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Local Government and Environment Committee
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SUBMISSION ON THE EXCLUSIVE ECONOMIC ZONE AND CONTINENTAL SHELF (ENVIRONMENTAL EFFECTS) BILL

INTRODUCTION

The Pacific Institute of Resource Management, (PIRM), was founded in 1984 with the idea that Aotearoa/ New Zealand could provide an example to the world of a sustainable country. We publish *Pacific Ecologist* to help educate on key sustainability matters and in 2011 we published a 64-page issue on the state of the Oceans.

The bill addresses our obligations under the UN Convention on the Law of the Sea to manage and *protect the natural resources of the Exclusive Economic Zone and Continental Shelf*. The EEZ Bill says it seeks to achieve a balance between protection of the environment and economic development in relation to activities in Aotearoa's exclusive economic zone and on the continental shelf, and addresses seabed mining, aspects of petroleum activity, energy generation and carbon capture and storage and marine farming. It includes a general duty for adverse affects to be avoided, remedied or mitigated. But is there any acknowledgment or consideration in the Bill that the Oceans are already under serious threat from human activities?

It is imperative for its validity that legislation involving the Ocean ecosystem, particularly now, in a time of climate change and Ocean acidification, should seek to restore and conserve the health of the Oceans which are already damaged by human activity. We must support the life-giving qualities of our living ocean planet rather than short-term values of maximizing financial return and over-exploiting the Ocean ecosystems and marine life.

It may be possible to find all sorts of "resources" in the Oceans to turn into the gold of money profits. However the world we will develop with these polluting methods will be as unlivable as Midas discovered to his horror when his wish was granted and all he touched was turned to gold.

Currently the Oceans are under severe threat from various industrial activities, though this is not widely understood. Ever increasing industrial activity worldwide is threatening life in the Oceans, which perform many vital functions on which humanity and life on earth depends. Besides being a substantial food resource for billions of people, the Oceans also provide the moisture for the Earth's hydrological cycle, they mediate the climate and the Ocean circulation system transports heat around the world. But global warming, ocean warming and ocean acidification, caused by emissions from heavy industrialisation activities, plus over-fishing, and pollution of the oceans by long-lived radionuclide pollution and also persistent organic pollutants, are changing the oceans to such an extent that scientists warn of mass extinctions with unknown ecological and evolutionary consequences. This is well documented by eminent scientists around the world and in many UN reports.

The Oceans absorb over a third of climate changing CO₂ emissions from our industrial activity and sadly emissions continue to rise, despite IPCC reports urging reduction of emissions. As emissions rise the Oceans warm and transport heat to polar ice sheets. This has serious consequences for marine ecosystems and ice sheets, the largest being Antarctica, which in turn will seriously affect humanity and many millions of people, including New Zealanders living on coastlines. CO₂ also combines with seawater to form carbonic acid thus making the Oceans more acidic. More acidic Oceans now threaten the great web of life in the Oceans, which contribute to the food security of 4 billion people, according to a 2010 UNEP report. Key links in fish food chains, including pteropods, sea cucumbers and starfish are vulnerable to ocean acidification as are all organisms that make shells and reef systems. Coral reefs already declining through ocean warming, are threatened also by acidification. For coral reefs to survive experts say carbon dioxide needs to be reduced to 350ppm, but it is now over 390 ppm and rising about 2-3ppm annually. Many other marine organisms will also be badly affected by acidification with their respiration, oxygen uptake and reproduction being affected.

The acidification challenges facing marine organisms are unprecedented, reports Professor Robert Dunbar of Stanford University in the USA, because of the speed at which the changes are occurring, Without education about the role of the oceans in climate change, policy changes and **marked reduction in warming emissions** we will be unable to prevent disastrous consequences, and loss of entire ecosystems is likely. The 2010 UNEP report, *Emerging Issues: Environmental Consequences of Ocean Acidification: a threat to Food Security* says that if emissions continue to rise at the same rate, by the end of this century an unprecedented 150% increase in ocean acidity will occur with unknown consequences for marine life. .

