

PSGR

Physicians & Scientists for Global Responsibility

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Submission

Inquiry on the Natural and Built Environments Bill: Parliamentary Paper

Submitted to the:

Committee Secretariat
Environment Committee
Parliament Buildings
Wellington

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PSGR would welcome an opportunity to speak to this submission.

Physicians and Scientists for Global Responsibility New Zealand Charitable Trust (PSGR) work to educate the public on issues of science, medicine, technology (SMT). PSGR work to encourage scientists and physicians to engage in debate on issues of SMT, particularly involving genetics and public and environmental health.

[A] Introduction

1. The Natural and Built Environments Bill (NBEB) is envisaged as an overarching Act to manage air, soil, freshwater and the coastal marine area, and regulate land use and the provision of infrastructure.
2. The Draft Parliamentary Paper (DPP)¹ replicates the failings of the RMA and inadequately articulates the links between pollution, climate change, biodiversity loss and ecosystem degradation; and the obligation of the public sector to work across these spheres to and preserve ecosystem systems and protect intergenerational human and environmental health.
3. Aotearoa New Zealand is currently blind to the global pollution crisis.
 - ➔ Pollution is not strategically integrated at high level into overarching policy and regulation.
 - ➔ There is no integrated strategic science funding to articulate the industrial, agricultural and human drivers of pollution, beyond short term and precariously funded research activities.
 - ➔ The national narrative sets the protection of the environment as a linear process through the setting of ‘environmental limits’ rather than as an integrated cross-sector approach involving deep seated cultural change, and the promotion of both carrot and stick activities.
 - ➔ Environmental limits insufficiently encompass water health. Water is taonga, central to Māori life and required to be protected by the Crown according to the Treaty of Waitangi.^{2 3}
 - ➔ The media environment has not drawn attention to this complexity.
4. The problem of diffuse pollution remains the *bête noire* – the black beast - of New Zealand environmental policy, at every political juncture.
5. Jurisdictions which are ‘turning their elephants around’ – have adopted a strong interpretation of the precautionary principle at a high level in policy.

‘A key benefit of this stronger approach is that it does not function only as a shield – that is it is not merely a defence or enabling mechanism to justify a cautionary measure that a decision-maker decides to take. This stronger direction functions as a sword, requiring the decision-maker to take a cautionary approach in certain circumstances.’⁴

For efficient and effective legislation PSGR offers:

- ➔ It is noted the terms of this Inquiry refer to a focus on ‘efficiency’.
- ➔ Clearly the RMA became complex because it replaced ‘purpose’ with many absurd, costly and unnecessary (but specified) procedural requirements. In addition, arguably inappropriate RMA National Policy Statements began to set aside any fundamental role of local

¹ New Zealand Government. Natural and Built Environments Bill Parliamentary paper on the exposure draft (updated). C.32.

² Waitangi Tribunal, 1985, WAI 8 at 116

³ Waitangi Tribunal 1998 WAI 212 at 2.4

⁴ From a paper discussing pesticides regulation and the weakness of a precautionary approach in the HSNO Act. Iorns Magallanes, C. (2018). Permitting Poison: Pesticide Regulation in Aotearoa New Zealand. EPLJ, 456-490

government to protect its people – a policy to retreat from climate change effects, for example.

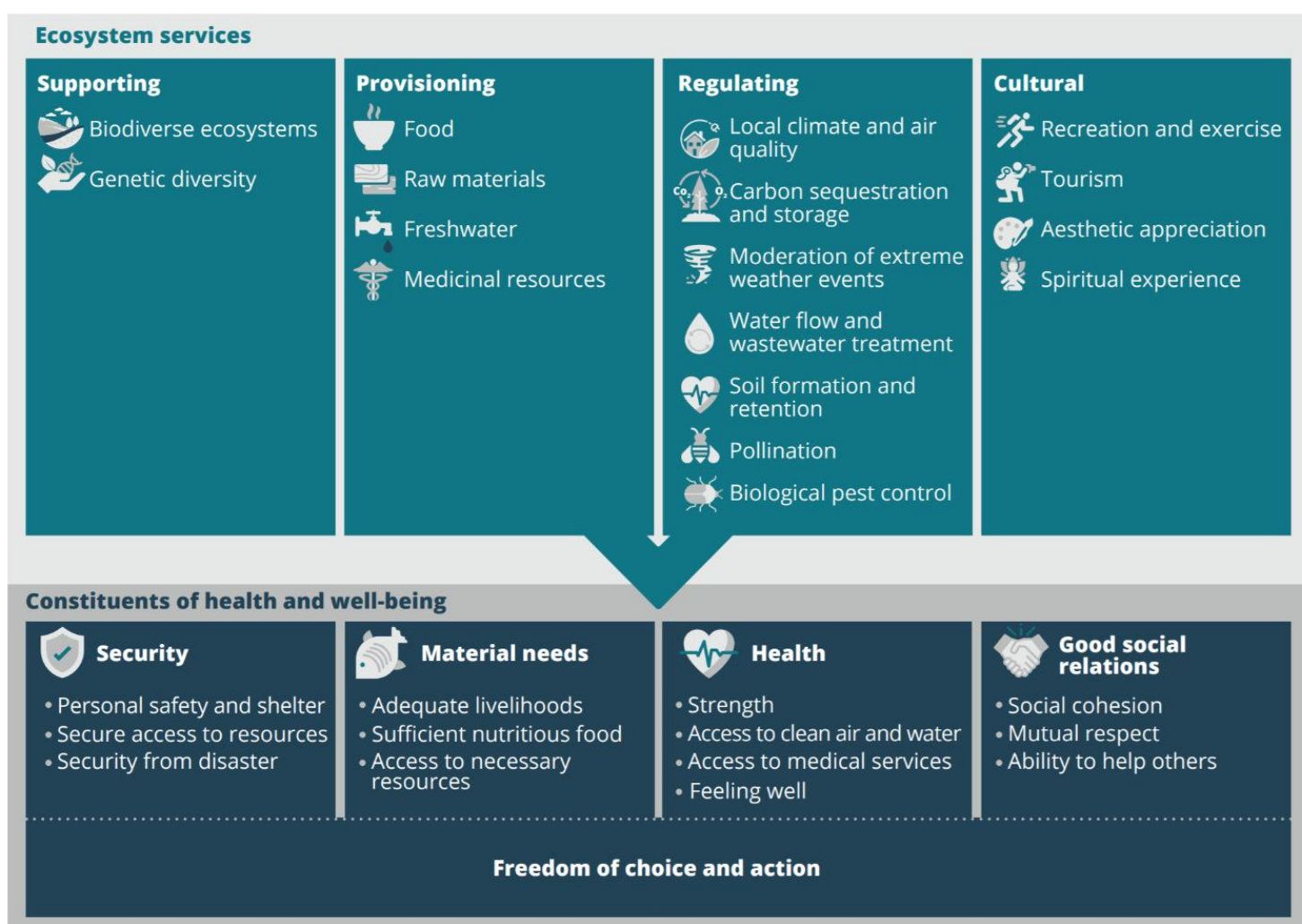
- ➔ While there was opportunity to strategically shift in the public interest, National Policy Statements and national bottom lines have been unable to identify and prioritise pollution.
- ➔ Yet compliance with policies and procedures by administrators became dominant - even when they were outdated, counter to statutory purpose and/or counter to the public interest.
- ➔ Inconvenient issues, such as pollution were buried, as the complicated legislation failed to draw a line of sight between polluter and polluted.
- ➔ Costly and inefficient ‘specified procedures’ can be ignored in this new legislation by a new requirement to identify all relevant considerations – the facts and the evidence – and then administrators can be required to set out their reasoning and the weight that they have accorded to all of the relevant factors – i.e. simple compliance with the principles of administrative law.
- ➔ Such a simple approach would set a basis for accountability, public evaluation and judicial reviews of decisions by administrators – and efficient administration.
- ➔ PSGR notes that transparency and accountability are integral to maintaining trust in policy and decision-making. Rigor is especially required in politically controversial environments, such as when identifying pollutants that are harmful to health.
- ➔ We recommend that elected members and public officials direct their gaze to the policy of countries who have embedded the precautionary principle at a high level in policy.
- ➔ Prior to further development of this policy, we ask that the Parliamentary Commissioner for the Environment undertakes a public review of the European framework to transition to a pollution free planet. See brief outline in [\[E\]](#)
- ➔ Suggestions relating to the DPP text in section [\[F\]](#) These are an immediate response to the issues in the paper but do not sufficiently address the context of this discussion.

Document Outline

6. Section [\[B\]](#) offers an interpretation of the problem of policy formulation in New Zealand
7. Section [\[C\]](#) briefly explains why pollution at a high level in policy is critical if human and environmental health are to be protected.
8. Section [\[D\]](#) briefly draws attention to the growing importance of pollution in international policy.
9. Section [\[E\]](#) briefly articulates the European experience and recommends that New Zealand turn to both European precedent, in terms of pollution regulation across chemicals, water basins and in air; as well as initiatives to encourage lower emission activities such as the Green New Deal.
10. Section [\[F\]](#) explains New Zealand’s political and scientific environment, and why this hampers the production of effective policy.

11. Section [G] attempts to submit to the Parliamentary Paper and offer suggestions, however due to the difficulty in illustrating the complexity of this issue, perhaps studies should be taken of the most advanced, transparent and jurisdictions in the world, before continuing with the drafting of this bill.

Example: European Environment Agency: Ecosystem Services and their constituents of well-being: ⁵



⁵ EEA 2019. Healthy environment, healthy lives: how the environment influences health and well-being in Europe. EEA Report No 21/2019. ISSN 1977-8449. Page 22.

