



Submission on
NZ ETS design and
permanent
forestry category.



11 August 2023

All climate change policy is public health policy.

Climate change is one of the greatest health challenges of the 21st century.¹ Climate change poses both direct and indirect health impacts. An example of a direct impact is extreme temperatures, with an estimated 60,000 plus people in Europe dying from heat-related issues in the summer of 2022.² Indirect threats include increased food insecurity and amplified problems from the pollution of freshwater.

It is, therefore, imperative that all climate change policy takes public health risks and potential benefits into account.

This submission is focused on the benefits and risks to public health from climate change, particularly the relative benefits of incentivising indigenous forest restoration over monocultural pine plantations, and how policy makers could better take public health into account.

To date, NZ Government agencies have poorly integrated public health needs into climate policy. Significant impacts to communities' health and well-being from climate change policy can be obscured when the problems policy is aiming to solve are too narrowly defined.

In a report on the human health impacts of climate change, the Royal Society of NZ wrote “[w]ell-designed policies to reduce global greenhouse gas emissions will not only limit climate change and reduce the associated risks to human health but have the potential to improve population health and reduce health inequalities”.³

Conversely, climate change policies that do not appropriately consider public health can have significant negative direct and indirect impacts. Frequently such impacts are experienced most acutely by communities that are least able to respond due to socioeconomic deprivation and political marginalisation.⁴

¹World Health Organization. (2023). The role of the Health Community in Climate Action: taking stock and moving forward. Retrieved from <https://www.who.int/news-room/events/detail/2023/05/24/default-calendar/the-role-of-the-health-community-in-climate-action-taking-stock-and-moving-forward>

² Ballester, J. *et al.* (2023). Heat-related mortality in Europe during the summer of 2022. *Nature Medicine*, doi:10.1038/s41591-023-02419-z

³ Royal Society Te Apārangi. (2017). Human Health Impacts of Climate Change for New Zealand. Retrieved from <https://www.royalsociety.org.nz/assets/documents/Report-Human-Health-Impacts-of-Climate-Change-for-New-Zealand-Oct-2017.pdf>

⁴ Jones, R. (2019). Climate change and Indigenous Health Promotion. *Global Health Promotion*, 26(3_suppl), 73-81. <https://doi.org/10.1177/1757975919829713>

In its current form, the NZ Emissions Trading Scheme (ETS) has not been effective in reducing emissions,⁵ nor does it fully realise its potential to protect public (population) health. Considered policy making can take public health into account, supported by the integration of wider government goals and frameworks into the redesign, and achieve significant public health benefits.

Ultimately, the ETS redesign should have as its goal the meeting of the country's international climate change commitments while reaping the public health and social benefits from greater emphasis on the restoration of indigenous forests.

This submission presents:

- implications for public health from climate change
- problems and opportunities for public health from the ETS
- how policy making on the ETS can take public health into account
- specific recommendations on ETS review options
- answers to consultation questions

We welcome this opportunity for to review of ETS settings and ask of policymakers to choose policy options that best reduce greenhouse gas emissions and support the health and well-being of communities, not only in the present but over coming generations.

About the Public Health Communication Centre

The Public Health Communication Centre (PHCC) is an independently funded organisation dedicated to increasing the reach and impact of public health research in Aotearoa New Zealand. The Centre has a range of public health and science communication experts, and the Director is Prof Michael Baker.

We are hosted by the Department of Public Health at the University of Otago Wellington. The PHCC identifies and promotes opportunities to improve public health, equity, and sustainability, and communicate these ideas effectively to the public, media, and decision-makers.

Authors and contact details

This submission was prepared by [Research Fellow Marnie Prickett](#), [Professor Nick Wilson](#), [Professor Simon Hales](#), and [Communication Lead Adele Broadbent](#) (links to access full bios). We would be very keen for any opportunities to verbally present our views to inquiry staff/policy-makers.

