploitation increases but knowledge about what rate can be sustained lags behind; eventually the necessary research is undertaken and it becomes clear that the shark populations have been severely depleted and continue to be overfished. At this stage, fishing levels are generally reduced but recovery of the population is forecast to take years or decades on account of the slow reproductive rates of most shark species. In many cases, particularly in developing countries (which cannot afford to regulate their fisheries) and high seas fisheries (which are effectively unmanaged as they do not fall under any national jurisdiction), the research stage of the pattern is never reached, as collecting the necessary knowledge is an expensive and lengthy process. The result is continued overfishing until the inevitable crash in shark populations forces fishers to move onto another area if they are to sustain their catches. In Australia, for those shark fisheries that have been assessed, an 'overfished' or 'overfishing' category with stock depletion is the norm.[22] However, as we have seen in NSW, there are still examples of increased exploitation despite a dearth of knowledge about sustainable fishing levels.

## Sharks and the law: a framework for sustainable fisheries?

### *Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

All Commonwealth fisheries must be assessed under the EPBC Act[23] and satisfy requirements to be demonstrably ecologically sustainable.[24] Furthermore, State managed fisheries seeking to export native Australian species (such as sharks) must undergo a Wildlife Trade Operation (WTO) assessment under the EPBC Act.[25] The conditions for approval of a WTO certainly appear to place significant weight on the sustainability of fisheries, with references to species survival, ecosystem health[26] and the precautionary principle.[27]

As most shark fisheries in Australia are either partly managed by the Commonwealth or are WTOs exporting fins, the EPBC Act serves as the overarching legislative framework. However, shark populations in Australia are not at healthy levels and many fisheries are depleted and unsustainable. Although some of the damage done predates the EBPC Act,[28] overfishing continues despite the sustainability requirements laid out in the Act. Clearly, something is amiss when an Act designed with environmental protection in mind is complicit in the depletion of threatened species.

The failure of the EPBC Act to regulate shark fisheries in a manner that is consistent with sustainability principles can be largely put down to the language used in the Act, some of which is open to interpretation. For example, although the precautionary principle[29] is specifically referred to, the only obligation on the Minister is to "take account of the precautionary principle".[30] Such vague language inevitably leaves a great deal of discretion to the Minister and can push science to the periphery, while allowing political concerns to influence decision-making.[31] A motorist can take account of the speed limit and then choose to break it anyway; so it is with the Minister and the precautionary principle. The difference is that a motorist will be sanctioned for breaking the speed limit; the Minister will not be for choosing to ride roughshod over the precautionary principle.

The application of the precautionary principle under the EPBC Act is vitally important for shark fisheries. Research into shark populations and movements is an expensive and time-consuming process and, as a result, there remain enormous knowledge gaps.[32] In light of the lack of research, and considering the inherent vulnerability of sharks to overfishing, without appropriate precautionary measures shark fisheries are extremely unlikely to be sustainable.

The 2009 independent review of the EPBC Act, involving widespread public consultation, should highlight some of the Act's shortcomings and it is telling that a common theme of many of the public submissions to the review was that of concern over Ministerial discretion.[33] Whatever the intentions of a Minister, he or she will consistently face enormous pressure from all stakeholders and it is imperative that decisions are based on sound science that is unfettered by political interference if shark fisheries are to achieve sustainability.

### *The EPBC Act – Threatened Species Listings*

The EPBC Act has another important function. As the legislation under which threatened species are listed nationally, the Act can offer protection from exploitation. However, the nomination and listing process under the EPBC Act is long and drawn out and there is, once again, significant scope for political interests to sideline science. The sharks that have been afforded protection under the Act (Grey nurse, speartooth, northern river, great white and whale sharks) were not the targets of notable commercial fisheries. By contrast, the commercially important school shark was allocated a category under the EPBC Act of 'conservation dependent' despite the Threatened Species Scientific Committee finding that numbers had declined by 86-91% and that it met the criteria for an 'endangered' listing.[34] The reality of the 'conservation dependent' category is that it allows exploitation of threatened fish species to continue and while this occurs under a recovery plan, that plan is developed by the very government department whose mismanagement allowed such precipitous declines in numbers in the first place.

The listing of the school shark as 'conservation dependent' does not bode well for the prospects of any future nominations of sharks and serves to highlight, once again, the shortcomings of the EPBC Act.

### *FAO Code of Conduct for Responsible Fisheries (the Code)*[35]

Developed in 1995 by the Food and Agriculture Organization of the United Nations, this voluntary international agreement has been heralded as an important tool in overcoming the worldwide phenomenon of overfishing.[36] However, to date, largely because of its voluntary nature, compliance with the Code has been poor. Recent research found that no country was achieving a compliance rate over 60% and that, while Australia achieved a top five ranking, there is significant room for improvement if the goal of sustainable fisheries is to be achieved.[37] Under the Code, a number of International Plans of Action (IPOA) were drafted, including an IPOA for the conservation and management of sharks, which states its objective is, "to ensure the conservation and management of sharks and their long-term sustainable use".[38] To fulfil its obligations, the Australian Government published the 'National Plan of Action for the Conservation and Management of Sharks' (Shark-plan) in 2004.[39] While the Shark-plan sets out goals for sustainable use of sharks, it appears to have severely stalled since its publication and there is now an urgent need to review and re-energise it. At present, the Australian Government is a long way from achieving many of the Shark-plan's goals, particularly the ultimate goal of sustainable shark fisheries. It is this disparity between intentions and implementation that keeps many countries, including Australia, from achieving better rates of compliance with the Code.