[B] New Zealand's pollution crisis

Systemic Ignorance

12. 'Ignorance' appears a rather extreme term, however there is evidence it is an accurate moniker.
13. The Parliamentary Commissioner for the Environment (PCE) reported in 2019:

'To say that we have designed a national environmental reporting system would be to overstate its coherence. It has been more a case of cobbling together what we have to hand, trying to solicit the willing engagement of a wide range of stakeholders and putting the hat around to try to plug some of the many gaps. If there is one thing that stands out from the first cycle of reports, it is the extent of what we don't know about what's going on with our environment ... the blind spots...represent the unplanned consequences of a myriad choices over decades. Ours has been a passive system that has harvested whatever data is there and done the best it can to navigate what's missing.'

⁶
14. In 2020 the PCE stated: 'I discovered no shortage of high-level strategic statements supposed to inform research. But the way environmental research is funded is fragmented, and no single agency is responsible for ensuring that our investment in environmental research spans the range of knowledge gaps that need to be filled.'
⁷15. As PSGR have observed previously,⁸ Parliament, Cabinet, the drafters of legislation and the Ministry officials effectively dart around the issue of pollution, the 'wicked' problem of mixture effects, low level sub-chronic exposures, and continued degradation of New Zealand's soil, air and water.
16. Ignorance effectively creates the situation where pollution can be sustained. New Zealand publics engaged in trying to draw attention to pollution find few authoritative experts in this arena to inform submissions and reports, as the PCE explained. The absence of a quorum of experts who can speak publicly, further disables and marginalises advocates as they can be presented as having marginal views counter to the mainstream 'business' narrative. In effect, they lack political legitimacy to encourage funding of social, economic, legal and scientific development that can inform publics and strengthen and deepen policy to 'turn the elephant around'.
17. This situation may be at the heart of repeated legislative failure to address New Zealand's increasing levels of pollution and degradation - the dominant driver of biodiversity loss, and species extinction.
18. Ignorance, and deficient policy, can be at the heart of cascading effects in policy and regulation. PSGR's submission endeavours to illustrate the drivers and effects, albeit briefly, in section [F].
19. This 'empty space' contrasts with the substantial body of funding directed to climate change, genetics research and invasive species, while science funding for other drivers appears disabled by an absence of suitable schemes, particularly to look at long-term pollution flows.
20. Acknowledging pollution as a driver of biodiversity loss, ecosystem degradation and human and environmental health harms, can be declared at a high level in the parent Act in order to guide

⁶ Parliamentary Commissioner for the Environment. November 2019. Focusing Aotearoa New Zealand's environmental reporting system

⁷ Parliamentary Commissioner for the Environment. A review of the funding and prioritisation of environmental research in New Zealand

⁸ The Soil & Health Association and PSGR. 2019 Aotearoa/New Zealand Policy Proposals on healthy waterways: Are they fit for purpose. ISBN 978-0-473-50130-3

downstream regulation and resourcing. I.e. that scientific research, monitoring and enforcement that is critical for the protection of environmental and human health and wellbeing may be carried out.

Draft Parliamentary Paper

21. New Zealand's approach to environmental regulation is fragmented, ad hoc and poorly resourced: Prior to the RMA there were many problems:
 - a. A mass (mess) of legislation, a lot of rules;
 - b. Inadequate integration between land, air, and water
 - c. Inadequate monitoring
 - d. Enforcement was difficult.
22. The RMA had attempted to ameliorate all these problems but has not done so.⁹
23. The Draft Parliamentary Paper indicates is intended as an overarching integrated statute, however the problems of the RMA and its earlier iterations, look like they will be repeated.
24. The challenges of increasing pollution pressures, the drivers, and the challenges of research and monitoring have been insufficiently articulated.
25. These comingled drivers of environment and human health are unlikely to be strategically addressed via narrowly formed secondary regulation, without effective parent Act oversight.
26. PSGR recognises that the processes that have informed the present DPP, have neither outlined the issue of pollution as a planetary crisis nor discussed the politically precarious nature of identifying pollution.^{10 11 12} In these documents, pollution remains an ambiguous, opaque concept that is to be dealt with.

Pollution is a growing wicked problem in Aotearoa New Zealand

27. Freshwater status in New Zealand is increasingly uninhabitable for endemic species. As we have discussed previously,¹³ 'biodiversity in Aotearoa, as with much of the world, is in dramatic decline. Indigenous fish, whitebait (īnanga), eels (tuna) and crayfish (kōura) are in decline or under threat. New Zealand has some of the highest levels of threatened freshwater species in the world. Almost three-quarters of New Zealand's thirty-nine native fish species are threatened with extinction.'
28. New Zealand's freshwater standards measure 'attributes' which are measurable characteristics and form the 'national bottom lines' that are intended to protect freshwater. The only manmade

⁹ The case for RMA Reform. Sir Geoffrey Palmer QC Resource Reform Symposium 26 February 2018 Auckland

¹⁰ New Directions for Resource Management in New Zealand. Report of the Resource Management Review Panel June 2020.

¹¹ Meek. Comprehensive Review of the Resource Management System: Scope and Process Cabinet Environment, Energy and Climate Committee Minute of Decision. ENV-19-MIN-0036. 9oywkse4p 2019-06-28 10:19:25

¹² Parker D. Cabinet Paper. Comprehensive review of the resource management system: confirming the scope and terms of reference. 6byfenzqm 2019-11-12 14:22:36

¹³ The Soil & Health Association and PSGR. 2019 Aotearoa/New Zealand Policy Proposals on healthy waterways: Are they fit for purpose. ISBN 978-0-473-50130-3 p.2

pollutants measured are ammonia, nitrogen and phosphorous. No other pollutants other than these two ‘nutrients’ are included in the freshwater national standards.¹⁴

29. New Zealand lacks any form of consistent resourcing to identify freshwater and land-based pressures, and where issues are highlighted, regulators rarely take action. As an example, neonicotinoid insecticides imidacloprid, clothianidin and thiamethoxam have been banned for outdoor use in Europe.¹⁵ These insecticides are sprayed on vegetable, fruit, cereals and grass seed in New Zealand contaminating thousands of hectares of soil.¹⁶ New Zealand studies have found the banned neonicotinoids imidacloprid and clothianidin pollute soil¹⁷ and freshwater.¹⁸ However the NZEPA has not responded to the European ban, and information concerning the reassessment since September 2019 can be located. In the meantime, new commercial iterations of these banned substances continue to be authorised.¹⁹
30. Polluted environments make it harder for endemic species to survive. Pollution – including at low sub-lethal levels, may be a greater driver of species decline²⁰ than climate change in temperate climates such as New Zealand. For example, almost half of insect species are rapidly declining and a third of insects are threatened with extinction. The drivers are, in order i) habitat loss and conversion to intensive agriculture and urbanisation; ii) pollution, mainly that by synthetic pesticides and fertilisers; iii) biological factors, including pathogens and introduced species; and iv) climate change.²¹
31. Ecosystems are much more sensitive to the effects of persistent and accumulating pollution, particularly from non-natural processes, i.e., anthropogenic (human) activity, than historically acknowledged, and in many instances, the impact from climate change can be demonstrated to be secondary (contributing to cascading effects and tipping points).²²
32. Policy has not embedded mechanisms that clarify how officials will iterate these sensitive effects, transparently monitor emissions, and most particularly recognise the pressure of low levels of pollutant mixtures – or cocktails.²³

Environmental Limits

33. The DPP Purpose text states that the purpose of the Act (protection of the environment) will be achieved by merely complying with environmental limits.

¹⁴ New Zealand Government. National Policy Statement for Freshwater Management 2020 August 2020

<https://environment.govt.nz/assets/Publications/Files/national-policy-statement-for-freshwater-management-2020.pdf>

¹⁵ Foote N. May 6, 2021. EU Court backs Commission’s ban on controversial neonicotinoid pesticides. Euractiv.

¹⁶ NZEPA September 2019. Neonicotinoids in New Zealand. https://www.epa.govt.nz/assets/Uploads/Documents/Hazardous-Substances/Neonicotinoids_in_NZ_Call_for_info_summary.pdf

¹⁷ University of Auckland. 2019. Bee-threatening soil residue up to 14x ‘safe’ levels – study.

<https://www.auckland.ac.nz/en/news/2019/11/29/bee-threatening-soil-residue-up-to-14x--safe--levels---study.html>

¹⁸ Hageman et al 2019. Current- Use Pesticides in New Zealand Streams: Comparing Results from Grab Samples and Three Types of Passive Samplers. *Environmental Pollution*, 254, 112973. <https://doi.org/10.1016/j.envpol.2019.112973>

¹⁹ See for example <https://www.epa.govt.nz/assets/FileAPI/hsno-ar/APP202489/2069e828a2/APP202489-APP202489-Decision-Final.pdf>

²⁰ Moore et al 2021. Laboratory-Based Comparison for the Effects of Environmental Stressors Supports Field Evidence for the Relative Importance of Pollution on Life History and Behavior of the Pond Snail, *Lymnaea stagnalis*. *Environ. Sci. Technol.* 2021, 55, 8806–8816

²¹ Sánchez-Bayo, F., & Wyckhuys, K. 2019. Worldwide decline of the entomofauna: A review of its drivers. *Biological Conservation*, 8-27.

²² Scott D. Application of the Precautionary Principle During Consenting Processes in New Zealand: Addressing Past Errors, Obtaining a Normative Fix and Developing a Structured and Operationalised Approach (LLM Thesis, Victoria University of Wellington, 2016).