Please direct any queries to marnie.prickett@otago.ac.nz

⁵ Climate Change Commission. (2023). Executive Summary: Advice on NZ ETS unit limits and price control settings for 2024-2028. Retrieved from <https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/nz-ets/our-advice-on-the-nz-ets/nz-ets-unit-limits-and-price-control-settings-2024-2028/executive-summary-advice-on-nz-ets-unit-limits-and-price-control-settings-for-2024-2028/>

Public health and climate change

In 2017, the Royal Society Te Apārangi summarised the evidence relating to the impacts of climate change on health.⁶ Their report identified the direct and indirect impacts of climate change on public health that we include in brief below. We refer to their work as a useful summary.

Please note, however, there is far more literature available on the public health implications of climate change. The Lancet, for example, produced a high-quality, comprehensive report on health and climate change in 2020.⁷

Our researchers can further support climate policy makers to reach sound public health decisions by identifying and synthesising relevant literature.

Direct impacts on public health from increased global greenhouse gas emissions:

- Increased climate extremes: storm severity and flooding, droughts (and fires) and related infrastructure damage
- Displacement of homes and whole communities from climate-related disasters
- Extreme temperatures

Indirect impacts on public health from increased global greenhouse gas emissions:

- Crop damage with impacts on food availability, quality, and safety
- Harmful algal blooms impacting water supply and recreational use of waterways
- Microbial contamination (water and food)
- Mental health and well-being impacts from climate-change disasters and other disruptions
- Poorer outdoor air quality from fires
- Impacts on infectious disease risk (eg, vector-borne diseases)

Public health and ETS

In its current form the ETS results in an imbalance between promoting the restoration of indigenous forests and promoting plantation forestry. However, redesigned to put a high carbon price on restoring indigenous forests (relative to the carbon price on plantation forests) it could achieve a wide range of health and other co-benefits.

⁶ Royal Society Te Apārangi. (2017). Human Health Impacts of Climate Change for New Zealand. Retrieved from <https://www.royalsociety.org.nz/assets/documents/Report-Human-Health-Impacts-of-Climate-Change-for-New-Zealand-Oct-2017.pdf>

⁷ Watts, et al. (2021). The 2020 report of The Lancet Countdown on health and climate change: responding to converging crises. The Lancet, 397(10269), 129-170. [https://doi.org/https://doi.org/10.1016/S0140-6736\(20\)32290-X](https://doi.org/https://doi.org/10.1016/S0140-6736(20)32290-X)

The problems with incentivising plantation pine forests over indigenous forest restoration

Current ETS settings have incentivised the planting of monocultural pine plantations. This has had some benefits in terms of extracting carbon from the atmosphere and providing jobs for forestry workers – often in economically-deprived regions. However, compared to indigenous reforestation it has the following disadvantages:

- The carbon stored in exotic plantation forests is less secure in the long term than in indigenous forests. Trees like pines “may sequester carbon quickly for the first 20 years, but 10 years later they’re cut down and most of the carbon is dispersed and lost.”⁸ That is because wood and paper can be burnt in wood burners releasing the carbon back to the atmosphere; or newspaper rots in garbage dumps releasing methane.
- Relative to indigenous reforestation, monocultural exotic plantations can increase erosion and soil loss (particularly after trees have been harvested).⁹ A July 2023 report produced for the Ministry for the Environment by Manaaki Whenua found standing exotic forests were less effective in erosion control than indigenous forest during Cyclone Gabrielle.¹⁰ Along with forestry slash, soil lost during flooding can increase the damage to crucial public health infrastructure, like drinking and wastewater facilities.¹¹ Soil deposited on the land after such flood events can be a public health risk. It may contain contaminants and, as it dries, can cause respiratory and other health issues.¹²
- Monocultural forestry plantings can disrupt water cycles. As a 2020 Nature article notes:

“The short-term gains for climate mitigation delivered by planting swaths of uniform trees for carbon storage may be offset by the long-term losses caused by the hydrological consequences of lower resilience to environmental disturbances. For example, plant uniformity in agricultural landscapes that have replaced wetlands has been linked to increases in flood and drought frequencies and magnitudes, and deterioration of water quality, both of which place people at risk. Furthermore, plant uniformity in forested areas has been linked to changes in precipitation recycling by altering the balance between local water storage and runoff and the contribution of evaporation within a region to precipitation

⁸ Country Life. (2022). Indigenous Forest and Carbon. Radio New Zealand.