Once again, the concept of a precautionary approach is promoted in the general principles of the Code.[40] Although important, it is again clear that what constitutes precaution is open to interpretation and, despite the best intentions of the Code, implementation of the precautionary approach or principle will always depend on its interpretation in a given situation, even if the principle is enshrined in law.[41]

Ultimately, voluntary agreements such as the Code are unlikely to fulfil their objectives and national and/or international mandatory instruments are required.[41] For Australia's sharks, such a move cannot come too soon.

## Conclusions

> *"The world is as complicated and as delicate as a spider's web. If you touch one thread you send shudders running through all the other threads. We are not only touching the web, we are tearing great holes in it…"*

Gerald Durrell's analogy of our treatment of the natural environment may have been penned almost forty years ago but it has become, if anything, more relevant with time. Australia's shark fisheries are one of the "great holes" we are tearing. Sharks are in deep trouble as a result of a growing and insatiable demand for shark fin soup. While Australia may be a relatively minor player on the international fin market, shark fisheries nevertheless inflict further damage on the fragile marine environment. Scientific knowledge of marine biodiversity and ecosystems is still in its infancy, something made strikingly clear by the classification and naming, in 2008, of over 100 new shark and ray species.[44] With such limited knowledge, and what is known generally showing trends towards the wrong end of sustainability, a precautionary approach to shark fisheries is fundamentally important.

However, the continued and sometimes increasingly high levels of exploitation effectively throw the precautionary principle to the wind. Whilst the laws exist with which to manage shark fisheries in a sustainable fashion, until reform places scientific advice and the precautionary principle at the top of the decision-making toolbox, and until political interference is removed from the process, shark populations are likely to continue to decline.

There is still time to save sharks from extinction but it will require a new attitude to their exploitation. In what might be the first glimmer of hope, this new attitude is in the early stages of developing, not in Australia but in the Maldives, where fishing for reef sharks has recently been prohibited out to twelve nautical miles. The ban will be extended to oceanic sharks in 2010, with a view to ending all shark product exports from the country.[45] If a developing country, and one now quite literally fighting to stay afloat, can demonstrate the foresight to protect vulnerable and endangered marine species, perhaps the fate of Australia's sharks is not sealed after all.

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[2] Myers, R. & Worm, B., 2003, 'Rapid worldwide depletion of predatory fish communities', *Nature*, 423, 280-283.

[3] The IUCN is the world's oldest global environmental network of governments, scientists and NGOs (Non-Governmental Organisations). It develops and supports research in conservation science. The Red List is an objective, scientifically-based list that assesses the conservation status of plant and animal species. For more on the IUCN, see http://www.iucn.org/.

[4] IUCN Red List 2008. Available at http://www.iucnredlist.org/ See also: Polidoro, B.A., Livingstone, S.R., Carpenter, K.E., Hutchinson, B., Mast, R.B., Pilcher, N., Sadovy de Mitcheson, Y. & Valenti, S., 2008, 'Status of the world's marine species', in: J.-C. Vié, C., Hilton-Taylor, & S.N. Stuart (eds.), *The 2008 Review of The IUCN Red List of Threatened Species*, IUCN, Gland, Switzerland.

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[9] Myers, R., Baum, J., Shepherd, T., Powers, S. & Peterson, C., 2007, 'Cascading Effects of the Loss of Apex Predatory Sharks from a Coastal Ocean', *Science*, 315(5820), 1846-1850.

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[11] Vince, J., 2007, 'Policy responses to IUU fishing in Northern Australian waters', *Ocean and Coastal Management*, 50(8), 683-698.

[12] The Australian Bureau of Rural Sciences defines maximum sustainable yield (MSY) as: "Maximum catch that can be removed from a stock over an indefinite period without affecting sustainability. MSY defined in this way makes no allowance for environmental variability, and studies have demonstrated that fishing at the level of MSY is often not sustainable." See: Larcombe, J. & Begg, G., (eds.), 2008, *Fishery status reports 2007: status of fish stocks managed by the Australian Government*, Bureau of Rural Sciences, Canberra.

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[25] EPBC Act, s. 303FN.

[26] EPBC Act, s. 303FN(3)&(4).

[27] EPBC Act, s. 391.

[28] 'Advice to the Minister for the Environment, Heritage and the Arts from the Threatened Species Scientific Committee (the Committee) on Amendments to the list of Threatened Species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)', Available at http://www.environment.gov.au/biodiversity/threatened/species/pubs/68453-listing-advice.pdf (viewed 10 March 2009).

[29] Under Section 391(2) of the EPBC Act, the precautionary principle is defined as follows: "lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage."

[30] EPBC Act, s. 391(1).

[31] A case in point is the Threatened Species nomination under the EPBC Act for southern bluefin tuna, where the Threatened Species Scientific Committee's recommendation for a listing of 'endangered' was ignored by the Minister. Available at http://www.environment.gov.au/biodiversity/threatened/species/southern-bluefin-tuna.html (viewed 10 March 2009).