²³ EEA 2013. Late lessons from early warnings: science, precaution, innovation. Report No. 1/2013. doi:10.2800/73322

34. It is infeasible that a narrow range of environmental limits will sufficiently be protective, when the full range of environmental stressors from industrial, agricultural and urban use are considered.
35. New Zealand environmental limits do not conventionally include individual chemicals, nor chemical classes, as can be observed in the freshwater attributes. National standards at this stage revolve around three nutrient pollutants and (important) ecological parameters. In relation to freshwater, it appears that the ‘national bottom lines’ for freshwater may constitute the ‘environmental limits’.
36. This renders inaccurate the claim that the purpose of the future Act would be achieved by achieving stated environmental limits.
37. This demonstrates that the New Zealand DPP drafters just ‘haven’t got it’. Environmental limits would not capture neonicotinoid insecticides, nor persistent plastics, industrial solvents, heavy metals and pharmaceutical pollutants that are emitted through industrial use and in biosolids (sewage sludge).
38. The DPP Purpose text places an emphasis on ‘environmental limits’ when New Zealand’s capacity to establish environmental limits appears heavily dictated by firstly, powerful industry players, secondly, an absence of a scientific community that can articulate the issue without facing considerable reputational risk, such as Mike Joy has endured.
39. There is an opportunity to monitor and regulate ‘environmental limits’ but importantly, establish a ‘Watchlist’ for contaminants, to compulsorily and transparently monitor a broad spectrum of industrial, agricultural and urban pollutant levels across regions and ensure this information is recorded on StatsNZ for public access.²⁴
40. The following critical elements of sound chemicals and waste management are unlikely to be addressed in policy in such a way that is cohesive, transparent and accountable, and include:²⁵
- a. Legal frameworks that address the life cycle of chemicals and waste;
 - b. Monitoring and assessing the impacts of chemicals on health and the environment;
 - c. Relevant enforcement and compliance mechanisms;
41. It is also evident that core activity areas, essential for the sound management of chemicals and waste are under-resourced and insufficiently integrated across institutions:
- a. Establish and strengthen national legislative and regulatory frameworks for chemicals and waste: improving capacity to address the basic elements of the sound management of chemicals and waste and encouraging regional cooperation.
 - b. Promote information access: increasing the accessibility of relevant information and making it understandable for all levels of society.
 - c. Draw back from outside sub-contracting and contracting measures²⁶ that effectively hide contract pricing and polluting activities and build these activities into council processes, as

²⁴ For example [European Union watch list https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020D1161&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020D1161&from=EN)

²⁵ SAICM 2015 Overall orientation and guidance for achieving the 2020 goal of sound management of chemicals. Reiterated in the UNEP Global Chemicals Outlook II paper.

²⁶ Mazzucato M. Mission Economy. A Moonshot Guide to Changing Capitalism. Allen Lane 2021

public Official Information Act requests cannot expose the degree to which these activities prevent or disempower non-polluting innovation.²⁷

42. New Zealand appears to reflect deficiencies observed by the UNEP: ‘many other countries still lack effective national systems, including basic regulatory capacity and effective institutional structure. Such uneven progress puts vulnerable and marginalized groups at particular risk’.²⁸
43. Stakeholder engagement often excludes civic groups.
 - a. Engagement ignores the barriers many groups face in participating, despite a desire to do so.
 - b. Where industry funding ensures industry stakeholders will be ‘at the table’, without resourcing and support, citizens will be under-represented.
 - c. Industry participation may be implicitly and explicitly encouraged through ongoing communications between governing bodies and industry, smoothing consultative processes.
 - d. Equal participation as a stakeholder ‘at the table’ can be conditional upon how amenable invited stakeholders are to the decision at hand.
44. The low profile of pollution in the public sphere, and public focus on climate change urgency works to perpetuate feedback loops of inferior policy, underfunding and ignorance on this issue. Climate change and pollution jointly contribute to planetary degradation and the erosion of essential resources.
45. The new DPP appears designed to perpetuate the problems of the past.
46. In many ways European and best practice policy emphasising systemic interdependence, the fragility of systems and the requirement that a firmer application of the precautionary principle may more appropriately reflect Māori values and limits.
47. Ecosystem health is identified by multiple complex factors, such as could be seen in mātauranga Māori and in the maramataka. Linear environmental limits, particularly if they are dependent on the outcome of parochial, narrowly defined and debated political contestation may not be able to protect Aotearoa New Zealand’s land, our rivers and inhabitants.

Looking to Europe

48. European law for two decades has addressed pollution in a series of legislative and regulatory measures. The effect is that the: ‘The European Union already has one of the most comprehensive and protective regulatory frameworks for chemicals, supported by the most advanced knowledge base globally. This regulatory framework is increasingly becoming a model for safety standards worldwide’²⁹

²⁷ Eg. In Auckland Council Annual rolling costs, where pesticide spraying contractors sub-contract to non-pesticide spraying sub-contractors using non-chemical methodologies, remain unknown and hidden by commercial confidentiality. This prevents more rapid transition to non-chemical practices.

²⁸ United Nations Environment Programme, 2019. Global Chemicals Outlook II From Legacies to Innovative Solutions: Implementing the 2030 Agenda for Sustainable Development. <https://www.unep.org/resources/report/global-chemicals-outlook-ii-legacies-innovative-solutions> p.641

²⁹ European Commission 2020. Chemicals Strategy for Sustainability. Towards a Toxic-Free Environment. COM(2020) 667. Communication from the Commission to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions.

49. Stricter legislation in Europe and the precautionary principle as a legislative instrument, compliments guides and drives new policy development. Europe's 'Green New Deal' growth strategy includes European legislation aims for 'zero pollution' and to minimise pollution. and the connected obligation to resource for related monitoring, regulation and compliance. The Green New Deal recognises that climate change and pollution are dual drivers that threaten planetary resilience.³⁰
50. Europe's integrated stance contrasts strongly with shallower approaches to policy and law relating to environmental and human health, illustrated across the recently colonised English-speaking nations. While no state is perfect, high-income English-speaking nations are much more reluctant - when there is evidence of harm from industrial activities, but the policy remains uncertain - to take action in favour of public and environmental health.

[C] Pollution: the defining issue of the 21st Century

51. Pollution is *the* accelerator of environmental and human health risk in the twenty-first century:
- a. Scientists have established 9 planetary boundaries³¹ – where over-reach threatens the safe operating space for humanity – and the potential to achieve our sustainable development goals – the goals set by the United Nations to encourage the protection of human and environmental health.
 - b. Anthropogenic pollution is a planetary boundary. Novel-manmade substances (anthropogenic pollutants) are identified as a threat. This group includes synthetic organic pollutants, engineered materials/organisms, heavy metal compounds (mobilised by anthropogenic activities) and radioactive materials.
 - c. Chronic sub-lethal pollution drives disease, disorder, infertility and degradation. Individual or mixture pollutant exposures creates the conditions for disease, disorder, delay and infertility. These pressures encourage often subtle and unrecognised biological tipping points via processes such as oxidative stress and/or endocrine disruption; and creating dysbiosis where critical but vulnerable organisms are unable to compete with emissions-tolerant species.³²
 - d. Effective policy will not only address source point emissions (such as council waste-water containing endocrine disruptors, or industrial discharges), but will encompass crecive diffuse emissions from multiple sources, including from industry, agriculture, rubbish dumps, and biosolids (sewage sludge) on farmland.
 - e. The difficulty and complexity of this task can be assisted by drawing on authoritative jurisdictions that are already some two or three decades ahead of New Zealand

³⁰ European Commission 2021. Pathway to a Healthy Planet for All EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'. COM(2021) 400. Communication from the Commission to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions.

³¹ Steffen, W., Richardson, K., Rockstrom, J., Cornell, S. E., Fetzer, I., Bennett, E. M., . . . Persson, L. M. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*

³² Scott D. Application of the Precautionary Principle During Consenting Processes in New Zealand

- f. Public interest, independent scientific research to explore harm from sub-lethal pollution, the potential for mixture or cocktail effects, the risks from new novel technologies is drastically under-resourced in New Zealand.
 - i. Anthropogenic pollutants can have sub-lethal effects even at distances far from the emission source because they bioaccumulate, exhibiting:
 1. Persistence;
 2. Mobility across scales (long-range transport) with consequent widespread distribution;
 3. Potential impacts on vital earth system processes of sub-systems.
- g. However anthropogenic pollutants can interfere with and destabilise other planetary boundaries:
 - i. Freshwater: Pollution severely impacts freshwater access as drought rendering freshwater harmful to environmental and human health (unpotable);
 - ii. Land use: Aggregated impacts of pesticides and fertilisers to soil can degrade microbiological life, reduce the soil fertility, bind essential nutrients, and increase the potential for disease and disorder in agricultural produce and surrounding systems;
 - iii. Nitrogen and phosphorous bioaccumulation predominantly occur from nutrient fertilisers, however these fertilisers include heavy metals and other synthetic chemical pollutants;
 - iv. Atmospheric aerosol loading from atmospheric pollution and the problem of long-range atmospheric transport. Pesticides and industrial pollutants are found in isolated regions such as in Arctic glaciers. Plant-microbe interactions can be degraded by pollutants, establishing the environmental conditions for plant diseases.
 - v. Ocean acidification is not the only threat to marine life, plastic waste, industrial pollutant runoff combines to reduce the safe operating space for marine ecologies.
- h. Anthropogenic pollutants include carbon and methane as greenhouse gas emissions, and which together with the forms of pollution identified above, form an existential threat to the future of earth;