<https://www.rnz.co.nz/national/programmes/countrylife/audio/2018847934/indigenous-forest-and-carbon>

⁹ Ministerial Inquiry into Land Uses in Tairāwhiti and Wairoa. (2023). Outrage to optimism: Report of the Ministerial Inquiry into land uses associated with the mobilisation of woody debris (including forestry slash and sediment in Tairāwhiti /Gisborne District and Wairoa District. <https://environment.govt.nz/assets/Outrage-to-Optimism-CORRECTED-17.05.pdf>

¹⁰ McMillan, A., Dymond, J., Jolly, B., Shepherd, J., & Sutherland, A. (2023). Rapid assessment of land damage – Cyclone Gabrielle.

¹¹ Laing, D. (2023). Hawke's Bay Today. <https://www.nzherald.co.nz/hawkes-bay-today/news/wastewater-still-a-battle-for-napier-city-council/J63Y63T3PFCVLS5ROUXNMZOI7U/>

¹² Hawke's Bay Today. (2023). Cyclone Gabrielle: Health warning issued over dust, floodwaters. Hawke's Bay Today. <https://www.nzherald.co.nz/hawkes-bay-today/news/cyclone-gabrielle-health-warning-issued-over-dust-floodwaters/AWKTYXVWCJDWVLY5WPGSEZ3PDY/>

elsewhere — with different consequences in different climatic zones for both downstream and downwind water supplies utilized by people. Yet current international policymakers often consider forests largely in terms of the carbon cycle without consideration of the implications for the water cycle”.¹³

This homogenisation of hydrological functions can contribute to increased flood and drought risk, where less water may be absorbed and stored in soil and underground, and more water may be lost through processes like evaporation. Additionally, research from New South Wales identified negative effects on mental health as an important health consequence of flooding.¹⁴

- Monocultural pine plantations are more susceptible than indigenous forests to wildfire.¹⁵ Wildfires have direct and indirect risks to people’s health. As Leverkus, et al, write:

“Strategies to combat climate change through tree planting—whether through plantations or through restoring native vegetation— should address how the changes in composition and configuration of landscapes can affect fire propagation. Plans should favor landscape mosaics, heterogeneous and fragmented stands rather than large and homogeneous ones, vertical vegetation discontinuities that prevent surface fires from spreading to crowns, high species diversity, low-flammability species, and low plant densities throughout the life span of planted trees. In addition, decisions about which tree species to plant should prioritize natural resilience to future fires, which are likely to occur at large spatial and temporal scales under warming conditions. In many places, native resprouting species would meet these criteria”.¹⁶

This susceptibility to fires also degrades the long-term carbon capture of plantation forests relative to indigenous forests.

Opportunities for public health and other co-benefits from a redesigned ETS

A redesigned ETS that puts a high carbon price on restoring indigenous forests relative to that for planting exotic plantation forests could have a wide range of benefits. These include:

¹³ Levia, D. F., et al. (2020). Homogenization of the terrestrial water cycle. *Nature Geoscience*, 13(10), 656-658. <https://doi.org/10.1038/s41561-020-0641-y>

¹⁴ Lee, G. W., Vine, K., Atkinson, A.-R., Tong, M., Longman, J., Barratt, A., Bailie, R., Vardoulakis, S., Matthews, V., & Rahman, K. M. (2023). Impacts of Climate Change on Health and Health Services in Northern New South Wales, Australia: A Rapid Review. *International Journal of Environmental Research and Public Health*, 20(13), 6285. <https://www.mdpi.com/1660-4601/20/13/6285>

¹⁵ Barquín, J., Concostrina-Zubiri, L., Pérez-Silos, I., Hernández-Romero, G., Vélez-Martín, A., & Álvarez-Martínez, J. M. (2022). Monoculture plantations fuel fires amid heat waves. *Science*, 377(6614), 1498-1498. <https://doi.org/doi:10.1126/science.ade5923>