[32] NSW Department of Primary Industries, 2008, *Status of Fisheries Resources in NSW 2006/07*, Available at http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/221012/Status-Of-Fisheries-Resources-In-NSW-2006-07.pdf (viewed 10 March 2009).

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[35] Available at http://www.fao.org/DOCREP/005/v9878e/v9878e00.htm (viewed 10 March 2009).

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[37] Ibid; Also: Pitcher, T., Kalikoski, D., Pramod, G. & Short, K., 2008, *Safe Conduct? Twelve years fishing under the UN Code*, WWF International, Gland, Switzerland.

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# Walking away from considering climate change

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## Overview

Recent decisions in a range of jurisdictions across south-east Australia show that Australian courts are grappling with the extent to which decision makers must consider climate change when determining whether to grant development consent within the coastal zone.

The potential impacts of climate change include sea level rise, increased coastal flooding and storm surges, amplified coastline erosion and the destruction of property.[1] The Intergovernmental Panel on Climate Change (IPCC) has published studies confirming that a measurable increase in temperature and sea level rise is already occurring.[2] In fact, many scientists are predicting that the sea level rises will be even more significant than even the IPCC projections have indicated to date.[3] This will have significant ramifications for Australia where 85% of our population lives on the coast.

The need for decision makers to take account of potential climate change impacts is reasonably well established but as yet there is very little in the way of legislated mandatory requirements. In the absence of legislation, lower courts have taken a proactive approach towards planning for and adapting to the anticipated impacts of climate change. Nonetheless, relying on judicial activism alone is an inadequate response to climate change at the planning and development level, particularly when such activism often does not survive the scrutiny of higher courts.

This paper will examine a number of recent cases in which the need to consider climate change in planning decisions has been argued. Given the varied outcomes of this litigation, it will also make the case for the need for State governments to introduce legislation requiring decision makers at the local government and State government level to take climate change into account when determining developments in the coastal zone.

## Current judicial response to climate change

### *Walker v Minister for Planning*

The matter of *Walker v Minister for Planning*[4] was the first case in NSW to successfully challenge a decision by the Minister for Planning (the Minister) on the basis of a failure to consider the impacts of climate change upon a coastal development Concept Plan. In NSW, proposed projects declared as being of State or regional planning significance are assessed and determined by the Minister in accordance with Part 3A of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act). Under this Part, the Minister is granted a broad and largely unfettered discretion to approve major projects and, unlike other environmental assessment regimes under the EP&A Act, it does not specify what environmental impacts the Minister must consider when determining whether to grant consent.

In 2006, Stockland Ltd and Anglican Retirement Villages Pty Ltd lodged an application for preliminary approval via a Concept Plan application under Part 3A of the EP&A Act for 180 residential allotments, a 250 unit aged care facility and three super-lots for future residential development. The application related to coastal land at Sandon Point, north of Wollongong. The site is traversed by three watercourses which are subject to periodic flooding. Under the Concept Plan, the proponents proposed to narrow the riparian zones to maximise developable land. During the consultation stage of the approval process, the NSW Department of Natural Resources (DNR) submitted that wider riparian zones were necessary to reduce the risk of flooding and to preserve and enhance the ecological characteristics of the site. In approving the Concept Plan, the Planning Minister did require the riparian zones to be widened but not to the extent suggested by DNR. Importantly, the Minister did not consider whether the proposed development would be compromised by the impact of anthropomorphic climate change.

Jill Walker, on behalf of the Sandon Point community, lodged proceedings in the NSW Land and Environment Court seeking review of the Minister's approval of the Concept Plan. One of the grounds pleaded by the Applicant was the failure of the Minister to consider the impacts of climate change on the proposed development. The Applicant alleged that the Minister, when granting Concept Plan approval, had failed to consider the principles of ecologically sustainable development (ESD) because he had not considered whether the flood risk on the site would be exacerbated by climate change. The Applicant needed to show that the principles of ESD were a mandatory relevant

consideration for the Minister in exercising his power to grant Concept Plan approval. Since ESD is not explicitly a head of consideration under Part 3A of the EP&A Act, the Applicant argued that such a mandatory consideration should be implied.

His Honour, Justice Biscoe, held that the Minister's consideration of the public interest is mandatory under Part 3A of the EP&A Act and that both ESD and human induced climate change are part of the public interest.

