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for the Environment
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Vicky Robertson
Secretary for the Environment

Liz McPherson
Government Statistician

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Commentary on *Our Atmosphere and Climate 2017*

Dear Vicky and Liz

This letter outlines my general approach to the Commissioner's commentary role and signals my intention to produce a wide-ranging review of the environmental reporting system in 2019.[1]

It also contains an assessment of the structure and style of the *Our Atmosphere and Climate 2017* domain report produced by the Ministry for the Environment and Statistics New Zealand (Stats NZ), and then recommends areas of development for future reports. This is the first commentary I have produced as Parliamentary Commissioner for the Environment.[2]

Our Atmosphere and Climate 2017 marks a clear and welcome evolution in the structure and approach of environmental reports, and in doing so, sets the benchmark for subsequent reports to build on.

One thing *Our Atmosphere and Climate 2017* makes very clear is that New Zealand's greenhouse gas emissions have increased markedly since 1990, with increases seen in almost all sectors of the economy. Most concerningly, our net emissions have gone up by 64% over that period.[3]

New Zealand, along with the rest of the world, has committed to reducing emissions to limit the impacts of climate change. Clearly, ongoing increasing domestic emissions does not square well with meeting our obligations under the Paris Agreement.

I am pleased to see the new Government has signalled its intention to act on climate change, and I will follow developments in this space closely. However, I will also be writing to the Ministers responsible for relevant government agencies to see what policies and programmes their agencies have in place to address climate change mitigation and adaptation.

Background

My predecessor, Dr Jan Wright, was the Commissioner at the time of establishment of the Environmental Reporting Act 2015, and the first reports produced by the Ministry for the Environment and Statistics New Zealand.[4] She recognised that producing high quality, trusted and useful reports is no easy task, and the Ministry for the Environment and Stats NZ are to be commended for the approach they have taken to this task.[5] I agree with that sentiment.

Not long before the end of her term as Commissioner, Dr Wright recommended that the environmental reporting system be reviewed in 2018, to assess how well it is working and whether any changes to roles, resourcing, or approach are required.

I agree that such a review would indeed be valuable. It would allow us collectively to take a step back and consider whether or not the environmental reporting system, as currently conceived, is helping us to better understand and manage our environment in a way that supports environmental, social and economic health.

On consideration it is my view that a review would best be conducted in 2019, after the synthesis report – *Environment Aotearoa 2019* – has been produced by the Ministry for the Environment and Stats NZ.[6] To support such a review, I intend to produce an assessment of the 'reporting system' that will include the remaining domain reports in this cycle, *Environment Aotearoa 2019* itself, and the underpinning policies, processes and frameworks used by the two agencies.

However, 2019 is still some distance away and it is important that the reports that will be produced in the interim are as relevant and useful to New Zealanders as we can make them. To this end, I will continue to make comments on domain reports as they are produced, and my assessment of *Our Atmosphere and Climate 2017* is the focus of the rest of this commentary.

The structure and content of Our Atmosphere and Climate 2017

My starting point for evaluating Our Atmosphere and Climate 2017 was to assess the report against earlier recommendations for improvement made by the previous commissioner.[7] Against these criteria, the report generally performs well.

Our Atmosphere and Climate 2017 and the associated webpages pick up on many of the recommendations made by my predecessor. The report makes it very clear that some of the effects of climate change are already impacting on New Zealand.

Pleasingly, the report looks beyond a simple 'within domain' approach and instead considers the widespread impacts of climate change. It highlights a range of significant changes in our environment, including rising sea levels and temperatures, changes in rainfall patterns and soil moisture levels, and possible early indications of impacts on native species.

Maps and figures provide useful information to help the reader understand where different effects may be found around the country.

The report also does a good job of taking this information further. Utilising the best available information and forecasts, the report considers the outlook and implications for our natural environment and our society.

For example, the report highlights the increasing risk and damage coastal communities face from rising sea levels, and some of the difficult decisions and expensive actions that will need to be taken. Similarly, the report highlights the range of impacts that climate change may have on our agricultural systems, through changes in the frequency and severity of droughts.

However, there are some areas of the report where the reader may be left wanting more information. This is particularly so when it comes to New Zealand's domestic emissions, in respect of which the report notes that *"population growth and increased domestic production have driven the increase in gross emissions since 1990."* [8] The report makes no detailed attempt to identify the causes of the increases, or the relative contributions from different sources and the relationships between them.[9] Such information is essential for making informed decisions about necessary responses.

Increased population will in turn increase consumption and the emissions associated with them. In the absence of significant improvements in emissions intensity, population growth will simply see emissions continue to rise. To identify such a significant factor without any further commentary is of limited value.

It would be useful in future reports to provide more analysis of changes in emissions, sector by sector, and the pressures behind these changes, such as population growth. While New Zealand's emissions are small on a global scale, information on them is valuable as it highlights where there are needs and opportunities to take action on the emissions we are responsible and can do something about.

