

To: Environment Committee
Parliament Buildings
Wellington

From: Royal Forest & Bird Protection Society of New Zealand Inc.

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Submission on the Crown Minerals (Petroleum) Amendment Bill

Introduction

The Royal Forest & Bird Protection Society of New Zealand Inc. (Forest & Bird) is New Zealand's largest and oldest membership-based conservation organization in New Zealand. We have 50 branches across New Zealand.

Reducing human induced climate change and ocean acidification, promoting the role of nature in helping New Zealand adapt to unavoidable climate change and ocean acidification and reducing the local harm caused by fossil fuel extraction are important strategic priorities for the Society.

Forest & Bird supports the Crown Minerals (Petroleum) Amendment Bill because it will contribute to a fair transition away from fossil fuel use, will reduce emissions from oil and gas that contribute to both climate change and ocean acidification and will over time reduce threats to marine life from oil and gas exploration and recovery.

Decision sought

That the Bill be passed for reasons given below.

Global picture

On October 9, 2018, the IPCC released its special report on whether the world can keep warming to 1.5deg (the key priority of the Paris Agreement), and what this would mean. The report says that holding warming to no more than 1.5deg above pre-Industrial levels is not only possible, but also necessary to avoid dangerous levels of climate change. However, the report says it will require massive cuts in greenhouse gas emissions, to the order of a 45 per cent reduction in 2010 levels of carbon dioxide emissions by 2030 and net-zero by 2050, and a 35 per cent cut in other greenhouse gases (including methane) by 2050. Key points to note from the report are:

- The planet has already warmed by 0.8 degrees to 1.2 degrees since the Industrial Revolution. At the current rate of emissions, we are likely to reach 1.5 degrees between 2030 and 2052. The Earth is warming at 0.2 degrees a decade

- Impacts from emissions to date will affect climate and oceans for millennia, but on their own, are unlikely to cause another 0.5 degrees of warming.
- Climate change is already affecting natural and human systems.
- Warming of 2deg compared to 1.5deg will mean more extreme rain and droughts. At 1.5 degree of global average warming, extreme hot days in the mid-latitudes will be about 3 degrees hotter, but at 2 degrees of warming, they will be but 4 degrees hotter.
- Sea-level rise will be 0.1m lower at 1.5 degrees of warming than at 2 degrees, meaning about 10 million people living by coastlines will be safer. By 2100, sea-level rise will be between 0.26 to 0.77m at 1.5 degrees of warming. This has significant implications for coastal communities and biodiversity.
- Marine ice sheets in Antarctica and the Greenland ice sheet could be irreversibly lost somewhere between 1.5 and 2deg, triggering further sea-level rise.
- Impacts on land-based species' ranges are twice as bad at 2deg as at 1.5 degrees – of 105,000 species studied globally, 18 per cent of insects, 16 per cent of plants and 8 per cent of vertebrates will lose more than half their range at 2 degrees warming.
- Thirteen per cent of terrestrial land will transform from one ecosystem type to another at 2 degrees – twice as many as at 1.5 degrees
- Seventy to 90 per cent of coral reefs will be lost at 1.5 degrees, retaining a possibility for them to re-establish as conditions improve. At 2 degrees, they will probably be completely destroyed.
- Range shifts of marine species to higher latitudes increases at 2 degrees. Impacts on fisheries and aquaculture are worse at 2 degrees, with one model showing a decrease in the annual catch of 1.5 million tonnes at 1.5 degrees, but 3 million tonnes at 2degrees. The reduction in hoki when waters are warmed is a New Zealand example of this. With reduced breeding success for species with land based breeding sites for which their prey becomes out of their foraging range.
- Limiting warming to 1.5 degrees will reduce the number of people at risk by 2050 from climate impacts and associated poverty by several hundred million, and will substantially reduce the number of deaths from heat, ozone exposure, starvation, water shortages and diseases like malaria and dengue fever. Impacts on global economic growth are higher at 2 degrees of warming than at 1.5 degrees.
- Allowing warming to overshoot the 1.5 degrees mark and then reducing it by capturing carbon dioxide will mean the permanent destruction of some ecosystems.

By the end of 2017, we had used up about 2200 gigatonnes of the global carbon budget to stay within 1.5 degrees of warming. The exact amount we have left is uncertain and depends on factors like the rate of emissions reduction of various types of gases, but for a two-thirds chance of staying within 1.5deg, the remaining budget is about 420 gigatonnes. If the permafrost thaws, releasing trapped methane, the budget will drop by 100 gigatonnes.

- Staying within 1.5 degrees of warming without any overshoot (allowing warming to get higher than that, and then cooling the planet again through carbon capture) requires changes to energy, land, urban and industrial systems at a scale never seen before. However, some systems, such as technology, have been known to change at the speed required
- Ocean acidification can cause malformations in invertebrates including shellfish and squids. The difference between 1.5 degrees and 2 degrees and a reduction in pH from 8 to 7.5 has been demonstrated to cause longer development times and higher instances of malformation. Such animals play a fundamental role in complex food webs. This will have a flow on effect on dependent marine fauna and fisheries, as well as being important for human food security and providing New Zealand with food exports.

The window for action is closing fast and the consequences of inaction are becoming clearer.

Benefits of long term policy signaling

The benefits of the approach that underpins this Bill is that it is based on long term signaling to the energy sector so that a fair and orderly transition can occur. It is disappointing that vested interests appear to be overstating the Bill's immediate impact in order to scare people into opposing the law change.

The history of the fossil fuel industry is one of taking the resources and then leaving others to clean up the mess and deal with social and economic dislocation of a boom and bust sector. In recent years we have seen this with the crash in coal mining on the South Island West Coast.