It is imperative this bill does not encourage activities which exacerbate the already dire problems which industrial activity has caused in the Oceans. Drilling in the seabed for oil, gas or other products can only cause more emissions and take us further down the road to ecological disaster in damaging marine ecosystems.

Energy development dangers

Methane hydrate locked up in continental shelf sediments or on the seafloor could be proposed for energy developments. They reportedly contain perhaps double the amount of carbon as all other known fossil fuel deposits. It is commercially attractive because of this. Methane is a powerful greenhouse gas, 25 times more powerful than carbon dioxide so losses to the atmosphere through drilling operations could greatly exacerbate global warming. Another concern is that because the hydrates play a role in maintaining seafloor stability, the disturbance of removing the hydrates at such depths, as eminent marine ecologist Tony Koslow reports in his book, *The Silent Deep*, (p 174, 191-193) could also trigger large underwater landslides posing tsunami threats and cause the release of enormous amounts of methane due to the sudden release of pressure. Amongst other huge problems this would greatly increase global warming emissions. There are other big concerns about methane hydrates, as a shift in Ocean circulation could warm and destabilize the hydrates over large sections of the seafloor. This would trigger further huge release of greenhouse gases and is the doomsday scenario as Koslow recounts, p. 193.

A key environmental principle is the *precautionary principle*, if current or proposed activities risk "high and irreversible damage." The Gulf of Mexico oil disaster in 2010 gave ample example of this with its countless toll on fish, birds and reduction in primary productivity of 38,000 square kms of Ocean, consequently affecting the fishing industry. Evidence indicates there is great potential for serious impacts on the sea floor through mining from direct crushing of life forms and coverage with mining discharges. Low oxygen levels in the sea lead to dead zones. Food chains can be disrupted with the demise of plankton species.

Eminent deep sea ecologist, Tony Koslow reports P 172/173 that a major impact of oil exploration on the Oceans has been the chronic effect of drill cuttings and drill muds disposed during operations. They often contain barite and other products which contain heavy metal contaminants, particularly zinc, copper, cadmium and lead. A complex mix with effects which include smothering of benthic organisms around the well-head and effects of hydrocarbon enrichment of the sediment community. The oil industry rarely opens to the public the monitoring of impacts of its activities. **However in Norway this monitoring is open for scrutiny.** Scientists Olsgard and Gray showed that offshore oil drilling contaminants continued to disperse several years after drilling had ceased and eventually covered an area of at least 100 square kilometers around each platform with impacts on the marine community around 10-60 square kilometers, p173.

Back in 1953, Ocean visionary Yves Cousteau wrote: *“The vegetable life of the Oceans provides a large part of the oxygen we breathe. If the sea is poisoned marine flora will disappear and with it will disappear a large part of the oxygen that is necessary for life on land.”*

What are the consequences for the marine environment of the types of machinery used, plus processes and chemicals used in energy and other projects for the EEZ and continental shelf? Will the evidence from monitoring of the effects of such activities be publicly available?

NZ should live up to its Green image and move away from damaging and dangerous oil and gas prospecting towards investing in renewable energy production and a low-carbon, but high quality life style, with far more local production of goods.

Polluting the oceans

The oceans receive all our pollution via the air, land or water. Unfortunately, the oceans have been out of ignorance, regarded as a safe haven for humanity's toxic pollution from various industrial activities whether from agriculture, heavy industry, waste from nuclear-powered ships, the Space programme, nuclear plants, from testing nuclear weapons of mass destruction or toxic radioactive chemical debris, or mining effluence.

