

Independent International Review – National Climate Change Risk Assessment 2026 (NCCRA 2026)

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Introduction

This paper provides my independent peer review of the overall New Zealand National Climate Change Risk Assessment 2026 methodology. I have assessed its robustness, validity, and alignment with established international practice, including the consistency and the validity of risk scoring and prioritisation.

Detailed review points and suggestions

I have read the methodology report and would like to congratulate the team on producing a detailed and thorough method. I also note that the method has been updated since the 1st NZ CCRA, and this has led to a number of significant improvements. I do have some suggestions for clarification in the current method paper, as well as suggestions on points for improvement, both for CCRA2026 and also for future CCRA's, which I have detailed below. I have based my analysis on international comparisons, notably with the method used in the UK CCRA³ and the draft method for UK CCRA⁴, as well as method used for the EUCRA³.

Section 2.3 (page 5) Clarification on analysis of present day risks

The presentation of the Part one: Risk severity method and the table on Page 5 could be improved for clarification and consistency with international practice. The table on p5 does not include reference to the analysis of a current period, but I note later in the method on page 9, the text says the severity of *risks were assessed for the present day*.

It would therefore be useful to add present day to the Table on Page 5, but also to define exactly the interpretation of 'present day'. To provide examples:

- The UKCCRA4 includes analysis of present day and in the future (for the 2030s, 2050s and 2080s) under an assumption of no adaptation, while the EUCRA includes analysis of Current/near term (2021-2040).

Further, the discussion of present day should be clear on whether this is a historical period or near-term, and should note the difference between observed impacts and potential risks e.g., the UK specifies *present day as risk and opportunities from the range of possible weather and climate conditions possible today*. This include risks that are possible but have not yet been observed. There are some streams of evidence that can provide the later (e.g., attribution studies, and modelling assessments such as the UNSEEN project⁴): if similar studies are not yet available for NZ, they could be considered for future research recommendations. I am sure these issues were considered, and guidance developed, but as a reader I could not find them in the method paper. It would therefore be useful to clarify how the present is defined and what information authors were asked to consider.

¹ <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA3-Chapter-2-FINAL.pdf>

² <https://weather.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/climate-change/ccra4-ia-tr---methods.pdf>

³ <https://www.eea.europa.eu/en/analysis/publications/european-climate-risk-assessment>

⁴ <https://rmets.onlinelibrary.wiley.com/doi/10.1002/joc.8460>

Section 2.3 (page 5) Clarification and suggestion on future scenarios

Also in the same section and table on p5, there is a minor source of confusion that could be clarified in the method. The table (see below) has a low and high GWL for each of 2050 and 2090 related to global warming levels. This implies that the analysis would be undertaken for 2 GWLs in 2050 and 2 GWLs in 2090 – although it is confusing that the high impact includes two GWL values (e.g., 2/2.5). However, on Page 9 it says *risks were scored four times: for the present day, 2050, and 2090 under both a low emissions and a high emissions scenario*, (but assessing present and 4 futures would be five scores).

This implies that perhaps only one run in 2050 was considered, and this would be consistent with previous practice in Europe. Likewise it may be that the two values in the high impact were provided to allow a wide set of data to be included. However, the main issue is that the method is currently unclear, and thus it would be useful to clarify exactly what was undertaken, and how authors were instructed to interpret the two figures in the high impact scenario.

Time horizon	Global Warming Level
2050	GWL1.5 (low impact) GWL2/2.5 (high impact)
2090	GWL2 (low impact) GWL3/3.5 (high impact)

I also note that the low impact in 2050 is set at GWL of 1.5. I assume that this is in line with the Paris Agreement and pursuing efforts to limit to 1.5°C, but I believe this warming level is unrealistic in current policy terms (e.g., see EGR2025⁵). The inclusion of 1.5 as a lower estimate in 2050 may therefore give weight to an outcome that is impossible to achieve (without overshoots) and could be misleading for adaptation, leading to maladaptation by underestimating lower end risks. Similarly, assuming GWL2 for 2050 as the higher level of risk will underestimate high end risks and it would be better to have GWL2.5 stated. Again, in terms of consistency, I note that the UK CCRA4 uses 2 and 2.5 as the central and high for the 2050s (see below). It might therefore be preferable to reframe the table as GWL2 (low impact) and GWL2.5 (high impact) for 2050, or at least take this into account when compiling the risk scores.