In reaching this conclusion, his Honour surveyed the plethora of both domestic and international jurisprudence regarding the importance of considering climate change when determining the grant of planning approval. Because of the Minister's failure to consider the impacts of climate change, Justice Biscoe rendered the Minister's decision void, stating that:

> *"Having regard to the subject matter, scope and purpose of the EPA Act and the gravity of the well-known potential consequences of climate change … the Minister was under an implied obligation to consider whether it was relevant."*[6]

Significantly, His Honour stated that:

> *"Climate change presents a risk to the survival of the human race and other species. Consequently, it is a deadly serious issue. It has been increasingly under public scrutiny for some years. No doubt that is because of global scientific support for the existence and risks of climate change and its anthropogenic causes. Climate change flood risk is, prima facie, a risk that is potentially relevant to a flood constrained, coastal plain development such as the subject project."*[7]

The Minister successfully appealed Justice Biscoe's decision to the NSW Court of Appeal in *Minister for Planning v Walker*.[8] The Court held that the Minister's consideration of climate change was a relevant but not a mandatory consideration, forming just one of a range of issues that the Minister can take into account when considering the public interest. Furthermore, the Court found that ESD and climate change impacts were not sufficiently developed and of significance to the public interest at the time the decision was made to have amounted to mandatory considerations. However, His Honour Justice Hodgson stated:

> *"However, I do suggest that the principles of ESD are likely to come to be seen as so plainly an element of the public interest, in relation to most if not all decisions, that a failure to consider them will become strong evidence of failure to consider the public interest and/or to act bona fide in the exercise of powers granted to the Minister, and thus become capable of avoiding decisions."*[9]

Ms Walker sought special leave to appeal to the High Court. The application was heard in March 2009. The High Court declined to grant leave on the basis that while there were valid arguments in her favour, they did not think those arguments would succeed if the appeal was heard by the High Court.

### *Aldous v Greater Taree City Council*[10]

Justice Biscoe in the NSW Land and Environment Court again had an opportunity to consider whether potential climate change impacts are relevant or mandatory considerations under the EP&A Act, this time under Part 4. In an *obiter* vindication of his first instance decision in *Walker*, Justice Biscoe pointed to the maturation of ESD as a legal concept over the past decade in a range of scientific reports, judgments, extra curial writings and incorporation into both international treaties and domestic law since the mid-1980s. He also noted that since December 2006, when the first instance decision in *Walker* was handed down, there had been a number of important scientific and legal developments in relation to climate change and ESD.[11] On this basis, Justice Biscoe concluded that as at February 2009 (when he handed down the decision in *Aldous*) climate change impacts were plainly an element of the public interest.

### *Gippsland Coastal Board v South Gippsland Shire Council*[12]

As in NSW, there have been differences between the approaches to climate change impacts in Victorian courts. In *Gippsland Coastal Board v South Gippsland Shire Council*, the Victorian Civil and Administrative Tribunal (VCAT) determined that sea level rise must be adequately considered by a decision maker when determining whether to grant approval for housing developments on flood prone coastal grazing land. VCAT applied the precautionary principle and concluded that rising sea levels and increased storm severity as a result of climate change created a reasonably foreseeable risk of inundation, which was unacceptable in this case. Interestingly, VCAT noted that "the relevance of climate change to the planning decision making process is still in an evolutionary phase".[13]

### *Santos v East Gippsland Shire Council*[14]

The decision in *Gippsland Coastal Board* can be contrasted with the VCAT decision in *Santos* which reviewed both the Victorian Government's and a local council's approval of the upgrade of an existing natural gas facility located in a dune system of the Snowy River estuary. VCAT affirmed that the approval was correctly granted by concluding that the impacts of climate change were "sufficiently delayed to not be relevant".[15] The decision in *Gippsland Coastal Board* was not considered or even referred to.

### *Northcape Properties Pty Ltd v District Council of Yorke Peninsula*[16]

In *Northcape* the Supreme Court of South Australia upheld a refusal to grant consent to sub-divide coastal land by the Yorke Peninsula District Council and the Environment, Resources and Development Court (on appeal) on the basis of non-compliance with a Development Plan. Specifically, Objective 2 of the Development Plan aims to promote


development which recognises and allows for hazards to coastal development such as inundation by storm tides or combined storm tides and stormwater, coastal erosion and sand drift; including an allowance for changes in sea level due to natural subsidence and predicted climate change during the first 100 years of the development.[17] The Court found that the general intent of the Development Plan aims to preserve coastal buffers and vegetation to protect against likely future coastal erosion. Hence, the Court agreed with the Commissioner's findings that coastal erosion (either natural or climate change induced) would erode existing coastal dunes back to the extent of the proposed development within a 100 year period. This would result in a net loss of coastal buffers and is contrary to the intent of the Development Plan.[18] Given this, the Court upheld the refusal.

## The legislative fix

The decisions discussed above demonstrate the current inability of the courts to adequately and consistently respond to climate change impacts on coastal areas, with some developments allowed to proceed despite an acknowledged risk of sea level rise whilst others are refused. This inconsistency is due, in part, to a lack of planning law drafted specifically in response to climate science which is in strong agreement that human induced climate change is occurring and will have impacts on the Australian environment in the relatively short term. As a result, the law currently offers little certainty and predictability for both proponents and decision makers.

The effect of projected sea level rise on the behaviour of the coastal zone is becoming clearer yet the disjuncture between the science and the law must be addressed.

The Environmental Defender's Office (NSW) recently conducted an audit review of NSW legislation to identify references to 'climate change', 'sea-level rise', and 'greenhouse'. Disturbingly, the audit found that no NSW laws referred to climate change impacts and, significantly, the *Coastal Protection Act 1979* does not mention climate change or sea level rise at all.[19] This legal vacuum means that NSW courts are currently flying blind with regards to the issue that has been said to be the greatest moral challenge of our generation.