[D] International Direction on Pollution

52. A brief literature review of the international documentation is necessary. While New Zealand base much policy around OECD literature, it must be noted that the OECD is trade-facing, and as such, will have a 'complex' relationship with pollution.
53. The global burden of disease and premature death related to environmental pollution is already three times greater than that from AIDS, tuberculosis and malaria combined.³³

³³ EEA 2019. The European environment — state and outlook 2020. Knowledge for transition to a sustainable Europe. Denmark. P.10

54. The 1987 United Nations Brundtland Report³⁴ informed the development of the RMA.
- a. The 1987 Report articulated this problem: ‘other great institutional flaw in coping with environment/development challenges is governments' failure to make the bodies whose policy actions degrade the environment responsible for ensuring that their policies prevent that degradation’
 - b. ‘The existence of such agencies gave many governments and their citizens the false impression that these bodies were by themselves able to protect and enhance the environmental resource base. Yet many industrialized and most developing countries carry huge economic burdens from inherited problems such as air and water pollution, depletion of groundwater, and the proliferation of toxic chemicals and hazardous wastes. These have been joined by more recent problems - erosion, desertification, acidification, new chemicals, and new forms of waste - that are directly related to agricultural, industrial, energy, forestry, and transportation policies and practices.’
55. The United Nations, as well as the European Union, have dedicated an enormous literature to articulating the growing and existential threat pollution holds for planetary resilience. This literature remains outside New Zealand public narrative, which remains parochial and captured to narrow messaging.
- a. New Zealand is a founding member of the United Nations. However there is little connection between overarching legislation in New Zealand, and U.N. messaging directing attention to the pervasive and growing problem of environmental pollution, and the requirement that this is managed at a high level in policy.
 - b. New Zealand endorsed the 5 key documents resulting from the 1992 United Nations Conference on Environment and Development (UNCED, or 'The Earth Summit')
 - i. Legally binding: Convention on Biological Diversity (1993)³⁵. The convention did not mention pollution but inferred that human activities leading to the loss of biodiversity should be recognised and controlled:
 1. Recognised the urgent need to develop scientific, technical and institutional capacities to provide the basic understanding upon which to plan and implement appropriate measures;
 2. It was essential to conserve - anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at source;
 3. Recognised that protective measures can be taken in absence of full scientific certainty;
 4. Noted that a fundamental requirement for the conservation of biological diversity is the in-situ conservation of ecosystems and natural habitats;

³⁴ United Nations 1987 Report of the World Commission on Environment and Development Our Common Future

³⁵ United Nations Convention on Biodiversity. <https://www.cbd.int/doc/legal/cbd-en.pdf>

5. Recognised that indigenous communities often contained traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components.
 - ii. Legally binding: Framework Convention on Climate Change.
 1. The Parliamentary Paper recognises climate change in the DPP bill text (8 Environmental outcomes) along with ‘natural hazards’. However, there is no mention of protection from pollutants, or of protection of biological diversity.
 - iii. Not legally binding: Rio Declaration on Environment and Development, Agenda 21, and the Forest Principles. The Rio Declaration included the recognition of a right to inter-generational equity; the need for precaution when there was an absence of full scientific certainty where harm may occur, and the polluter pays principle
- c. New Zealand is a signatory to the 1992 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal 1989 which includes a commitment to reducing source point pollution;
- d. 2016 Report to the U.N. Human Rights Council emphasising the vulnerability of children.³⁶
 - iv. The Special Rapporteur noted:

‘Childhood exposure is a systemic problem everywhere. All around the world, children are born with dozens, perhaps hundreds, of hazardous substances in their bodies. This is leading to what doctors are referring to as a “silent pandemic” of disease and disability affecting millions during childhood and later in life. For a number of reasons, children are left without access to an effective remedy or justice for the harms of toxics and pollution, which enables perpetrators to remain unaccountable. Prevention of exposure is the best remedy. The best interests of the child must be a primary consideration of States in protecting children’s rights to life, survival and development, physical integrity, health, being free from the worst forms of child labour, and also to safe food, water and housing, and other rights implicated by toxics and pollution that are enshrined in the Convention on the Rights of the Child. *States have a human rights obligation and businesses a corresponding responsibility to prevent childhood exposure to toxic chemicals and pollution.*’
- e. In 2006 the Strategic Approach to International Chemicals Management (SAICM) was established to steward a voluntary global framework, designed to achieve the sound management of chemicals through their life-cycle so that by 2020 chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment.³⁷ The Strategy realised:
 - i. Current state-led policy frameworks were inadequate;
 - ii. Improved scientific understanding of role and behaviour of substances were central to reducing risk;

³⁶ U.N. General Assembly. Human Rights Council 33rd session. Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes. A/HRC/33/41

³⁷ 2006 Overarching Policy Strategy. https://saicmknowledge.org/sites/default/files/publications/Overarching_Policy_Strategy.pdf

- iii. Improvement was required to ‘prevent the adverse effects of chemicals on the health of children, pregnant women, fertile populations, the elderly, the poor, workers and other vulnerable groups and susceptible environments’.
- iv. While SAICM had admirable goals, it largely failed to exercise the soft power a voluntary instrument relies on to make an impact³⁸
 - 1. As a voluntary instrument – soft power was toothless and sustained a relatively low profile;
 - 2. Shortage of funding reduced SAICM capacity: ‘if compared to the economic turnover of the chemicals and pharmaceutical industry of about 5.2 trillion US\$ per year, this low level of funding becomes even more striking.’³⁹
 - 3. Despite chemical industry participation, downstream users were absent from meetings;
 - 4. The approach was positioned as an environmental rather than a health-based issue.
- v. A 2018 report written for the German Environment Agency appears to have set the direction for increased WHO/UNEP leadership on pollution.⁴⁰
- f. UNEP 2019 Global Chemicals Outlook II⁴¹ document was released, stating [that urgent action](#) was needed to tackle chemical pollution. The document highlighted that
 - i. The chemical industry is powerful, valued at over 5 trillion USD.
 - ii. Global production is set to double by 2030;
 - iii. Hazardous chemicals and other pollutants (e.g. plastic waste and pharmaceutical pollutants) continue to be released in large quantities and are ubiquitous contaminants of humans and the environment;
 - iv. The benefits of preventative action to protect human and environmental health have been estimated to be tens of billions of USD;
 - v. Treaties and voluntary instruments are inadequate; and there are legislation gaps;
 - vi. Resourcing has been inadequate and not addressed knowledge gaps;
 - vii. Drivers of change can be scaled up through enabling policies to promote green and sustainable chemistry.

³⁸ Simon et al 2018. Sustainability in international chemicals management – Further development of the Rio process post 2020. On behalf of the German Environment Agency. Project No. (FKZ) 3715 65 402 0

³⁹ Simon et al 2018 page 13.

⁴⁰ Simon et al 2018. Sustainability in international chemicals management – Further development of the Rio process post 2020

⁴¹ United Nations Environment Programme, 2019. Global Chemicals Outlook II From Legacies to Innovative Solutions: Implementing the 2030 Agenda for Sustainable Development. <https://www.unep.org/resources/report/global-chemicals-outlook-ii-legacies-innovative-solutions>

- g. The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) recognises that land degradation and biodiversity loss costs the world ten per cent of GDP each year in lost ecosystem services.
- h. UN 2019 resolution to work towards a [pollution free planet](#)⁴². The resolution alerted people to:
 - i. The continued relevance and importance of the Rio Declaration.
 - ii. Increasing pollution and the fact that women and girls are disproportionately affected.
 - iii. The tens of thousands of untested, unlabelled and untracked chemicals in the environment.
 - iv. The links between pollution, climate change, biodiversity loss and ecosystem degradation.
- i. United Nations 2020: Making peace with nature is the defining task of the 21st century.⁴³ Key messages of this document emphasising polycentric governance included:
 - i. The development of the goals, targets, commitments and mechanisms under the key environmental conventions and their implementation need to be aligned to become more synergistic and effective.
 - ii. Economic, financial and productive systems can and should be transformed to lead and power the shift to sustainability
 - iii. Recognising that GDP is chronically dependent on the provision of healthy ecosystem services.

[E] The European Environment Action Programme – 2020-2030

1. The European Union has led international efforts to address pollution and degradation. The Report that informed the UN Global Outlook, was written on behalf of the German environment agency. The capacity of Europe to more effectively utilise the precautionary principle to make policy decisions, has enabled Europe to move more swiftly and ban many harmful chemicals that remain in the New Zealand environment today.
2. The European Environment Agency (EEA), formed in 1993 has been crafting policy and informing debate that is light years ahead of New Zealand action.
3. The 2013 European Environment Agency book *Late lessons from early warnings*⁴⁴ addressed such topics as mobile phone use, endocrine disruption, cocktail effects from chemicals and the potential for intellectual property rights granted to genetically modified crops to close down rather than open

⁴² United Nations Environment Assembly of the United Nations Environment Programme Third session Nairobi, Ministerial declaration of the UN Environment Assembly at its third session. Towards a pollution-free planet. UNEP/EA.3/HLS.1

⁴³ United Nations Environment Programme (2021). *Making Peace with Nature: A scientific blueprint to tackle the climate, biodiversity and pollution emergencies*. Nairobi. <https://www.unep.org/resources/making-peace-nature>

⁴⁴ EEA 2013. *Late lessons from early warnings: science, precaution, innovation*. Report No. 1/2013. doi:10.2800/73322