There are now over 400 coastal hypoxic areas worldwide. And high levels of persistent organic pollutants, POPs, in the oceans and methyl mercury a highly toxic organic form are serious concerns for marine ecosystems and for human health if contaminated seafood is eaten. Other dangerous long-lived compounds e.g. the polychlorinated biphenyls PCBs, were used from the 1940s in the electronics industry, in coolants and lubricants. They are virulent carcinogens and their capacity to evaporate and be transported to through the atmosphere makes them very dangerous. Within a year of their manufacture, one quarter would enter the Oceans, a US Academy of Science study found. It was later discovered that just one part per billion depresses reproduction of marine algae and other marine plants by half. PCB concentrations in wild algae are high enough now that marine biologists believe they must be affecting the wider marine life.

The sensitivity of organisms at the base of the marine food chain (phytoplankton, and micro- zooplankton) to PCB/s DDT and related compounds, says marine ecologist Tony Koslow, “is nothing short of remarkable.” As PCBs concentrate in algae, they become even more concentrated in krill (a key species at the base of the marine food chain) with their faeces contamination levels sometimes being 1.5 million times higher than in the surrounding sea water. **Marine biologists warn that the ocean depths may be the first global biotic environment to face long-term dangers from contamination. Yet Industrial chemicals continue to be invented and used with little research into their environmental consequences.**

Radioactive pollution of Ocean floor *

Seaweed was found to be very good at concentrating nuclear fission products after the atomic bombing of Nagasaki and was used to help radiation sufferers. Krill and their faeces which sink to the Ocean floor have more recently been found to have the highest radioactivity levels ever recorded, a million times higher than in the surrounding water. On the ocean floor these highly radioactive krill faeces will be available, as marine ecologist Tony Koslow colorfully recounts, to pollute marine life for many thousands of years. There must be a limit to how much human induced radioactivity can healthily be absorbed by the Oceans and it's clear now that we are well over the limit. The Irish Sea is said to be one of the most radioactive in the world with 200 kg of plutonium, one of the most dangerous long-lasting radioactive isotopes, deposited in marine sediments from the Sellafield nuclear plant in the UK. The Baltic Sea is also reported to be highly radioactive, according to a 2006 study. Knowing it to be so radioactive is a very good reason to stop any further releases into the Sea the Swedish study concludes. Eating fish is the main way people absorb radioactivity, according to a Riso Laboratory report, *Modelling & Assessment of Doses*. The report recommends thorough tracking of radionuclides in water, fish and sediments and tracking of sources.

Close to home in the South Pacific, as a result of 30 years of French nuclear tests, 21 years of these underground, Moruroa and Fangataufa Atolls contain over 510 kg of plutonium, a huge amount of long-lasting highly toxic radioactivity (effects lasting many thousands of years), plus other toxic fission products. The South Pacific Ocean is at risk of these radioactive materials (within the atolls structures and lagoons) leaking into the marine environment. This could occur through an earthquake, or rock slide in the upper level of Moruroa. A 2003 Australian scientific

study, *Prediction of the Fate of Radioactive material in the South Pacific Ocean*, showed that within 7 years of a release from Moruroa, radioactive contamination could reach Australia, diluted by a factor of only 1000 of initial concentrations which would be 9000 times greater than natural radiation levels. Large quantities of radionuclides from Moruroa, released into the South Pacific Ocean could have large-scale, long-term consequences with high levels of radioactivity reaching other Pacific Islands, South American and Australasian nations within 10 years of initial release from Moruroa.

Climate change with sea-level rise could also redistribute radioactive sediment from the lagoon into the open ocean, and stronger weather systems from a warmer world will also put pressure on the atolls with the potential to dislodge weak reef material, according to marine geologist Professor Lionel Carter of Victoria University of Wellington. .

Research urgently needed!