¹⁶ Leverkus, A. B., Thorn, S., Lindenmayer, D. B., & Pausas, J. G. (2022). Tree planting goals must account for wildfires. *Science*, 376(6593), 588-589. <https://doi.org/doi:10.1126/science.abp8259>

- Avoiding the above listed problems with plantation forests (ie, via indigenous forests having more secure long-term carbon storage; better erosion prevention; no forestry slash; less pressure on infrastructure; more resilience to drought and flooding; and reduced wildfire risk).
- Improved biodiversity and buffering from climate change impacts. Diverse landscapes and healthy ecosystems support biodiversity and increase resilience to the impacts of climate change. Scholars have identified a “vicious cycle” whereby ecosystem degradation drives climate change drives increased disaster risk which in turn drives ecosystem degradation.¹⁷ Well-designed policy can drive the reverse cycle (fig. 1).

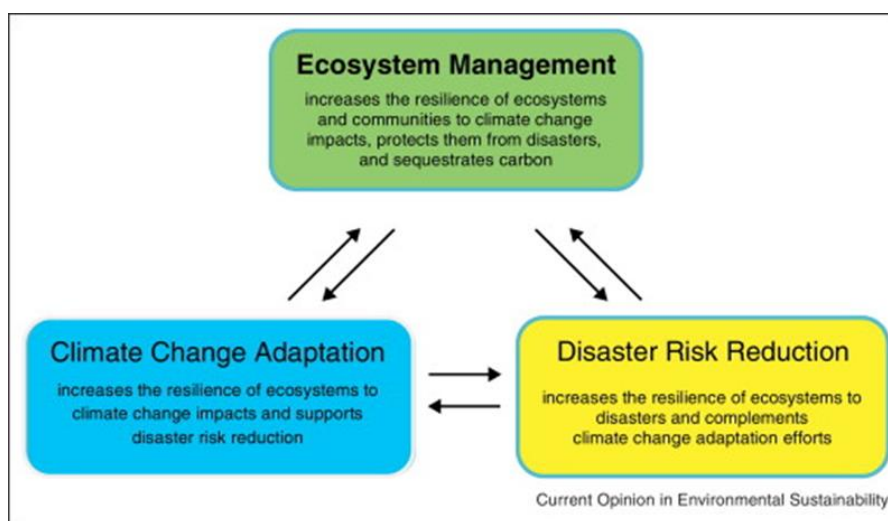


Figure 1: Simplified illustration of the complicated interactions between climate change, ecosystem degradation and increased disaster risk (Source: Munang, et al. (2013))

- Drinking water source protection. The Government inquiry into the contamination of Havelock North’s drinking water emphasised, “protection of the source of drinking water provides the first, and most significant, barrier against drinking water contamination and illness”.¹⁸ An ETS that encourages permanent native forest restoration could have the co-benefit of improved drinking water source protection.¹⁹ Source water protection reduces contamination risks to people’s drinking water and can reduce costs associated with the treatment of drinking water supplies.

¹⁷ Munang, R., Thiaw, I., Alverson, K., Liu, J., & Han, Z. (2013). The role of ecosystem services in climate change adaptation and disaster risk reduction. *Current Opinion in Environmental Sustainability*, 5(1), 47-52. <https://doi.org/https://doi.org/10.1016/j.cosust.2013.02.002>

¹⁸ Government Inquiry into Havelock North Drinking Water. (2017). Report of the Havelock North Drinking Water Inquiry: Stage 2. <https://www.dia.govt.nz/Report-of-the-Havelock-North-Drinking-Water-Inquiry---Stage-2>

¹⁹ Abell, R. et al. Freshwater biodiversity conservation through source water protection: Quantifying the potential and addressing the challenges. *Aquatic Conservation: Marine and Freshwater Ecosystems* 29, 1022-1038, <https://doi.org/10.1002/aqc.3091> (2019).

