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“Action for Healthy Waterways”: some big ticket actions that the Government has neglected

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The NZ Ministry for the Environment has produced a valuable discussion document with many good ideas for improving the health of waterways in New Zealand. But there are important gaps. In this blog we consider three big ticket items to include in an integrated strategy to improve our waterways: a fertiliser tax, taxing ruminant animal products, and promoting the right sort of reforestation with a high carbon price.

Introduction

As we recently pointed out, the health of waterways has important health and cultural impacts for people in Aotearoa/NZ [1]. Fortunately, the Ministry for the Environment (MfE) has produced a detailed discussion document [2], which has many good ideas around protecting and improving the health of NZ's waterways. In particular, the overarching concept of Te Mana o te Wai, the integrated and holistic health and wellbeing of freshwater from mountains to sea, is a valuable way forward for freshwater management in Aotearoa. There are also moves to ensure that Regional Councils use their teeth to protect water ecosystems in a much wider way than at present.

However, despite this good work by MfE, the discussion document tends to focus on farm and river level outputs, and avoids some highly effective national-level ways to affect outcomes. These national-level policy instruments should be given serious attention in addition to the MfE proposals.

Taxing fertiliser as it leaves the fertiliser factory

NZ has a very high level of application of nitrogenous fertiliser, by global standards. The OECD (2017) noted that between 1998 and 2009, the "nitrogen balance has worsened in New Zealand more than in any other OECD member country, primarily due to expansion and intensification of farming" [3](pp. 159-160). This growth has increased nitrogen pollution in soils and rivers, especially in key farming regions, and especially where dairying has been intensifying.

One key way to address this problem would be taxing fertiliser (eg, at the fertiliser factory or port of importation), but this is an economic instrument that is not mentioned at all in the MfE document. Yet such a tax would reduce fertiliser use and promote its more careful application. The nitrogen and/or phosphorus content of the fertiliser could be the determinant of the tax level (eg, nitrogen focused fertiliser taxes are more common in Europe in general, but in Denmark the phosphorus in animal feed is taxed [4]). A review of

fertiliser taxes in European countries has found evidence of benefits in terms of reducing nitrogen load on the environment and low administrative costs of such taxes [5]. This European review “concluded that a fertilizer tax as a policy instrument is not a perfect method, but that such economic instruments can be part of an effective policy mix to solve nitrogen problems”. Modelling studies also suggest benefits, as per different nitrogen taxes on fertiliser in a Danish setting [6], and how a nitrogen tax (on fertiliser) compares with other control measures in a German setting [7]. Some of this work suggests that the efficiency of a nitrogen fertiliser tax varies by farm type [8]. NZ data also suggest a tax would work ie, one NZ study reported that “in the long run, nitrogen fertiliser use is elastic” [9]. In other words, a tax that increases fertiliser prices would be expected to reduce its use over time, in the NZ setting.

As an extra bonus, the tax revenue from a fertiliser tax could be recycled eg, put toward tree planting subsidies for farmers, to fund research into waterway protection, or it could contribute to reducing income taxes for low-income New Zealanders. The latter approach would help counter the possibility that taxes on fertilisers might slightly raise food prices.

Taxing ruminant livestock products for greenhouse gas emissions

Taxing products for greenhouse gas emissions is another economic instrument that is not mentioned in the MfE document and indeed the “Zero Carbon Amendment Bill” and “Climate Commission” are only mentioned once each. Yet putting a price on ruminant livestock products is an effective way to efficiently address NZ’s international climate change response commitments. Indeed, the Ministerial Advisory Committee, the Interim Climate Change Commission, recommended that the Government starts taxing farmers through the Emissions Trading Scheme (ETS) from 2020 until 2025 (ie, costing farmers 1c on every kg of milk solids and between 1c – 4c per kg of meat produced at the freezing works) [10]. However, an announcement on 24 October [11] means the ETS approach is now being delayed for six years to 2025, and may never come into effect, as the Government allows the farming sector even more time to explore on-farm management changes to reduce emissions [12], and longer-term policy changes are unpredictable. While there is most certainly a case for many on-farm management changes to reduce emissions, we suspect they would not be as efficient and probably far more costly to administer than using simpler price signals such as via dairy/meat taxes.