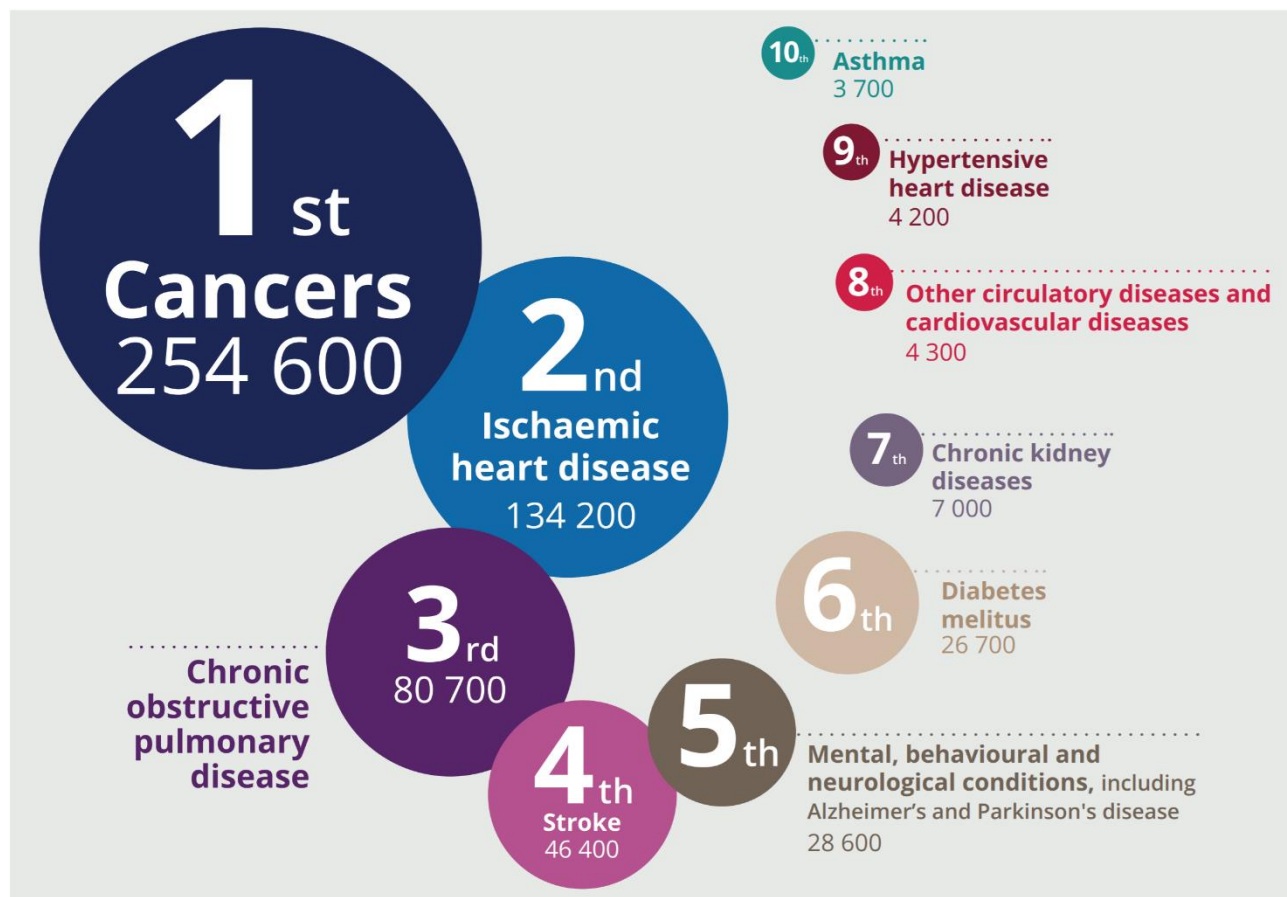
up innovation potential. It is difficult to envisage such a document being produced in New Zealand in 2021.

4. Europe's REACH regulation, adopted in 2006, expressly incorporated the precautionary principle. REACH prohibits the manufacture or sale of any substance in the EU that has not been registered with the European Chemical Agency in accordance with the regulation. While REACH is not perfect, it far exceeds anything comparable in New Zealand.
5. The precautionary principle has underpinned European Food Safety Authority decisions to ban and regulate many chemicals released into New Zealand's environment today. The long banned chemical paraquat can be applied to our animal feed crops. Specific insecticides in the neonicotinoid class are not authorised for release into the European environment, while in New Zealand these same insecticides are applied on grass and arable crop seed, sewn across hundred of thousands of acres.
6. Despite long-term action, some of the most consistently progressive action globally, the European Commission recognises that 'biodiversity loss and ecosystem services degradation, climate change and its impacts, and unsustainable use of resources, pollution and associated risks to human health and well-being, nature, ecosystems, and the economy all require decisive further action in the EU and globally'.
7. While European Commission decisions remain contested, there is a high degree of democratic inclusivity that remains unacknowledged.⁴⁵ This inclusivity, such as via decision-making through referendum processes for individual countries, have ensured that European publics debate issues and transition – albeit roughly – along with the Commission. By contrast, the U.K.s decision-making through parliamentary decision-making (as representative democracy) acted to keep the public outside debates, which prevented complex issues being publicly debated over to ensure political licence for change. This created the conditions of ignorance that resulted in Brexit.
8. As a consequence, the United Kingdom domestic and foreign policy will become much more vulnerable to economic and political manipulation from heavily resourced industry and multinational pressure, much as New Zealand is currently.
9. Europe's solid progress over decades, stands in contrast to New Zealand's small-state political vulnerability that is amplified by short term election cycles and narrowly framed public discourse.
10. Most recently the EEA⁴⁶ reiterated that addressing knowledge gaps in policy and monitoring between land, soil and chemicals. The EEA does not shy away from articulating various forms of pollution – such as air pollution, chemical pollution and industrial pollution. Waste threats are also identified, such as e-waste and plastic waste.
11. In 2019 the EEA released a major paper communicating the interrelatedness of human and environmental health.⁴⁷ The following diagram, illustrates top 10 non-communicable diseases causing deaths attributable to the environment in high income European countries in 2012:

⁴⁵ Elles J. Fiction, Fact and Future. The Essence of EU Democracy. Haus Publishing 2019

⁴⁶ EEA 2019. The European environment — state and outlook 2020. Knowledge for transition to a sustainable Europe. Denmark. P.10

⁴⁷ EEA 2019. Healthy environment, healthy lives: how the environment influences health and well-being in Europe. EEA Report No 21/2019. ISSN 1977-8449



12. In 2020 Europe released its 8th Environment Action Programme to 2030. The EAP acts as a high level and strategic tool to guide environmental policy. It also ‘functions as a planning tool, providing environment policy continuity – including with its long-term vision, accountability and predictability for European Commission actions, in addition to having a positive influence on mainstreaming and streamlining environmental policy’. The policy aims to ‘increase coherence and synergies between actions across all level of governance by measuring progress towards environmental and climate objectives in an integrated way’. Europe pursues a suite of strategic initiatives, designed to reduce waste and pollutant emissions: the Circular Economy Action Plan; a Biodiversity Strategy and Farm to Fork Strategy.
13. The Farm to Fork strategy places safe, healthy food at the centre of transition, and emphasises the ‘need to reduce dependency on pesticides and antimicrobials, reduce excess fertilisation, increase organic farming, improve animal welfare, and reverse biodiversity loss’.⁴⁸
14. The European Commission recognises that not only do the public generally support restrictions on pollution, the economic case for pollution reduction is clear.⁴⁹

⁴⁸ European Commission 2020. Farm to Fork Strategy. For a fair, healthy and environmentally friendly food system. https://ec.europa.eu/food/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf

⁴⁹ European Commission 2021. Pathway to a Healthy Planet for All EU Action Plan: ‘Towards Zero Pollution for Air, Water and Soil’. COM(2021) 400. Communication from the Commission to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions. [Policy paper](#) and [Annex](#)

15. By contrast – Aotearoa New Zealand’s ‘environmental limits’ place environment within a context of policing a small group of defined parameters which, due to the unfortunate reality that tens of thousands of pollutant emissions, is unrealistic.
16. Europe’s integrated approach to controlling pollution includes an overarching action plan to guide all relevant European Union policies, in order to maximise synergies. ‘To steer the EU towards the 2050 vision of a Healthy Planet for All, this action plan sets key 2030 targets to speed up pollution reduction.
17. The zero pollution targets for 2030. Under EU law, Green Deal ambitions and in synergy with other initiatives, by 2030 the European Union should reduce:
 - by more than 55% the health impacts (premature deaths) of air pollution;
 - by 30% the share of people chronically disturbed by transport noise;
 - by 25% the EU ecosystems where air pollution threatens biodiversity;
 - by 50% nutrient losses, the use and risk of chemical pesticides, the use of the more hazardous ones, and the sale of antimicrobials for farmed animals and in aquaculture;
 - by 50% plastic litter at sea and by 30% microplastics released into the environment;
 - significantly total waste generation and by 50% residual municipal waste
18. An example of Europe’s integrated approach can be seen in the Summary of past trends, outlooks and prospects table on the following page.⁵⁰

⁵⁰ EEA 2019. The European environment — state and outlook 2020. Knowledge for transition to a sustainable Europe. Denmark. Page 12.