- Mental health and wellbeing benefits, both in terms of reduced risk of high impact events on mental health and in terms of access to the natural world. Connection to a healthy environment provides mental health benefits and is likely to be particularly important for Māori.²⁰ Access to native plants for traditional treatment of health conditions (rongoā) is also a benefit of indigenous forests. The ETS redesign needs to account for and not worsen socioeconomic disadvantages experienced by Māori.²¹

What we suggest is compatible with international calls to focus more on indigenous forest restoration rather than plantation forestry in response to climate change.²² Additionally, models are already being developed for how we might transition poorly placed existing pine plantations to indigenous forests.²³ There may also be a case for expanding this approach (of applying a high carbon price in a reformed ETS) to the protection and restoration of wetlands and estuaries. These store significant quantities of carbon and are important for biodiversity.

Additionally, central and local government (under the National Policy Statement for Indigenous Biodiversity) as well as communities' biodiversity goals could be better supported by a redesigned ETS and permanent forest category.

How policy making on ETS can take public health into account

To date, it appears that public health has not been considered in policy making with regards to the ETS. Our brief review of previous ETS Regulatory Impact Statements suggests this is likely the case. While limited, we commend the Ministry's acknowledgement of the public health impacts of climate change and ETS decisions on public health in the consultation document.

This acknowledgment can be formalised in the ETS policy making process in its redesign and supporting documents.

- Regulatory Impact Statements (RIS) prepared for climate policy must address public health risks (costs) and opportunities (benefits).

RIS template guidance recommends the following dot pointed issues are covered. Done well, covering them would support decision making that takes public health into account. The dot

²⁰ Ewing, I. Push for Government to permanently halt planting exotic trees and restore native forests. *Newsroom* (2023). <<https://www.newshub.co.nz/home/politics/2023/07/push-for-government-to-permanently-halt-planting-exotic-trees-and-restore-native-forests.html>>.

²¹ Jones, R. (2019). Climate change and Indigenous Health Promotion. *Global Health Promotion*, 26(3_suppl), 73-81. <https://doi.org/10.1177/1757975919829713>

²² Lewis, S. L., Wheeler, C. E., Mitchard, E. T. A. & Koch, A. Restoring natural forests is the best way to remove atmospheric carbon. *Nature* 568, 25-28, doi:10.1038/d41586-019-01026-8 (2019).

²³

pointed issues below are intended to inform the problem definition, ensuring it is not limited to the technical details but encompasses public health needs. A problem definition that does not include public health will obscure from decision makers the significant impacts to communities' health and well-being from climate change and poor land use.

- **'Government regulatory failure** – where there are unintended consequences resulting from the **design or implementation** of existing regulation (eg, outcomes misaligned with the original policy intent)

Example: The unintended consequences of risks to public health under climate change from monocultural pine plantations could be significant, including risks to infrastructure, human health and environmental health.

Outcomes are misaligned with original policy intent as gross emissions have not been substantively reduced.

- **'Equity issues** – where the impacts of current arrangements fall disproportionately on certain groups and require fairer distribution'.

Example: Climate change risks and impacts, including public health impacts, disproportionately affect lower socioeconomic groups and marginalised communities.

- **'Behavioural problems** – where cognitive biases (eg, confirmation bias, optimism bias, status quo bias, the availability heuristic, etc.) can lead to distorted incentives and poor decision-making'.

Example: Current settings incentivise monocultural pine plantations that may increase climate change risks to communities, including from flooding, drought, wildfire, damaged infrastructure, etc.

- **'Externalities** – where impacts fall on people other than those who use a good/service which can lead to its over- or under-provision.'

Example: NZ ETS pine plantations may be owned by individuals and companies that do not experience the localised impacts and risks from monocultural plantations under climate change (eg, downstream damage of homes or infrastructure from silt and/or forestry slash).

- Treasury's Living Standards Framework should be integrated into policy making and the RIS. The ETS RIS objectives should link to the Living Standards Framework and He Ara Waiora and be consistent with the multi-dimensional approach to well-being.

An ETS and permanent forestry category that incentivises and supports the regeneration of indigenous forests could include benefits the Living Standards Framework indicators.