Basic economic theory would suggest that such dairy/ruminant meat taxes should result in some reductions in ruminant livestock numbers, a shift to less water polluting food production (at least on a per calorie of food energy produced), and would make conversion to (the right sort of) forestry more viable as a use of some agricultural land (eg, see also below). All these changes would then be likely to result in reduced waterway pollution from farming in NZ.

Of note is that there would be a potential public health dividend from higher ruminant meat prices for the NZ population. For example, modelling studies suggest that taxes on meat would achieve health and sometimes economic benefits (eg, for the US [13], for Germany [14], and for 149 world regions in a large international study [15]). There is also real-world evidence for food taxes reducing demand for meat and dairy products from Denmark [16]. Meat taxes have also been proposed to help address the antibiotic resistance problems with animal farming [17].

More generally, replacing animal-source foods with plant-based ones has been modelled for 150 countries [18]. The findings were that this is particularly effective in high-income

countries for improving (dietary) nutrient levels, “lowering premature mortality (reduction of up to 12% [95% CI 10–13] with complete replacement), and reducing some environmental impacts, in particular greenhouse gas emissions (reductions of up to 84%).” From an environment perspective, this modelled shift also: “… reduced environmental impacts globally (reducing greenhouse gas emissions by 54–87%, nitrogen application by 23–25%, phosphorus application by 18–21%, cropland use by 8–11%, and freshwater use by 2–11%) …”.

Taxes on ruminant meat would also not be problematic from an equity perspective when considering low-income New Zealanders. This is because the taxes would not apply to the cheapest meat – which is non-ruminant poultry meat. Furthermore the cheapest sources of protein in NZ come from plant foods eg, beans and legumes.

As with the fertiliser tax revenue discussed above, the tax revenue from dairy/meat taxes could be recycled. It could go specifically into tree planting subsidies or more generally, such as allowing for a reduction in income taxes for low-income New Zealanders. All these co-benefits and contextual issues should have been discussed in the MfE document.

Having a high carbon price to promote more of the right sort of forestry and bush regeneration

To its credit, the MfE document does consider the benefits of tree planting on waterway health. Eg, “For example, sediment loss will be reduced by the One Billion Trees programme and major increases in the Hill Country Erosion Fund” (p50). It also refers to the wider benefits of erosion control: “Beyond the farm gate, reduced erosion benefits communities and businesses downstream through avoided dredging, improved fish habitat, increased availability of fish, and an overall increase in mahinga kai species population” (p92). Also noted is that “reducing nitrogen run-off from the land has benefits not only for aquatic ecosystem health, but also for reducing emissions of nitrous oxide, a greenhouse gas produced by bacteria in the soil” (p46).

Nevertheless, the MfE document fails to specifically discuss the advantages of having a sustained high carbon price in terms of promoting tree planting and bush regeneration (with farmers shifting some of their activities to “carbon farming”, forestry or earnings from mānuka honey production). Such a policy approach may be addressed by the forthcoming Climate Change Commission’s work. But having a higher carbon price and other incentives to plant trees (or allow reversion to native forest) should have been specifically discussed as a joint climate change prevention and waterways protection strategy as it would almost certainly help to reduce run-off and soil erosion from hill country farms, and displace some land used for livestock grazing.

The type of forestry needed for sustainable climate change mitigation, and for water ecosystems, is a whole separate topic. In short, we suggest much more diverse, longer rotation forestry, and no clearing of native vegetation [19] [20]. This more valuable timber would allow small felling cuts and much less sediment in waterways from forestry activity. With suitable government policies, more valuable timber (eg, hardwoods) are more likely to be processed in NZ, and in the forestry rural areas.

Conclusions

There are major gaps in the use of national-level policy instruments in the NZ Government’s approach to protecting and rehabilitating waterways. But it is not too late for these issues

to be addressed in further work by MfE and other NZ Government agencies that have roles in both climate change prevention and waterways protection. The country needs integrated thinking with both strong national level drivers of changes – as well as changes at the levels of farms and specific waterway. Concerned citizens and organisations should consider making submissions to MfE [21], before the consultation process on protecting waterways ends on 31 October.

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