	2030s (2026-2045)		2050s (2046-2065)		2080s (2076-2095)		
	Central	High	Central	High	Low	Central	High
GWL	1.5 °C	2 °C	2 °C	2.5 °C	1.5 °C	2.5 °C	3.5 °C
GWL band	1.25 °C	1.75 °C	1.75 °C	2.25 °C	1 °C	2 °C	3 °C
	to 1.75 °C	to 2.25 °C	to 2.25 °C	to 2.75 °C	to 2 °C	to 3 °C	to 4 °C

List of risks (appendix 1): misalignment of some risks with the method

There is a revised list of risks for the NZ CCRA 2026 in Appendix 1. In looking at these I make a number of comments.

⁵ <https://www.unep.org/resources/emissions-gap-report-2025>

I note that the list of *natural environment risks* is shortened (by merging risks) and this may present some challenges as it will lose the resolution of severity, as well as the appropriate level of guidance for subsequent policy. I also note that the risk description refers to biodiversity, rather than natural capital and ecosystems services: these are extremely important in framing the impacts to stocks and flows. It might therefore be useful to ensure these natural capital and ecosystem service flows are considered in the summary of the risk, because of their importance for the economy.

It would also be useful for clarification if the location of agriculture (crops) could be clarified. Under *Sectors relying on the natural environment* I see there is Livestock agriculture, horticulture, forestry, tourism and fisheries, but I do not see agriculture (crops) anywhere in the risk. It was not clear if agriculture included in livestock or in horticulture, but again a clarification issue, and I think agriculture should be explicitly added to the relevant risk descriptor, so that this is clear in all subsequent reporting.

I do want to raise a significant concern over the set of risks on *Governance*, especially the risks *coherent and enduring climate adaptation*, and *effective implementation of climate adaptation*. The inclusion of these as 'risks' seems to be contradictory to the overall methodology, which assesses adaptation policy in Step 2.

As an example, defining a separate risk as *effective implementation of climate adaptation* is inconsistent with the logical flow of the CCRA method, as the method assesses pure risks in Step 1 without adaptation, then assesses adaptation policy readiness in Step 2 (for three categories – policy coverage, readiness to implement/deliver, and shortfall). It therefore makes no sense to have a risk on adaptation effectiveness. Even if there is a desire to assess the overall effective implementation across all risks, this should be undertaken in Step 2, based on the evidence gathered across all risks on this step. To have this as a separate risk category seems inconsistent and unnecessary.

My suggestion is therefore that these governance risks on adaptation are deleted or that the findings from this risk is moved into the Step 2 analysis, or if government risks are maintained there is a stronger climate hazard perspective included. I would also strongly recommend that a revision of the governance risk theme is undertaken for the next CCRA, and that the more obvious duplicative policy assessments risks are deleted and moved into the Step 2 to align to the method.

Equivalence of risk severity - Appendix 4: Risk Severity Assessment Criteria

It is important that risk severity is assessed consistently, though I recognise that assessing equivalency is challenging, across and between risks. The method has set out the scoring method in Appendix 4. This provides a qualitative set of descriptors for authors, which is comprehensive.

However, I note that the qualitative nature of this is different to other international CCRA's. The UK CCRA3 and CCRA 4, and the EUCRA, developed detailed quantitative equivalency scoring. An example is shown below from CCRA4.

Impact descriptor	Indicator			
	Very High Magnitude	High Magnitude	Medium Magnitude	Low Magnitude
Qualitative descriptor				
Annual damage & disruption or foregone opportunities	Critical	Major	Moderate	Minor
Damage and frequency	Very large & frequent	Large and frequent	Substantial	Limited and rate
Extent and pervasiveness	Very high	Large and high	Moderate	Not significant
System functionality	Irreversible loss	Long-term disturbance	Moderate disturbance	Not significant
Economic				
Annual damages (economic) or foregone opportunities	£ billions or 0.05% GDP	£ hundreds of millions or 0.005%-0.05% GDP	£ tens of millions or 0.001%-0.005% GDP	Less than £10 million or <0.001% GDP
Health impacts				
Deaths (annual)	Thousands	Hundreds	Tens	A few
Major health impacts (annual)	Tens of thousands	Thousands	Hundreds	Tens

Clearly it is difficult to do this in all areas, but in many areas there are equivalency metrics that could easily be used, e.g., deaths, people affected, economic damage. At this stage it will be difficult to develop a more quantitative equivalency table and it would be impossible to retrofit to scores, but I would encourage some level of direct quantitative equivalency to be included during the process of risk scoring harmonisation. These could also be adopted more strongly in the next CCRA.