Areas of focus for future reporting

Based on the assessment of *Our Atmosphere and Climate 2017* and the earlier domain reports, I have identified three key areas where ongoing work by Ministry for the Environment and Statistics NZ should be focussed.

Firstly, the range of indicators of pressure should be broadened. As noted above, *Our Atmosphere and Climate 2017* states that gross greenhouse gas emissions have increased, and identifies two key sources – road transport and agriculture. This claim is not investigated further in the report.[10]

To understand what is causing these pressures to intensify, a broader range of information is required. For transport emissions, indicators of things like changes in population size or the distances travelled per driver are needed. For agricultural emissions, information on things like changing livestock numbers, fertiliser application and productivity is required.

This choice of indicators may well be, in part, a result of the truncated *Pressure-State-Impact* framework specified in the Act. Crucially, this framework precludes consideration of the *Drivers* that put pressure on the environment.[11]

However, it may be also a consequence of the environmental reporting topics specified under regulation. It is not clear whether the topics limit the value of the reports by restricting the range of indicators that can be considered. Social, cultural, and economic factors can be included as impact topics, but are not specifically included under the pressure and state topics.

That said, a broad reading of the regulations does not automatically preclude social and economic indicators. For example, the pressure topics for the domains all include some mention of "human activities",[12] which could cover social and economic indicators.[13]

Clarification of what types of indicators can be included as pressures in environmental reports, given the current requirements under the Environmental Reporting Act and the environmental reporting topics, would be helpful. This will likely require input from other agencies or sources of information and expertise.

I recommend that:

The Secretary for the Environment and Government Statistician develop criteria for the selection of social and economic pressure indicators and include them in the *Good Practice Guide for Environmental Reporting*.

Secondly, environmental reports should help readers understand why something is happening, giving them a basis for deciding what, if anything, needs to be done in response.

In some cases the relationships between indicators of pressure, state and impact will be direct and clear.

However, in many cases the relationships between different indicators will be inter-related and complex. Detailed analysis or models may be required in order to understand them fully.

For example, *Our Atmosphere and Climate* does well to draw on international climate change science and models to explain why rainfall intensity is expected to increase, and ocean temperatures to rise. This was not always the case in earlier domain reports.[14]

For some issues, there may not be enough information to perform such analyses at the national level. Nevertheless, local or regional case studies can still be very informative, and help to identify underlying processes that apply more broadly.

Much of the capability to analyse environmental data lies in external research organisations – universities, Crown Research Institutes, and other research providers. Indeed, these organisations are the source of much of the analysis contained in the domain and synthesis reports. Their expertise should continue to be drawn upon; both in conducting specific modelling exercises, and more broadly in developing principles and systems for designing, managing and analysing environmental datasets.

Modelling is a time and resource intensive undertaking – whether it is performed internally by the Ministry for the Environment and Statistics NZ or by external research providers. In either case, there will always be trade-off between commissioning specific models, and developing other indicators or parts of the broader environmental reporting system.[15]

I recommend that:

The Secretary for the Environment and Government Statistician develop principles and guidance for when existing models will be drawn upon, and when models or other analyses will be commissioned as part of environmental reporting and include these in the *Good Practice Guide for Environmental Reporting*.

Thirdly, national-level performance indicators can yield useful information. Existing indicators should be developed and added to. Knowing how many places around the country are within or beyond environmental limits, and whether these numbers are changing over time, helps our understanding of the state of our environment.[16]

The choice of benchmark for assessing performance is critical. Benchmarks should be science-based and relate to significant changes in the environment or significantly different states. Policy-based benchmarks, which may contain a mix of science and subjective assessment, are much less helpful.

Our Atmosphere and Climate 2017 did not feature performance indicators. However, the *Our Marine Environment 2016* and *Our Freshwater 2017* domain reports did use a number of these types of indicator. Some indicators were science-based, such as those used to assess concentrations of heavy metals in marine sediments, and stream macro-invertebrate communities. However, others used policy-based benchmarks to assess performance. For example, concentrations of nitrate and ammonia in streams were compared to the bands within the National Objectives Framework in the National Policy Statement for Freshwater Management.[17]

The *Our Freshwater 2017* report notes that it did not include the science-based *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* because they were under review and might change, although these guidelines were presented on the indicator webpage. However, it is preferable to use science-based benchmarks – and deal with any calibration that may be required if threshold levels change – than to use policy-based benchmarks that have social, cultural or economic considerations built into them. Judgements about whether action is needed should be made after the information is assessed, rather than be implicit in the indicator itself.

I recommend that:

The Secretary for the Environment and Government Statistician ensure that science-based performance indicators are used in preference to policy-based indicators, and protocols are developed to deal with the effects of changes in threshold levels or calculation methods to ensure continuity and consistency of the indicator.