TABLE ES.1 Summary of past trends, outlooks and prospects of meeting policy objectives/targets

Theme	Past trends and outlook		Prospects of meeting policy objectives/targets		
	Past trends (10-15 years)	Outlook to 2030	2020	2030	2050
Protecting, conserving and enhancing natural capital					
Terrestrial protected areas					
Marine protected areas					
EU protected species and habitats					
Common species (birds and butterflies)					
Ecosystem condition and services					
Water ecosystems and wetlands					
Hydromorphological pressures					
State of marine ecosystems and biodiversity					
Pressures and impacts on marine ecosystems					
Urbanisation and land use by agriculture and forestry					
Soil condition					
Air pollution and impacts on ecosystems					
Chemical pollution and impacts on ecosystems					
Climate change and impacts on ecosystems					
Resource-efficient, circular and low-carbon economy					
Material resource efficiency					
Circular use of materials					
Waste generation					
Waste management					
Greenhouse gas emissions and mitigation efforts					
Energy efficiency					
Renewable energy sources					
Emissions of air pollutants					
Pollutant emissions from industry					
Clean industrial technologies and processes					
Emissions of chemicals					
Water abstraction and its pressures on surface and groundwater					
Sustainable use of the seas					
Safeguarding from environmental risks to health and well-being					
Concentrations of air pollutants					
Air pollution impacts on human health and well-being					
Population exposure to environmental noise and impacts on human health					
Preservation of quiet areas					
Pollution pressures on water and links to human health					
Chemical pollution and risks to human health and well-being					
Climate change risks to society					
Climate change adaptation strategies and plans					
Indicative assessment of past trends (10-15 years) and outlook to 2030			Indicative assessment of prospects of meeting selected policy objectives/targets		
	Improving trends/developments dominate	Year		Largely on track	
	Trends/developments show a mixed picture	Year		Partially on track	
	Deteriorating trends/developments dominate	Year		Largely not on track	

Note: The year for the objectives/targets does not indicate the exact target year but the time frame of the objectives/targets.

[F] New Zealand's Pursuit of Innovation & Economic Growth

56. PSGR recognise there has existed, a longstanding tacit agreement regarding the 'bringing to the attention of pollution' in Aotearoa. This recognition is that major NGOs and institutions seeking to protect the environment, cannot draw attention to the persistent problem of the drivers behind climbing environment pollution levels, if they wish to be sit at the government table, or have a continued presence in New Zealand's media environment.
57. We also recognise the longstanding tacit agreement that scientific research into pollution levels sits outside current science policy aims. The precarious nature of funding means that few scientists have the courage to 'make a fuss' over the drivers of degradation and pollution.
58. PSGR echoes others in reiterating that the pathways that can protect human and environmental health in Aotearoa are a function of the fragility (and expense) of pathways that enable citizens to hold polluters and regulators accountable for eroding their interest in the health of the environment and ultimately their own health.
59. Weak policy positions are driven by problematic political lobbying, and election financing. These influences perpetuate the cycle of weak legislation and deficient approaches to monitoring and regulation and protection of health. The counterveiling power of industry organisations and large private sector organisations exert accumulative, and sustained influence in New Zealand's political, legal, trade and media environment, and there is little capacity for the public sector, the demos to contest such power.
- a. The financial clout of these organisations, and their capacity to engage in sustained legal contestation, without public sector capacity to contest, has shifted policy, legislation and regulation to weight decision-making in a narrative that directly benefits corporate and industrial goals.
 - b. An increasing measure of these entities are offshore owned. Their profits are not only a function of extraction of New Zealand resources and downwards pressure on wages, but their engagement in policy makes it evident that they push for weak regulations that enable them to 'socialise the costs' while increase their private profits.
60. New Zealand has adopted the position of other recently colonised Anglo-nations in its approach to science – that technological and economic growth will result in a trickle-down effect of wellbeing.
61. The inability to articulate a balance between environmental and human and economic health is a legacy effect of institutional, privatised (New Public Management) narrative that has severely reduced the potential for publicly owned institutions including utilities, and government sectors to appropriately cost in long term liabilities or externalities that potentially degrade human and environmental health.⁵¹
62. The consequence, as Mazzucato has articulated, is that expertise has been contracted out, leading to short-term planning, eroding institutional expertise that could more accurately engage in long-term forecasting and planning.

⁵¹ Mazzucato M. Mission Economy. A Moonshot Guide to Changing Capitalism. Allen Lane 2021

63. Universities have adopted the New Public Management (corporate) model, and funding is connected to the capacity for the research to inform economic growth, and intersect with industry and business opportunities.
64. Management of drinking water, waste-water and biosolids treatments plants having short term budgeting requirements;
65. Science for public good human and environmental health research is precarious.
- a. Thirty years of government funding that has steered science away from basic science research, including research that might draw attention to the long-term risk of sustained pollution; with the consequences that a relatively small group of scientists now occupy this space.
 - b. The science enterprise is positioned as pursuing ‘innovation’ and ‘excellence’. Innovation draws on the OECD definition, of innovation that produces a good, service or new business process. Innovation in the context of science production, excludes public good research that does not produce a good or a service, but from which knowledge is drawn that will serve a public purpose.⁵² Excellence in science is more easily determined for applied applications in established disciplinary areas than uncertain, interdisciplinary complexity science.^{53 54}
 - c. Scientific funding for ‘non-innovative’ basic science research continues to be precarious⁵⁵, and much more-weakly resourced than innovation research (for example to develop technologies with I.P. potential) and who are unlikely, due to funding precarity, to engage in controversial public political debate (It is well known that Mike Joy’s engagement in nitrate pollution has been detrimental to his academic career);
 - d. This narrative places a great deal of basic and interdisciplinary uncertain and exploratory science researching the interplay of biological health and human technologies (including pollution), outside most funding schemes.
66. The erosion of institutional expertise and the continued short-term funding and austerity narrative⁵⁶ encourages cascading errors in policy development that establishes the conditions of sustained ignorance that dually erodes or prevents regulatory action. However this not only perpetuates pollution. It fails to drive, or nurture the conditions for the development of truly innovative technologies that address long term ‘wicked’ problems. The effect is protectionist, benefitting polluting industries and perpetuating an impotent short-termist public sector.
67. Three examples of how conventional structures prevent the prevention of polluting activities, producing a cascading effect of political, economic and scientific ignorance:
- a. *Biosolids – the new organic matter, but only in New Zealand.*

⁵² OECD. (2018). Oslo Manual. Guidelines for collecting, reporting, and using data on innovation. OECD Publishing.

⁵³ Ferretti, F., Pereira, A., Vertesy, D., & Hardeman, S. (2018). Research excellence indicators: time to reimagine the ‘making of’? *Science and Public Policy*, 45(5), 731-741.

⁵⁴ Moore, S., Neylon, C., Eve, M., O'Donnell, D., & Pattinson, D. (2016). “Excellence R Us”: university research and the fetishisation of excellence. Palgrave Communications. doi: 10.1057/palcomms.2016.105

⁵⁵ Bentley, P., Gulbrandsen, M., & Kyvik, S. (2015). The relationship between basic and applied research in universities. *Higher Education*, 689-709.

⁵⁶ See Mitchell, William, L. Randall Wray, and Martin Watts. 2019. *Macroeconomics*. London: Red Globe Press.

- i. The Ministry for the Environment, who previously wrote the regulations, adopted a hands-off approach to the revision of regulations relating to biosolids onto productive agricultural land.
- ii. The Ministry for the Environment devolved the establishment of biosolids regulations to a group of mainly wastewater industry associated representatives, with some scientist input. The industry focused consultation has resulted in the change from the internationally recognised ‘biosolids’ or ‘sewage sludge’ terminology to more opaque and industry friendly ‘organic matter’ or ‘organic materials’ terminology.
- iii. Some 40% of biosolids are likely to be dispersed on productive agricultural land, yet there has been minimal public or iwi consultation.⁵⁷
- iv. Scientific funding to explore biosolid risk to soil, air and water has been inconsistent. Few studies have explored the cumulative mixture effect of biosolid pollutants, and funding appearing more easily secured for studies to track the ‘beneficial effect’ of biosolids to agricultural land.
- v. Pollutants in biosolids (and wastewater) can include: ‘Sewage sludge may contain a wide spectrum of harmful toxic micropollutants such as polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), poly- brominated diphenyl ethers (PBDEs), di(2-ethylhexyl) phthalate (DEHP), personal care products, detergent residues, endogenous hormones, pharmaceuticals, synthetic steroids, polychlorinated dibenzo-p-dioxins and dibenzo-p-furans (PCDD/Fs), and others. Moreover, recent studies evidenced the accumulation of microplastics in agricultural soils after sludge.’⁵⁸
- vi. Biosolids also contain heavy metals, and the heavy metal cadmium is a persistent bioaccumulant in New Zealand soils, and is taken up by food crops.
- vii. Increasing knowledge demonstrates risk to agricultural soil from biosolid contaminants.
- viii. Lacking broader consultation, the pollutant chemicals in biosolids will be pushed downstream to farmers and territorial and local authorities.
- ix. With current funding and existing frameworks for monitoring, it is unlikely that many biosolid contaminants would be screened for in local environments.
- x. Scientific alternatives for paradigm-shifting management of biosolids require much longer basic and blue-sky research than tightly managed 3-year funding blocks, but such funding schemes, overseen by the Ministry of Innovation and Employment are rare and tightly contested.
- xi. Resourcing to connect, learn from and piggy-back on scientific and policy developments in other international jurisdictions, and report back to local scientific

⁵⁷ Biosolids/Sewage sludge policy development, presented as Guidelines for the Beneficial Use of Organic Materials on (Productive Agricultural) Land https://www.waternz.org.nz/Article?Action=View&Article_id=1212

⁵⁸ Gianico et al 2021. Land Application of Biosolids in Europe: Possibilities, Con-Straints and Future Perspectives. *Water* 13:103. <https://doi.org/10.3390/w13010103>.