The recent IPCC projections predict temperature rises of 1.1 to 6.4 degrees Celsius, causing average global sea levels to rise by 18 to 59 centimetres during the 21st century.[20] Despite this, some climate scientists are suggesting that the current IPCC projections are too conservative and that a critical climate change tipping point may soon be reached.[21] Furthermore, more recent studies have shown that a sea level rise of 80 to 200 centimetres is possible by 2100 when ice flow dynamics and accelerated climate change scenarios are taken into consideration.[22]

The effects and impacts of these current ranges of projected sea level rise on the coastal zone must be determined through a comprehensive study, possibly undertaken by the Australian Commonwealth Scientific and Research Organisation (CSIRO), at an adequate fine scale mapping resolution. Accompanying this, legislative reform is required to give clear and unambiguous guidance to decision makers

regarding the range, scope and types of developments that can and cannot be allowed within the potential impact zone and the criteria against which permitted developments shall be assessed.

One such possible mechanism is the inclusion of the projected sea-level rise from the proposed study into local planning documents. In NSW, these are known as Local Environmental Plans (LEPs) (which are subordinate legal instruments under the EP&A Act)). Future LEPs could compulsory include climate change impact projections via the NSW Department of Planning Standard Instrument LEP Program.

However, State, as well as local governments need to be required to consider climate change impacts. In NSW, the Minister is not required to consider the provisions in LEPs for projects assessed under Part 3A of the EP&A Act which includes the vast majority of major projects in the coastal zone.[23] For this reason a new State Environmental Planning Policy is required to compel the Minister,[24] when deciding projects under Part 3A, to assess whether projected sea-level rise estimates will impact upon the planned development. Alternatively or additionally, the Minister ought to be required to consider the objectives of the EP&A Act, which include the encouragement of ESD,[25] when making decisions under Part 3A. Such reform would allow the Minister to adequately discourage inappropriate development on land projected to be at risk from sea level rise, reducing the likelihood of damage because of poor and uninformed consent and possible future negligence claims when current predictions of sea-level rises become reality.

## Conclusion

Recent Australian cases show that the common law is developing climate change jurisprudence that, in some cases, requires decision makers to take account of climate change impacts such as sea level rise when determining developments in the coastal zone, but not in other cases.

Given the science, which predicts serious coastal impacts from even a slight sea level rise, there is a clear need for legislation compelling the consideration of climate change impacts in decision making, particularly with regards to coastal developments.

Absent a clear expression of the intention of the legislature to address and consider climate change impacts, the courts and case law cannot be relied upon to ensure these impacts are taken into account.

Current IPCC projections of sea level rise are rapidly being superseded by more alarming projections. Due to this, Australia's State governments must act quickly and undertake a study into the projected impacts of sea level rise at a fine scale resolution. This information ought to be mandatorily included in all current and future planning documents relating to the coastal zone.

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[1] Inter-governmental Panel on Climate Change, 2007, *Working Group II Report "Impacts, Adaptation and Vulnerability"*, Chapter 6- coastal systems and low lying areas.

[2] Inter-governmental Panel on Climate Change, 2007 *Assessment of observed changes and responses in natural and managed systems.* This report found that physical and biological systems on all continents and in most oceans are already being affected by recent climate changes, particularly regional temperature increases.

[3] Rahmstorf, S et al, 'Recent climate observations compared to projections', *Science*, v.316, no. 5825, p.709.

[4] (2007) NSWLEC 741

[5] Compare s 75J and s 75O with s 79C and s 111 of the *Environmental Planning and Assessment Act 1979.*

[6] *Walker v Minister for Planning* (2007) NSWLEC 741, at 166.

[7] Ibid.

[8] (2008) 161 LGERA.

[9] *Minister for Planning v Walker* (2008) 161 LGERA, at 56.

[10] (2009) NSWLEC 17.

[11] Developments referred to by Biscoe J included the release of the International Panel on Climate Change's Fourth Assessment Report in 2007 and the release of the guidelines entitled 'Practical Consideration of Climate Change', designed to assist Councils design flood plain risk management plans that deal with climate change by the NSW Department of Environment and Climate Change, also in 2007.

[12] (2008) VCAT 1545.

[13] *Gippsland Coastal Board v South Gippsland Shire Council* (2008) VCAT 1545 at 47.

[14] (2008) VCAT 1658.

[15] *Santos v East Gippsland Shire Council* (2008) VCAT 1658 at 83.

[16] *Northcape Properties v District Council of Yorke Peninsula* (2008) SASC 57.

[17] *Northcape Properties v District Council of Yorke Peninsula* (2008) SASC 57 at 13.

[18] *Northcape Properties v District Council of Yorke Peninsula* (2008) SASC 57 at 19.

[19] NSW Environmental Defender's Office, 2008, *Coastal Councils and Planning for Climate Change: An Assessment of Australian and NSW Legislation and Government Policy Provisions Relating to Climate Change Relevant to Regional and Metropolitan Coastal Councils.* A copy of this report can be obtained by emailing info@sydneycoastalcouncils.com.au

[20] Inter Governmental Panel on Climate Change, 2007, *Fourth Assessment Report: Climate Change 2007 Synthesis Report.*

[21] Greenpeace Australia Pacific, 2008, *Final Warning: The World's Rapid Descent into Runaway Climate Change.* Available at http://www.greenpeace.org/raw/content/australia/resources/reports/climate-change/finalwarning240309.pdf (accessed 6 may 2009).