In a 2010 Science paper, Dr Scott Doney reported that the marine environment was “woefully under-sampled for most compounds.” Consequently there is limited knowledge of what’s happened in the ocean depths with high contamination levels from various industrial chemicals. **There are many stressors on the Oceans, as reported above (climate change, ocean acidification, chemical and radioactive pollution etc) and the scientific community needs to explore possibly synergistic effects among the many stressors, for a deeper understanding of human impacts on ocean bio-geochemistry, in order to understand the consequences of all this for marine life and human societies.**

Increasingly dangerous climate change is predicted if global emissions of greenhouse gases continue to grow without constraint. The resulting climate change threatens to have significant long-term adverse effects on the global economy, societies and ecosystems, and major effects on the Oceans. New Zealand’s economic base in primary production means it is particularly vulnerable to climate change. Threats to human health, land and water quality, infrastructure, biosecurity and native ecosystems are also significant. Aotearoa/New Zealand has a clear and direct interest in supporting efforts to minimise climate change.

The Bill by favouring economic over environmental considerations in a time of severe environmental crises overrides NZ’s international obligations. If enacted as it is without substantial change it will cause irreversible long-term harm to the already damaged marine environment and marine species and consequently the wider Earth environment. Also provisions in the Bill have the potential to create costly legal battles in favour of applicants.

PLEASE AMEND THE FOLLOWING SECTIONS:

Section 13 -Information principles

Delete Section 13(1) (b) and s13 (4).

a) Section 13(2)

Delete; ~~the person must favour caution and environmental protection~~ amend to read. “the person must apply a precautionary approach to ensure environmental protection

b) Section 13 (3)

Amend to read:

If adopting the precautionary approach ~~favouring caution~~ and environmental protection means that an activity is likely to be a prohibited activity or a marine consent is likely to be refused, the person must first consider whether taking an adaptive management approach should be applied ~~would allow the activity to be undertaken~~

Section 4 - Interpretation

Amend by inserting (d) as below:

(d) but does not include allowing an activity to commence if its effects are likely to be serious or irreversible.

Section 14- Treaty of Waitangi

Delete provision, amend to read:

“All persons exercising powers and functions under this Act shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi)”.

Section 15 Subpart 3 Duties and Restrictions (page 45 of pdf EEZ Bill. 22 of section)

Section 15 is a most important section. Clauses 2 a to g in Section 15 are vitally important for protection of the Seabed but it is marred by exceptions 5 and 6 which allow certain exemptions to the restrictions of 2e and g and f. **Please delete clauses 5 and 6 of Section 15 as it is critical that we restore the seabed and subsoil to health, rather than continue to allow disposal of radioactive waste in the seabed (see above section - Radioactive pollution of Ocean floor *).** Neither should we allow fishing methods which disrupt the seabed and subsoil. Over-fishing is a serious global problem now. Fish stocks in the deep sea must be conserved to prevent the demise of even more fish stocks. Fish from the depths of the Ocean are more vulnerable to extinction because of slower growth rates, etc. Read eminent fisheries biologist Daniel Pauly on this in issue 20 of *Pacific Ecologist*.

Section 61 -Decisions on applications for marine consents

- a) Section 61(2) overrides all other provisions in the Bill during decision making. It is unthinkable that such a provision could be inserted in legislation.

Section 61(2) to be amended as below:

After complying with subsection (1) and sections 59 and 60, and subject to Part 1 Subpart 2, the EPA may grant or refuse an application for marine consent, in whole or in part.

- b) Section 61(3)

Amend Section 61(3) to read:

The EPA may ~~also~~ refuse an application for a consent if it considers it does not have adequate information to determine the application.

- c) Section 61 (4)

Amend Section 61(4) to read:

Before refusing an application under subsection (3), the EPA must –

- (a) have regard to whether the applicant gave the EPA any further information or reports in response to a request by the EPA; and
(b) consider whether taking an adaptive management approach would be appropriate ~~allow the activity to be undertaken.~~

Section 107 -Representation at proceedings

Amend Section 107 by inserting (c) a person who has an interest in the proceedings that is greater than the interest of the general public.

I or a designated representative wish to appear before the Select Committee at its hearing of this bill.

Yours sincerely,

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