These problems are exacerbated when industry makes inflated claims about the benefits of mining (including oil and gas extraction). The claims made by industry about the offshore oil and gas sector in the lead up to the launch of the first block offers have proven to be overblown – in fact some permits were returned unused.

Forest & Bird supports a “just transitions” approach that sees an orderly exit from activities that cause climate change and ocean acidification, and notes that the union movement – including the union that represents oil and gas workers, *E Tu*, has accepted the Government's long-term signally of the end to this industry as part of the decarbonisation of the New Zealand economy.

Substitution issues

Suggestions that New Zealand would source gas from locations outside New Zealand (with hypothesized lower environmental performance standards) to substitute for a long term phasing out of domestic production are highly improbable because of the impracticality and cost of delivering

significant amounts of gas to New Zealand. New Zealand is simply too far from external suppliers of gas for this to occur. Imported gas would need to compete with renewable electricity generation.

Likewise, suggestions that coal will be used instead of gas ignore practical realities:

- New Zealand has only one coal fired power station (which is due to be phased out from 2030) and its closure will likely trigger the construction of renewable electricity generation that is presently consented but unbuilt.
- . For a 1.5 degree pathway with no overshoot that is essential to avoid the destruction of ecosystems, the IPCC report models the use of coal for electricity generation at close to zero by 2050
- Steel making is presently dependent on coal so no fuel switch is likely there in the medium term. However, new technologies, including hydrogen and green coke, are in development and are showing promise.
- Biomass and electricity provide alternatives to stationary energy using coal or gas, especially as the carbon price rises over time

New Zealand is a marine biodiversity hot-spot

New Zealand's marine environment supports more variety of seabirds and marine mammals than any other place on earth. More than one-third of seabird species are known to occur within New Zealand's EEZ and NZ supports more threatened seabirds than anywhere else in the world. Marine mammals occurring in New Zealand waters represent nearly half of the world's species. Globally important sites for our seabirds have been identified known as Important Bird Areas (IBA's) on land and at sea.

Direct environmental impacts of oil and gas exploration

Marine wildlife is vulnerable to the activities of the petroleum industry through the different phases of prospecting, exploratory drilling, and production. The threats from oil and gas industrial activities are principally from sound and light pollution, vessel collision (attending vessels), benthic disturbance, and oil spills.

Sound impacts of oil and gas seismic surveying and drilling

Marine fauna rely on sound for vital life functions, including communication, prey and predator detection, orientation and for sensing surroundings. Wild life is not adapted to anthropogenic noise.

Seismic surveys, through their sound level, frequency, and duration of operation introduce impulsive sounds that can exceed the adaptive capacity of marine mammals and other marine fauna (Including fish, turtles, crustaceans and cephalopods, seals, and penguins), which can cause mortality, physical injury or elicit physiological reactions, behavioural responses, masking, or other effects (including stress effects), and thereby pose a threat to individual animals or their populations. African penguins, for example have shown a strong avoidance of their preferred foraging areas during seismic surveys.

Along with seismic arrays the use of echo-sounders on survey and attending vessels, and ship noise, have also been demonstrated to impact marine mammals and some other fauna.

The current techniques under the Code of Conduct (2013) for detecting marine mammals (Marine Mammal Observers and Passive Acoustic Monitoring (PAM)) are not effective at detecting many marine mammals or other affected species, rendering mitigation impossible.

The impact from sound is not limited to seismic surveys but also to exploratory and well drilling that can cause long term exposure to deleterious levels of noise. A frequently misrepresented notion is that marine fauna can and will simply swim away from such sources of sound, but the reality is that animals are in an area for a reason that normally confers them some benefit, such as prey availability and so may not relocate but instead be forced to endure these sounds.

Light impacts from oil and gas seismic surveying and drilling

The lights from survey vessels and those on the drilling platform can attract seabirds and marine mammals may interact with the equipment, with negative impacts. Some seabird species are particularly susceptible to light and fly towards light.

At night during certain weather conditions such as mist and rain harm to seabirds from lighting can be significant, particularly close to breeding colonies or when birds are migrating. Birds are injured or killed when they impact vessels or platforms lights, superstructure, masts or cables or are simply unable to return to the sea unaided.

Seabed disturbance effects from oil and gas exploration and drilling

Seabed disturbance from drilling and vibration will destroy benthic communities at the drill site, and at distances associated with the propagation of the vibration and associated noise, but also have the potential to release harmful toxins and silt into adjacent waters, that may disperse and cause harm over larger areas.

Oil spill effects from oil and gas exploration and drilling

Oil spill from well heads or vessel damage, depending on the volume of the spill and ocean currents, can spread hundreds of kilometres from the release site. NZ is ill equipped to manage such spills in a timely way, and has insufficient capacity to deal with major spills.

The effects of oil can be short or long term and can impact a wide variety of organisms from planktonic species to larger vertebrates. Animals do not avoid oil spills, some fish are attracted to oils as it looks like food; seals, cetaceans and birds may go through these oil spills to hunt this prey.

Oil adhering to feathers or fur can cause such problems as hypothermia by reducing or destroying the insulation, reduce mobility (more vulnerable to predation and drowning), reduced normal behaviour, and sickness.

Certain hydrocarbons such as Benzene or Ethylene dissolve in water where they can be highly toxic to aquatic organisms and are invisible to the human eye and therefore impossible to get rid of in the clean-up process.

Most seabirds die when affected by oil spills and are unable to be rescued and rehabilitated, one notable exception are penguins. For example, during the Rena oil spill all Procellariid birds (petrels, shearwaters and albatrosses) died, while some penguins captured quick enough after the oil spill

were able to be rehabilitated, although the longer term impact to reproductive capacity is unknown. As most offshore islands around New Zealand support our major seabird populations, oil exploration and exploitation in these areas is a significant risk.