[22] Pfeffer, W.T., Harper, J.T. and O'Neel, S., 2008, 'Kinematic Constraints on Glacier Contributions to 21st-Century Sea-Level Rise', *Science*, 5 September, 1340-1343.

[23] *EP&A Act*, s. 75R(3).

[24] Under s. 75R(2) of the EP&A Act

[25] *EP&A Act*, s. 5(a)(vii).

# Port Hinchinbrook seadumping application refused!

Adam Millar, Solicitor/Coodinator, North Queensland Environmental Defender's Office

Protecting north Queensland's unique and precious coast from development and its adverse impacts has been a concern of many conservationists and much of the community in north Queensland for a long time, and remains so. A common sentiment from the north Queensland conservation sector is that more could be done by authorities and decision-makers to strengthen protection through legislation and coastal management plans.

EDO-North Queensland (EDO-NQ), the Alliance to Save Hinchinbrook Inc. (ASH) and many others within the north Queensland conservation community were delighted to learn that the Queensland Government recently relied on the *Cardwell Hinchinbrook Regional Coastal Management Plan* (CHRCMP) to refuse an application by Port Hinchinbrook Services Pty Ltd (PHS) for permission to dump sea dredge spoil from the Port Hinchinbrook marina development into the World Heritage listed Hinchinbrook Channel. The decision to refuse the application was made by the Queensland Government's newly formed Department of Environment and Resource Management (DERM), following consultation between the previous Environment Protection Agency and Department of Natural Resources and Water.

The Port Hinchinbrook marina development at Oyster Point, south of Cardwell and adjacent to the World Heritage listed Hinchinbrook Island, has a long and controversial history. It has been the focus of tireless opposition on a wide range of environmental grounds and from a large number of individuals and groups, including the now defunct Friends of Hinchinbrook Inc. and ASH, who are long-time clients and supporters of EDO-NQ. The latest controversy surrounds dumping of dredge spoil.

Under the Port Hinchinbrook Deed of Agreement (which binds the developer and all three levels of government) the developer must keep all marina canals and waterways dredged to a depth of two metres above Lowest Astronomical Tide (a lesser depth than was first required).

The developer has a licence to discharge dredge spoil to land, but no further use is allowed of the temporary dump site first used in 1997 (which already contains dredge spoil standing four metres high over some 30 hectares of agricultural land adjacent to the western boundary of the Girramay National Park) and no further sites are currently approved. Seadumping has always been opposed by Commonwealth and State governments.

According to PHS's application, the cost of dredging to land disposal is prohibitive in this case because of the unusually high frequency of dredging required for a marina; a fact which was well known long before the marina was built. The report of the 1977 Queensland Harbours and Marine Study stated "[t]he area at Oyster Point should not be developed as a boat harbour", citing a lack of "naturally deep water"[1] and the likelihood of "severe siltation"[2], and further that "[t]he excess of spoil really implies that the levels of the site are generally too high for boat harbour development" and "high annual maintenance costs would be expected".

*This decision is one of which the north Queensland conservation community and the Queensland Government can be proud.*

It is understood from advice from DERM that the decision to refuse the proposed dumping of dredge spoil into Hinchinbrook Channel relied on the provisions of the CHRCMP. Regional Policy 2.1.4 of the CHRCMP specifically states that a proponent must demonstrate that the construction and operation of a canal or dry-land marina in areas of state significance in the Cardwell-Hinchinbrook region will create "no adverse impacts on the water quality of coastal waters".[3] It seems that in arriving at its decision DERM has considered the impacts raised by ASH in the public interest, including impacts on seagrasses, dugongs and water quality. Evidently PHS was unable to demonstrate that there would be no adverse impact for a number of reasons including that the dumping of dredge spoil would likely be required for up to six months each year, and would need to be continued indefinitely.

The CHRCMP under which the refusal decision was made by DERM owes its existence solely to the Friends of Hinchinbrook Inc. challenging the Commonwealth's 1996 consent for the Port Hinchinbrook marina and canal estate,

and on conditions imposed on that consent by the Federal Court. Friends of Hinchinbrook Inc. was led by David Haigh (then environmental law lecturer at James Cook University at Townsville) and the 'two indomitable Margarets' (Margaret Thorsborne and Margaret Moorhouse).

Although the Federal Court upheld the Commonwealth's consent on appeal, the Court required that the Commonwealth ensure adequate means were put in place to control both the construction and operational aspects of the development. To satisfy this requirement, the Commonwealth government became a party to the State and local government's *Deed of Agreement* with the developer; and required the Queensland government to write an appropriate regional management plan.

The regional management plan was to have been written within two years. Many at the time were concerned as to whether the plan would be written at all, let alone on time, given that the Queensland government at the time had reportedly sent a delegation to Paris to oppose the proposed World Heritage listing of two of Australia's greatest natural areas (the Great Barrier Reef and the Wet Tropics of North Queensland), and that there was no State Coastal Management Plan in operation at all (which was required for regional plans to be written and exist under). After many false starts and much public controversy, the CHRCMP was released – only six years late. All of north Queensland owes a special thank you to Andrew Ballard (formerly of the EPA), and to other departmental and contract staff who worked so hard to get the CHRCMP plan written, and written to a proper standard.