- environmental amenity (access to natural environment, drinking water opportunities, drought, swimmability),
- health (being in good physical and mental health)
- safety (being safe from harm and the fear of harm)
- sense of belonging (ability to express identity)

Importantly, a policy that undermines public health or increases risks for communities from climate change would not be consistent with the framework or He Ara Waiora.

Specific recommendations on ETS review options

To obtain improved long-term carbon storage and to achieve a range of health and other co-benefits, the reformed ETS and permanent forestry category redesign should incentivise the restoration of indigenous forests ahead of plantation forestry. Our recommendations are made in order to support this outcome.

Option 1: Decrease the amount of emissions units so that the carbon price rises

Recommendation: We strongly support this option, along with some of the other options (see below). The carbon price in the ETS is currently far too low given the need for the country to efficiently meet its international commitments and to play its fair role (given its historically high greenhouse gas emissions as a high-income country).

However, any adverse impact on low-income New Zealanders should be addressed with appropriate other adjustments (eg, lowering income taxes for those on lower incomes and/or improving social welfare benefits and supports).

Option 2: Increase the demand for emissions units by allowing the Government and/or overseas buyers to purchase them

Recommendation: We support both the NZ Government and overseas buyers being able to purchase emissions units. A first step might be to permit only Australian buyers – and if that works well (after a 1-year review) to then consider allowing other buyers (eg, from other OECD countries). Ultimately, it is highly desirable to have a functional international market in carbon – given the international nature of the climate change crisis.

Option 3: Restrictions or conditions are placed on removal activities

Recommendation: We do not have a clear view on extra restrictions/conditions. It is ideal that more indigenous forest is planted (or allowed to regenerate), but there might also be a case for additional plantation forest in some appropriate localities (eg, where it replaces erosion-prone farmland and where the forestry slash problem can be avoided).

Option 4: Emitters will not be able to purchase NZUs from foresters to pay for their greenhouse gas emissions

Recommendation: Emitters should still be allowed to purchase NZUs. It seems optimal for forest planting (and allowing indigenous forest to grow) to be stimulated by the market price of carbon.

Answers to consultation questions

ETS

1. Does the NZ ETS need to be able to drive emissions reductions in transport, energy and waste?

Answer: Yes, absolutely. These are all areas with high emissions, eg, high ETS prices on transport fuels will help drive a shift to electric vehicles and to public transport (with public health benefits from reduced air pollution etc).

2. Does the NZ ETS need to be able to drive emissions removals from activities like forestry?

Answer: Yes, absolutely. Forests (especially indigenous forests) are a good way to remove carbon and have numerous co-benefits (eg, preventing erosion and protecting water quality).

3. If emissions reductions are to be prioritised in the NZ ETS, how could the scheme be changed to achieve this?

Answer: The priority for emissions reductions in NZ must be to bring agriculture fully into the ETS – with appropriate charges for methane and nitrogen emissions. (Eg, carbon charges on milk and ruminant meat, as well as on fertiliser). At present the design of the ETS is extremely unfair – as it ignores approximate half of the emissions (which are from agriculture).

Permanent forest category

1. What should be allowed to register as permanent forest?

Answer: Indigenous forests that are owned by the state and private owners – with a minimum size of some number of hectares (to avoid excessive administrative costs). It might be desirable for relevant government departments to get carbon credits given to them eg, if the Department of Conservation is able to buy up indigenous forest currently in private hands.

2. If the permanent forest category includes transition forests, how should transition forests be managed to: a. ensure they transition from exotic to indigenous, and b. reduce the financial risks to participants.

Answer: Putting a high ETS price on indigenous forest development – even at the start of the transition is probably desirable.

3. What rules and compliance regime will best maximise the positive outcomes from permanent forests, while minimising their risks?

Answer: Consideration could be given to requiring minimal levels of pest control to achieve the full carbon price for indigenous forests (eg, minimal ongoing controls on possums, deer, goats, and pigs). Possibly indigenous forests in watersheds used for urban water supplies could be given extra ETS pricing values.