and policy communities, and elected members, does not appear to have been undertaken.

b. Endocrine disrupting chemicals (EDCs)

- i. EDCs are synthetic (and some natural) chemical substances that interfere with, mimic and distort hormone functioning. There is no such thing as a safe level of EDC exposure, as there is no scientific consensus at the level at which hormones function. This is particularly so for pregnant mothers, infants and children who are particularly vulnerable to EDCs in important growth periods.^{59 60}
- ii. EDCs are considered alongside tobacco as a driver of disease⁶¹ and regulation directly effects population exposure levels.⁶²
- iii. No policy is established for endocrine disrupting chemicals (EDC) in New Zealand despite being entrenched in U.S. and European policies for approximately 20 years old.
- iv. The valuing of New Zealand water is based on stocks and flows, and does not account for the difference between polluted and non-polluted water and the relation to ecosystem services.⁶³
- v. No routine research is undertaken to understand EDC levels in human and environmental ecosystems, while research of emerging organic contaminants is funded for two places in New Zealand, Whau River (Auckland) and the Mataura River (Southland).
- vi. No research is undertaken to identify EDCs in source or drinking water;
- vii. Development of new Drinking Water Standards (NZDWS) did not conduct consultation to establish the degree to which EDCs are considered a long term risk;
- viii. No scientific experts in the EDC field were consulted. The greatest risk from EDCs may be to learning, behaviour and intelligence and life quality.⁶⁴ EDCs similarly impact all vertebrates, from fish, to frogs to humans.⁶⁵
- ix. The combinatory effect of low hormonally-relevant levels and the potential for current WHO Drinking Water Standards to be outdated, was not considered.

⁵⁹ Demeneix, B. (2019). Evidence for Prenatal Exposure to Thyroid Disruptors and Adverse Effects on Brain Development. *European Thyroid Journal*, 8, 283-292.

⁶⁰ Demeneix, B., & Slama, R. (2019). *Endocrine Disruptors: from Scientific Evidence to Human Health Protection*. requested by the European Parliament's Committee on Petitions. PE 608.866 - March 2019. Brussels: Policy Department for Citizens' Rights and Constitutional Affairs.

⁶¹ Grandjean, P., & Bellanger, M. (2017). Calculation of the disease burden associated with environmental chemical exposures: application of toxicological information in health economic estimation. *Environmental Health* 123, 16.

⁶² Kassotis, C., Vandenberg, L., Demeneix, B., Porta, M., Slama, R., & Trasande, L. (2020). Endocrine-disrupting chemicals: economic, regulatory, and policy implications. *The Lancet*, 8, 719-730.

⁶³ SataNZ 2021. Environmental-economic accounts: Water physical stocks, year ended June 1995–2020 <https://www.stats.govt.nz/information-releases/environmental-economic-accounts-water-physical-stocks-year-ended-june-1995-2020>

⁶⁴ Attina (2016). Exposure to endocrine-disrupting chemicals in the USA: a population-based disease burden and cost analysis. *Lancet Diabetes Endocrinol* 2016; 4: 996–1003. *Lancet Diabetes*

⁶⁵ Demeneix, B. (2017). *Toxic Cocktail. How chemical pollution is poisoning our brains*. Oxford University Press.

- x. Internationally there is scientific consensus regarding how to monitor, regulate and manage EDCs^{66 67} but there are few funding schemes in New Zealand that scientists could access to do this work, and so New Zealand continues to fall behind.

c. *Glyphosate-based (Roundup) herbicide*

- i. Glyphosate is the poster-child for chemicals management in New Zealand. Following ongoing court losses the producer of glyphosate, Bayer is now paying over \$10 billion dollars to farmers and applicators who contracted cancer after using Roundup.
- ii. The court cases drew attention to international scientific literature revealing the risk of glyphosate. However as the New Zealand Environmental Protection Authority (NZEPA) bases risk assessment around data supplied by the pesticide ‘applicant’ this literature is rarely consulted, or considered authoritative.
- iii. The court cases drew attention to the close relationship between the U.S. regulator and the company seeking authorisation of its products.
- iv. HSNO legislation states that if new information comes available any person may request NZEPA to decide if there is significant new information to justify a reassessment.⁶⁸
- v. NZEPA has never conducted a risk assessment of glyphosate.
- vi. NZEPA instead conducted a cancer review that was described as ‘flawed’ by authoritative experts in cancer.⁶⁹ These experts requested that the NZEPA withdraw the report and recommended a reassessment of the hazard classification.
- vii. While many people have requested a risk assessment, in 2018 the NZEPA required that \$1000 as payment to request that the NZEPA sub-committee convene to consider whether there is new information. As no person has paid the fee, the sub-committee has never convened to discuss the fact that there is new information.
- viii. Recently, due to tightened restrictions in Japan over glyphosate’s safety, several shipments of contaminated honey was turned back.
- ix. When publics request councils to cease spraying in public areas, they are advised that the NZEPA says that their practices are safe.
- x. Glyphosate persists far longer in the environment than 48 hours, or when the herbicide dries on the sprayed area.
- xi. Glyphosate is sprayed on human food (oats, wheat, lupins) and animal feed crops, down roadsides and in urban areas. Glyphosate is commonly sprayed alongside other

⁶⁶ Kassotis, et al 2020. Endocrine-disrupting chemicals: economic, regulatory, and policy implications. *The Lancet*, 8, 719-730.

⁶⁷ La Merrill et al 2019. Consensus on the key characteristics of endocrine- disrupting chemicals as a basis for hazard identification. *Endocrinology*, 45-57.

⁶⁸ Hazardous Substances and New Organisms Act 1996 (62) (1) & (2) <https://www.legislation.govt.nz/act/public/1996/0030/latest/whole.html?>

⁶⁹ Douwes, J., t Mannetje, A., McLean, D., Pearce, N., Woodward, A., & Potter, J. (2018). Carcinogenicity of glyphosate: why is New Zealand’s EPA lost in the weeds? *New Zealand Medical Journal*, 82-89.

pesticides such as metsulfuron-methyl. Testing for glyphosate is ad hoc and there are no consistent mechanisms for the public to understand the efficacy of monitoring.

xii. The Ministry for the Environment oversees the NZEPA.

xiii. There are few avenues for the public to appeal decision made by their local councils, or by the NZEPA without incurring substantial personal cost.

68. The implication throughout the current DPP is that ‘people’ are responsible for pollution, whereas more appropriately, polluting activities come from a wide sector, public sector activities, private industries, and public activities.

69. Legacy ‘suffusion’ of pollution responsibility has cascading effects that act in favour of polluters:

- a. It ignores the fact that dominant industries have access to political players at state, regional, and local level;
- b. In local contestation over policy development, the power of industry to dedicate resourcing to engage experts to submit to policies and effectively, override less ‘authoritative’ individual public submissions is discounted;
- c. Many of these industries are multimillion dollar industries, often niched in shell companies. Accountability is driven by obligations to offshore entities, not local actors;
- d. Democratic narratives assume the public can contest badly made policy in the environment court, or through judicial review, when in fact there is no resourcing for public to undertake such actions;
- e. In truth, such action is rare and precarious;
- f. Corporate universities have defunded academic expertise that might assist in public controversies, and with few academic experts – such as experts in public law with knowledge about these matters, there is no public forum that can act as an intermediary in debates
- g. The precarity of academic funding ensures that few legal or scientific experts are available to inform the media and engage in a public forum to promote a national discussion;
- h. This is enhanced by the complexities of international trade law and the suffusion of responsibility, through the public sector;
- i. This is enhanced by the industry capture of the hazardous substance regulator and the increasing failure to consider new scientific knowledge relating to synthetic chemicals and endocrinological and toxicological risk, normatively recognised in drug development, but avoided in authorisation and approval of chemicals used in food production that will be dispersed into the environment;
- j. The public is well aware industries will contest legal action;
- k. This creates a parochial – locally captured - environment and perpetuates the freezing of contestation around narrowly focussed issues – such as glyphosate or nitrates – when overall chemical use is doubling and total emissions into the environment are increasing proportionately with population and economic growth.

[G] Inter-institutional stewardship of waste & chemical pollution

1. **Decades behind best practice.** The inadequacy of current knowledge of chemical and waste contamination across soil, air and water places Parliament and Ministry officials on the ‘back foot’. Similar legislation in Europe is twenty years ahead of New Zealand. Monitoring across the European spectrum has drawn attention to the complexity of chemical and waste contamination.
2. **Transparency and accountability in ‘fake news’ environments.** In order to ensure that the science that upholds decision-making is trustworthy and that independent research is sufficiently included in consultation, we suggest that government policy on decision-making at the science-policy interface reflects the Preamble of the International Agency for Research on Cancer:

‘only studies that have been published or accepted for publication in the openly available scientific literature are reviewed. Under some circumstances, materials that are publicly available and whose content is final may be reviewed if there is sufficient information to permit an evaluation of the quality of the methods and results of the studies. Such materials may include reports and databases publicly available from government agencies, as well as doctoral theses. The reliance on published and publicly available studies promotes transparency and protects against citation of premature information.’⁷⁰