Most recently, the CHCRMP has been used to prevent highly inappropriate and damaging dumping of dredge spoil (likely to contain many harmful chemicals used in the boating industry) from being dumped into a World Heritage listed area. This decision is one of which the north Queensland conservation community and the Queensland Government can be proud.

EDO-NQ applauds ASH, in particular Margaret Moorhouse, for ASH's tireless campaigning to protect Hinchinbrook Island and the Hinchinbrook Channel from further environmental damage from inappropriate coastal development.

For many years ASH has raised concerns about the acid and saline impacts of the spoil 'pond' on the adjacent National Park. The bund-like effect of the above-ground dump has induced permanent drought in the National Park's coastal woodlands, robbing it of the copious wet season freshwater flows that allowed melaleuca wetlands to flourish close to the sea. Large areas of this former critical habitat for the critically endangered mahogany glider have now died, mainly due to raised soil salinity. Whilst the developer has denied responsibility, DERM has recognised the impacts of the spoil ponds on the National Park.

EDO-NQ, ASH and the north Queensland conservation community wait with interest to see if DERM will pursue an available option and prosecute for damage caused to the Girramay National Park as a result of changes made to overland water flow by the dumping of dredge spoil on nearby land.

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[1] Boat Harbour Feasibility Study for Cardwell Shire and Nearby Areas, 1980, chapter 2. p.9

[2] *Ibid*, p.13

[3] CHRCMP, 2003, chapter 2, p. 22

# Cases from the deep: Key coastal cases in the public interest

Yang Xu

The NSW Environmental Defender's Office (EDO) has been running public interest litigation to protect marine and coastal ecosystems for many years. It has represented numerous local community associations and conservation groups such as *Humane Society International*. The following case studies highlight the challenges in achieving the protection and sustainable use of marine ecosystems through court action but also the necessity of pursuing legal remedies as part of a broader campaign to protect marine and coastal environments.

## The whales case

*Humane Society International Inc v Kyodo Senpaku Kaisha Ltd*[1] is the culmination of over four years of legal action by Humane Society International (HSI) to prevent Japanese whaling company Kyodo Senpaku Kaisha (Kyodo) from whaling in the Australian Whale Sanctuary adjacent to Antarctica. At the time of hearing, Kyodo, which owns a number of whaling ships, had killed 3558 minke whales and 13 fin whales since 2000/2001 and intended to commence hunting humpback whales in 2007/2008.

On behalf of HSI, the EDO sought a declaration that Kyodo breached sections 229-330 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) by hunting whales in the Australian Whale Sanctuary and an injunction preventing Kyodo from continuing to kill whales there. Japan on the other hand refused to recognise Australia's sovereignty over the Antarctic waters which constitute the whale sanctuary.

Justice Allsop of the Federal Court found that despite the dispute as to Australia's jurisdiction over the waters, the EPBC Act remained valid and applicable. Further, the Court held that as most of the killings occurred in the Australian Whale Sanctuary, Kyodo was in breach of sections 229-330 of the EPBC Act as it had no permit under the Act to kill, injure, take or possess cetaceans (whales). The Court granted HSI an injunction to restrain Kyodo from further breaches.

HSI representatives travelled to Japan to serve the injunction upon Kyodo but so far no enforcement action has been taken. HSI has the option of taking enforcement action within Australia should the whaling ships enter Australian territorial waters.

## The Grey nurse shark case

In *Nature Conservation Council of NSW Inc v Minister for Environment and Water Resources and Ors*,[2] the EDO represented the Nature Conservation Council (NCC) in its efforts to protect the critically-endangered Grey nurse shark, which is facing a high risk of extinction. NCC challenged the declaration by the Federal Minister for Environment and Water Resources approving the NSW Ocean Trap and Line Fishery (OTLF) as a Wildlife Trade Operation (WTO) under the EPBC Act.[3] The NSW OTLF is a multi-species targeted fishery operating within the habitat of the Grey nurse shark. The fishery uses traps and long lines to capture target species (which do not include the Grey nurse shark) and requires Federal Government approval as a WTO because it involves the export of Australian wildlife.

At the Administrative Appeals Tribunal, NCC presented evidence that the OTLF has a significant impact on the east coast population of the Grey nurse shark which, apart from being endangered has a fragile reproduction process. In particular, evidence suggested that the long lines used by the OTLF were causing hook injuries in sharks which were contributing to the decline of an already decimated population.

In approving the OTLF as a WTO, the Federal Minister for the Environment had the opportunity to impose conditions on the OTLF that would limit the impact of the fishery on the Grey nurse shark. Unfortunately, the Minister failed to do this so the EDO, on behalf of NCC, sought a merits review of the Minister's declaration. It was argued that the Minister should have implemented restriction zones around specific key shark aggregation areas and banned the use of wire traces in deep waters. Expert evidence suggested that both these measures would have improved the prospects of the shark's long term survival.