Yours sincerely

Simon Upton
Parliamentary Commissioner for the Environment

1. Under the Environmental Reporting Act 2015, the Parliamentary Commissioner for the Environment may, at his or her discretion, produce commentaries on environmental reports produced by the Secretary for the Environment and the Government Statistician (S18(1), Environmental Reporting Act 2015). The content and nature of such commentaries is not constrained under the Act, and they may take any form the Commissioner believes may best help achieve good outcomes for the environment (S18(2), *Ibid*).
2. The Parliamentary Commissioner for the Environment can assess environmental reports in at least four key ways:
    - Are there clear messages or conclusions in the reports that the public and decision makers need to know about and act on that the Commissioner can highlight?
    - Conversely, are there things that are important that the reports do not cover, and why might that be so?
    - Given the findings in the reports, are there any policy responses or interventions that should be made to improve the environment?
    - Are there any issues with the way information is gathered, analysed or presented that affect the quality or value of the findings in the reports?
3. Net emissions is the sum of actual emissions of gases like carbon dioxide, nitrous oxide and methane, minus the carbon that is removed from the atmosphere, mainly though storage in trees and other plants as they grow. Net emissions are what ultimately affect the climate.
4. See relevant publications on the Parliamentary Commissioner for the Environment's' website (http://www.pce.parliament.nz/publications).
5. In this spirit, she made a number of recommendations for improvement to the way the reports are produced, and a large number of these have been taken on board by the agencies producing the environmental reports.
6. The first 'synthesis' report, *Environment Aotearoa 2015*, was produced before the Environmental Reporting Act was passed. Therefore, although *Environment Aotearoa 2019* will be the second such report, it will be the first synthesis report officially produced under the Environmental Reporting Act legislative framework.
7. The Parliamentary Commissioner for the Environment has made a number of recommendations about the way environmental reports should be produced and structured. The key recommendations are summarised below:
    1. Reports should have a *clear purpose* that helps the reader to assess different concerns about the environment. To help do this, environmental reports must go beyond compiling information and draw firm conclusions.
    2. *Structure reports by issues*, so the reader can understand how different pressures affect the environment, and the impacts that these pressures can have
    3. *Some issues cross domains* (climate change is the prime example of this), and to be able to fully understand an issue, reports need to include both pressures and impacts from multiple domains.
    4. *Choosing issues* to report on should be done based on their relevance to people and society, including new and emerging issues. Issues should not be chosen on the basis of data availability or quality.
    5. *Indicators should be chosen based on their relevance* to the issues, with data availability or quality as secondary considerations.
    6. *Location matters*. Environmental issues and environmental data are fundamentally spatial –and must be analysed with this in mind. Care must be taken when summarising data up to higher levels that important information or understanding is not lost.
    7. *Quality Assurance*. Environmental reports must be built on a bedrock of strong scientific understanding and analysis that is quality assured and communicated clearly.
8. *Our Atmosphere and Climate 2017* (p. 17).
9. The report does direct the reader to further sources of information, such as the Ministry for the Environment's *Emissions Tracker*. This is a good source of information on emissions from different sources, although without expert analysis and interpretation the reader risks becoming lost in the detail.
10. Consequently, this section raises a number of unanswered questions. For example, have increases in transport emissions come from the same distance being travelled in less efficient vehicles, or from more kilometres being driven by the same sized population, or more people driving the same or more kilometres, or some other reason?
11. The Environmental Reporting Act 2015 directs the Ministry for the Environment and Stats NZ to use the Pressure-State-Impact framework developed by the OECD, rather than the fuller Driver- Pressure-State-Impact-Response framework, which also considers *Drivers* of environmental change, and *Responses* that are made to address adverse effects.

12. See 5(b)(i); 6(b)(i); 7(b)(ii); 8(b)(ii); and 9(b)(ii) *Environmental Reporting (Topics for Environmental Reports) Regulations 2016*.
13. Noting however, that the Act requires the pressure state and impact indicators to be closely related to each other.
14. For example, the *Our fresh water 2017* report identified significant changes in a number of indicators – such as water clarity and stream invertebrate communities – but did not contain analysis or explanation of what was causing these changes.
15. Broader development of the reporting system could include the development and provision of geo-linked datasets that can be used as inputs in to models developed by other organisations. Care will need to be taken, both with data analysis and data management, that individual privacy concerns are appropriately managed. Analyses should help us understand what is causing patterns in environmental quality; but should not be so fine-grained as to identify individual properties or contributors.
16. In comparison, national quantitative estimates – averages, medians, sums and so on – tell us little. Climate change is one of the few exceptions to this; our total contribution of carbon dioxide to the atmosphere is a meaningful number.
17. The *Our Freshwater 2017* report notes that it did not include the science-based *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* because they were under review and may change, although these guidelines were presented on the indicator webpage. However, It is preferable to use science-based benchmarks – and deal with any calibration that may be required if trigger levels change – than to use policy-based benchmarks that have social, cultural or economic considerations built into them.