3. **Industry power prevents action through the creation of uncertainty.** Industry sectors have far greater power in driving and shaping pollution policy in New Zealand than the public. The current DPP identifies ‘people’ and emphasises behaviour rather than iterating the substantial power of industry sectors. These industry sectors conduct lobbying activities at state, regional and local levels.
4. **Relevant agencies weaken and fragment the potential for good governance.** Our current hazardous substances authority weakens New Zealand’s potential to steward chemical pollution. The precautionary approach outlined in the HSNO Act provides an example of what not to do. The Act is then supported by a methodology document⁷¹ that has no ‘line of sight’ and relies on outdated cost-benefit analyses that are promoted by industry. The result is that industry directed ‘cost-benefit’ analyses⁷² have no connection to the international literature on risk.
5. **Industry resourcing overwhelms public submissions in policy.** An important part of lobbying is scrutinising and submitting to policy documents. The resources dedicated to scrutinising and submitting to policy far exceed resourcing granted to scientists, are available to the public. Most submissions to the Environmental Protection Authority are dominated by industry, followed by some public who often lack the expertise, and the presentation of the industry sectors.
6. **Industry power exceeds the public’s power.** The Fit for Purpose freshwater paper⁷³ provided a case study of one submitter to an Air Plan attempting to require the regional council to track emissions to air in freshwater. The submitter was counter-submitted by Fonterra, Balance Agri-Nutrients, New Zealand Agrichemical Trust, Mercury NZ, Oji Fibre Solutions, HortNZ, Federated Farmers, AgCarm

⁷⁰ IARC Preamble January 2019. <https://monographs.iarc.who.int/wp-content/uploads/2019/07/Preamble-2019.pdf>

⁷¹ See: How to apply for a reassessment - Hazardous Substance Risk Assessment Methodology guide (docx 1.2KB) <https://www.epa.govt.nz/industry-areas/hazardous-substances/chemical-reassessment-programme/apply/>

⁷² See for example APP203611 Crucial, https://www.epa.govt.nz/assets/FileAPI/hsno-ar/APP203611/c4686971d9/APP203611_Final_Application_Form.pdf

⁷³ The Soil & Health Association and PSGR. 2019 Aotearoa/New Zealand Policy Proposals on healthy waterways: Are they fit for purpose. ISBN 978-0-473-50130-3 p.24

Port of Tauranga and Lawter NZ. Understandably, the regional council elected to act in favour of the weight of industry submissions.

7. **Five Sectors can be described as pollutant emitters.** The future bill can articulate the challenge of pollution and the fact that pollution is driven by 5 sectors which together aggregate as pollutants in the environment, from source point as well as diffuse emissions:
 - a. Agriculture, runoff as pesticides, nutrients and heavy metals from forestry, horticulture, and arable/dryland.
 - b. Industrial, from large industries often out of the public eye that can strategically avoid regulation; through to local small businesses such as automotive paint businesses that are more likely to be identified, and consequently regulated.
 - c. Government, and public contractors, including roading, and roadside and asset management such as pesticide spraying along train tracks;
 - d. Urban, household use of pharmaceuticals, detergents, and pesticides and the degree to which the ingredients are identified and regulated;
 - e. Release from waste treatment plants: wastewater and biosolids.
8. **Regions can set their own limits, but not below the floor set at national level.** The future bill can articulate regional pressures, such as regional basins, that change the local contaminant profile.
9. **The Purpose of the Act – is weakly worded.** The assumption that the establishment of ‘environmental limits’ will protect the environment reflects the failure to acknowledge the complexity of this issue.
 - a. There is an absence of political and scientific expertise, and no recognised quorum of interdisciplinary experts that can address the foundational policies and knowledges required to then strategically inform a guiding Act in this matter.
 - b. The scarce scientists with some knowledge of this area, and the politically problematic nature of it, a public consultation that will result in industry expertise dominating all debate, as happens with NZEPA consultation, and the public left to piecemeal contest industry claims.
 - c. In this absence, an analysis of the latest research across European and United Nations institutions would assist Ministry officials and policy drafters grasp the state and complexity of policy direction outside of New Zealand borders.
10. **Building in public capacity is critical.** Provide strategic direction for public engagement to achieve the SDGs, as SAICM has discussed:
 - a. Ensure ‘access to justice in matters of chemical pollution and human health protection related to chemicals and waste.’
 - b. Resource and improve information and the technologies supporting the transmission of information.

11. Recommendations for the DPP bill text – Insertions below in BOLD

- a. Notes:

- i. United Nations conventionally places ‘Health’ and ‘Wellbeing’ together. There can be no wellbeing without health.
- ii. UN states these represent some of the key human-driven changes to the planetary environment.)
- iii. Novel entity originates: Steffen, W., Richardson, K., Rockstrom, J., Cornell, S. E., Fetzer, I., Bennett, E. M., . . . Persson, L. M. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*. DOI:10.1126/science.1259855
- iv. Include ecological integrity in the purpose, not merely lower down in the bill

Part 1

Interpretation

anthropogenic (man-made) emissions, means emissions of toxic and/or long-lived emissions such as synthetic organic pollutants, novel entities, heavy metal compounds, noise, radioactive materials and from electromagnetic fields.

Ecological integrity means the ability of an ecosystem to support and maintain—

- (a) its composition: the natural diversity of indigenous species, habitats, and communities that make up the ecosystem; and
- (b) its structure: the biotic and abiotic physical features of an ecosystem; and
- (c) its functions: the ecological and physical functions and processes of an ecosystem; and
- (d) its resilience: **by safeguarding environments to ensure that ecosystems adequately protect the health of juvenile indigenous species;**
- (e) **to the adverse impacts of natural or human disturbances**

novel entity means new substances, new forms of existing substances and modified life-forms that have the potential for unwanted geophysical and/or biological effects.

Harmful novel entities: Novel entities of concern at the global level include entities that exhibit (i) persistence, (ii) mobility across scales with consequent widespread distributions, and/or (iii) potential impacts on vital Earth System processes or sub-systems. These potentially include chemicals and other new types of engineered materials/organisms.

Part 2

Purpose and related provisions

(1) Purpose

5 Purpose of this Act

(1) The purpose of this Act is to **ensure**—

- (a) Te Oranga o te Taiao to be upheld, including by protecting and enhancing the **ecological integrity of the** natural environment;
- (b) **The protection of human and environmental health from adverse effects of anthropogenic emissions and human activities;**
- (d) **The protection of health and** well-being of present generations without compromising the **health and** wellbeing of future generations.

(2) To achieve the purpose of the Act,—

- (a) **Decision-making will be based on the precautionary principle;**
- (b) **Preventative action will be taken and environmental damage will be rectified at the source;**
- (c) **When pollution is identified, the polluter will be liable for rectifying damage to the environment.**
- (d) **A Watchlist will monitor pollutants of concern:**
 - (i) **National monitoring of pollutants of concern will test all New Zealand regions.**⁷⁴
 - (ii) **This Watchlist can be altered and amended at the recommendation by Ministers, the Parliamentary Commissioner for the Environment and the Commissioner for Children.**
 - (iv) **Resourcing of the Watchlist is provisioned by Cabinet**
 - (iv) **Publication of the Watchlist on StatsNZ**
- (e) **Enforceable environmental limits will reflect best practice international regulatory standards;**
- (d) outcomes for the benefit of the environment must be promoted; and
- (e) any adverse effects on the environment must be avoided, remedied, or mitigated.

(3) In this section, Te Oranga o te Taiao incorporates—

- (a) the health of the natural environment; and
- (b) **protection of the *mauri*, or lifeforce, the wellbeing, of the waterway**
- (c) the intrinsic relationship between iwi and hapū and te taiao; and
- (d) the interconnectedness of all parts of the natural environment; and

⁷⁴ For example [European Union watch list](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020D1161&from=EN) <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020D1161&from=EN>

(d) the essential relationship between the health of the natural environment and its capacity to sustain all life.

(e) the particular obligation to ensure juvenile endemic species are protected, in order to intergenerationally safeguard ecological integrity;

(2) Precautionary ~~Approach~~ Principle

Recommended: *Replace all text stating precautionary approach with **precautionary principle**. Catherine Iorns has discussed in depth the weakness of the existing precautionary approach in the HSNO Act.*

12 Environmental limits

Recommended: *A process for arriving at environmental limits should be referred to in the primary act. Such as:*

In setting new environmental limits a publicly available review should be undertaken of order to draw attention to the degree of monitoring and the local knowledge, and the information supporting pollution, monitoring and data capture in international jurisdictions. This review should include:

- (a) the most recent analyses and decisions undertaken in the most visible regulatory environments including but not limited to the European Union and United States.
- (b) A review of the last ten years of relevant New Zealand monitoring data.
- (c) That (a) and (b) must be clearly published prior to public consultation on all publicly accessible digital medium.
- (d) The grouping of like pollutants into chemical classes to streamline monitoring and recognise aggregate risk of chemicals.

Regions have power to establish and adjust environmental limits. Where a national limit has been set, regional limits cannot be weaker than the national environmental limit.

18 Implementation principles

Recommended: *The PCE has proposed the ringfencing of public resources for environmental research.*

Power to provide extrabudgetary financial resources to public sector institutions and territorial and local authorities to:

- (a) Monitor anthropogenic emissions into the environment;

- (b) Conduct modelling of risk scenarios to improve forecasting of risk to ecosystems;
- (c) Research and model the potential of these emissions to:
 - (i) bioaccumulate in water, soil and/or air;
 - (ii) enhance risk to life-forms via toxic synergies as pollutant mixtures accumulate;
 - (iii) act in a highly mobile manner and disperse across other systems (air, soil, freshwater, marine and groundwater);
 - (iv) degrade productive agricultural soil;
 - (v) harm the mauri, or lifeforce, the wellbeing, of the waterway
 - (v) contaminate human food sources;

Monitoring institutions will:

- (a) Publish screening methodologies to ensure transparency in data monitoring across New Zealand;
- (b) Compile this data and make available on StatsNZ.

Thank you for the opportunity to submit to this inquiry.