Unfortunately, the Tribunal upheld the Minister's approval on the basis that the OTLF will not be detrimental to the survival of the Grey nurse shark. It was held that the 'real risk' came from the already depleted population together with the biology of Grey nurse sharks. In a disappointing judgment, the Tribunal claimed that the shark was already doomed and imposing restrictions on the operation of the OTLF would not improve the viability of the species.

## The Southern bluefin tuna case

The Southern bluefin tuna is a highly endangered species and is likely to be on the brink of extinction. Like the *Grey nurse shark* case, *Humane Society International v Minister for the Environment and Heritage*[4] centered on the declaration by the Minister for the Environment and Heritage that the Southern bluefin tuna fishery is an approved Wildlife Trade Operation (WTO) under the EPBC Act.[5]

EDO represented HSI in challenging the Minister's declaration on the basis that certain preconditions could not be satisfied, including that the operation of the fishery would not be detrimental to the survival or conservation status of the Southern bluefin tuna.

One of the central bases of HSI's challenge was that the Minister did not provide for quota reductions as a condition of approval. This is despite recent advice from the International Commission for the Conservation of Southern bluefin tuna that the overall catch for the Southern bluefin tuna should immediately be reduced by 30% in 2006 or by 50% in 2007.

Southern bluefin tuna is considered severely overfished and the Minister's Threatened Species Scientific Committee has advised him that it meets the criteria for protection as an endangered species.

The Tribunal found that the approval of the Southern bluefin tuna fishery would not be detrimental to the survival and conservation of the species and upheld the decision of the Minister to approve the fishery as a WTO.

It was disappointing that the Tribunal did not find the approval of the Southern bluefin Tuna fishery as a WTO to be detrimental to the survival and conservation of the species. While HSI decided not to appeal it is now pursuing the campaign to protect the Southern bluefin tuna through alternative measures.

## The southern and eastern scalefish and shark fishery trade case

In *Humane Society International Inc v Minister for Environment and Heritage*,[6] the EDO, on behalf of HSI appealed against the Minister's declaration of the Southern and Eastern Scalefish and Shark Fishery (SESSF) as a WTO under the EPBC Act.[7] The SESSF involves the harvesting of certain fish and invertebrates.

The basis of the appeal was that the operation of the fishery would be detrimental to the survival and conservation of endangered species in the areas adjacent to the fishery.

The EDO represented HSI at four mediations with the Minister and Australian Fisheries Management Authority representatives and succeeded in negotiating a number of significant draft additional conditions to the WTO in relation to a number of non-target species that were likely to be adversely impacted by the fishery. These included the Eastern Gemfish, Australian sea lions, sea birds and Harrison's dogfish.

## The abalone farm case

In *Pindimar Bundabah Community Association Inc v Great Lakes Council & Ors*,[8] the Pindimar Bundabah Community Association Inc (PBCA) challenged the Council's decision to allow NSW's first land-based abalone farm to be developed on the edge of Port Stephens estuary on the mid-north coast.

According to a marine ecologist engaged by the EDO, the construction and maintenance of the pipes to service the farm would have caused significant damage to seagrass beds along the pipeline routes and discharged nutrient-enriched water into the estuary which could have adversely affected the fragile estuarine ecosystem.

Also, abalone management and disease experts engaged by the EDO stated that the development could also have affected wild populations of abalone in Port Stephens. These are already seriously affected by overfishing, illegal fishing and the parasite *Perkinsus*. The spread of the disease would likely have been exacerbated by the development.

In addition to these challenges PBCA also argued that the proposal was inconsistent with the *Port Stephens Local Environmental Plan* and *State Environmental Planning Policy No. 62*.

During the hearing of the case, there were a significant number of uncertainties about the way in which the development would occur, including the developer's ability to remove nutrients before discharging water into the estuary. Ultimately the respondents agreed to the making of consent orders allowing the PBCA's appeal.

## The Hinchinbrook Channel case

In *Friends of Hinchinbrook v Minister for Environment & Ors*,[9] Friends of Hinchinbrook (FoH) challenged a consent by the Minister under the Commonwealth *World Heritage Properties Conservation Act 1983* to allow dredging of the Hinchinbrook Channel and removal of mangroves for a resort village adjacent to a World Heritage site.

While the challenge itself was dismissed at the time, there was recognition of the importance of enabling court cases that seek to enforce the law in the public interest in that the developer's application for security for costs was dismissed. Had that application been granted, it would have been unlikely that FoH would have been able to proceed with their legal challenge. The judge, however, was convinced that legitimate associations concerned with World Heritage properties should be able to raise issues before the Federal Court.

[1] (2008)FCA 3
[2] (2007) AATA 1876
[3] EPBC Act 1999, ss. 303BA and 303FN.
[4] (2006) AATA 298
[5] EPBC Act 1999, s. 303FN.
[6] (2007) AATA No.2007/0557
[7] EPBC Act 1999. S. 303FN(2)
[8] LEC Proceedings 10679/2006
[9] [1997] FCA 55

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[ ] Please charge $20 on my credit card [ ] Bankcard [ ] Visa [ ] Mastercard

Credit card number _____ Expiry date ____ / ____

Name of card holder _____

Signature of card holder _____

Australian Network of Environmental
Defender's Offices Inc