Am I GETTING WARMER?

BY JUSTINE INNS, BA LLB

Global Warming. It's a term that's been bandied about for years, with varying degrees of credibility. Global warming describes the process where the earth is warmed by gases in the atmosphere – greenhouse gases. This warming is predicted by some to have several effects on the ocean, warming it, melting the ice sheets, which in turn increases water levels and increasing the acidity of the ocean. Whether the earth is actually warming, the rate of warming and the degree to which it is caused by human activity will, continue to be topics of debate.

However, in 1997 the topic of greenhouse gasses and the phenomenon of global warming was enough of an issue to give rise to the Kyoto Protocol, an international response to rising levels of greenhouse gases. Developed countries such as New Zealand have made commitments under the protocol to reduce their emissions of greenhouse gases, although almost none have done so as yet.

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After first proposing, then abandoning, a carbon tax as a means of meeting the New Zealand's Kyoto commitments, last year the Labour Government introduced the Emissions Trading Scheme (NZ ETS). Following the general election, however, the incoming National-led Government put a hold on implementation of the NZ ETS and subjected it to a Select Committee review. The committee has received submissions and held hearings and was due to report back before the end of April.

The NZ ETS does (or, at least, did) provide for the seafood industry to enjoy some relief from the full effects and costs of the Scheme for a period, recognising its position as an exporting industry facing competition from companies in countries without ETSs. However, depending on the final outcome of the ETS review, the aquaculture industry will be particularly affected, both by whatever scheme is eventually implemented and by global warming itself.

It is likely, under any scheme finally implemented, that it will include some form of trading of carbon credits received from the government in return for, among other things, carbon sequestration: the 'storage' of carbon that would otherwise be released into the atmosphere. The Kyoto Protocol does not currently cover ocean sequestration but it is a factor that the aquaculture industry would argue merits further investigation.

The ocean is considered to be a 'carbon sink', absorbing up to one third of the carbon dioxide released into the air. A number of studies have looked at the sequestration levels of shellfish and other marine life with calcified shells (such as, crayfish) which absorb carbon to form shells. So why shouldn't mussel farms attract carbon credits in return for sequestering carbon in the same way that forests do?

The main problem is the question of whether, and at what rate, the carbon sequestered in shells is lost back into the atmosphere again after shellfish are harvested. By analogy, trees are effectively treated as releasing all of their sequestered carbon back into the atmosphere as soon they are cut down. In reality, therefore, forest owners are not granted credits for growing trees, but for refraining from cutting them down. There wouldn't be much point in a mussel farmer being awarded carbon credits only if he didn't harvest.

In any case, under the NZ ETS one 'New Zealand Unit' (NZU) represents one tonne of CO2 equivalent emissions and it is currently unclear how many shellfish would have to be grown to sequester one tonne of CO2 and therefore be eligible for 1 NZU. In addition, as a side effect of the ocean's absorption of carbon, it is predicted to become more acidic. This is projected to cause shellfish to calcify their shells up to 25 percent slower by 2100 than they do currently. As the average global temperature increases (if it does) and the amount of carbon in the atmosphere increases then the ocean is expected to reach its CO2 saturation point. If this occurs, the ocean's role as a carbon sink will alter significantly.

Clearly, the interactions between shellfish farming, global warming and the NZ ETS (or its successor) require more investigation.

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