I also think it would be beneficial to compare the scale of risks to other equivalency benchmarks used by NZ government. For example, New Zealand has a National Risk Register⁶ which lists 28 risks. These have been assessed in terms of Maximum Credible Event scenarios (though the final risk register is not available on the website) and this will have information on the scoring and severity of many similar risks, as well as some directly relevant climate risks, and I would assume some underlying equivalency benchmarks. I would suggest it would be useful to try and source these scoring system for the NZ NRR and undertake an exercise to benchmark Appendix 4 to the NRR and look at the cross comparability of scoring. This could then also be used in the harmonisation across risks to adjust scores for equivalency.

While it might be difficult to report on the NZ NRR externally, because of the sensitivity around the risk register, I do not think this is a barrier to internal cross government discussion, and this would provide some analytical material for the Commission to benchmark the analysis, and internally amend if there were significant anomalies identified in approach.

Generating a list of ‘most significant risks’ page 10 – deletion of urgency step 3

The final step of the method is set out (page 10) *to draw from multiple analytical inputs – including all three scoring methods outlined above as well as substantive risk analysis in all seven domains – to form advice on the most significant risks requiring the most coordinated policy action for the Government to focus on in its next National Adaptation Plan. This involved the Commission exercising strategic judgement to produce actionable advice.*

There are a set of principles set out to enable this, but the text states ‘*strategic judgement*’ will be used to produce actionable advice. This raises some issues of the transparency of the advice, especially at this key stage of the process.

⁶ <https://www.dpmc.govt.nz/our-programmes/risk-and-resilience/national-risk-and-resilience-framework/new-zealands-national-risks>

I also note there has been the deletion of the third step in the previous NZ CCRA method, the urgency scoring and recommendation. I understand the reasons for this are to match to the legislative requirements to prioritise risks based on their nature, severity, and the need for coordinated action in the next six years. I would also note that a similar process has happened in the UK, where a lot of this analysis of policy readiness has been removed from the author task and will be undertaken by the UK CCC. Nevertheless, I personally believe the urgency analysis should be part of the technical analysis, and would provide useful additional information for the policy assessment.

I would also note that a common problem experienced by both the UK CCRA and the EUCRA is that the standard risk assessment method from Step 1 and 2 generates too many risks being allocated a priority.

With this in mind, I believe it would be useful to add a slightly more prescriptive analysis to this final step based on some type of urgency advice. This would address both the issue of the transparency and robustness of the process, but also provide some level of urgency advice.

I believe a rapid analysis of this approach could be undertaken in this CCRA and I would also highlight the potential to do this in more detail in future CCRA's.

As an example, the EUCRA addressed this issue by moving to 5 urgency categories. It used an algorithm to assess how the scoring in Steps 1 and 2 led to each of these scores in each time period. These are shown below.

Urgency to act	Description
Urgent action needed	The combination of catastrophic risks and insufficient policy readiness calls for urgent new, stronger or different action in the coming years to reduce climate risks. Such actions include policymaking, implementation, capacity building or enabling the environment for adaptation, over and above those already planned.
More action needed	The severity of risk and the limited level of policy readiness calls for more action to be implemented. It is crucial to initiate processes that strengthen adaptation action to avoid critical impacts of climate change.
Further investigation	The available knowledge is insufficient to call for specific new action. Priority should be given to gathering additional evidence regarding the severity of the risk as well as policy readiness, e.g. through dedicated research, monitoring or policy evaluation.
Sustain current action	Current or planned levels of activity are appropriate, but continued implementation of these policies or plans is needed to ensure that the risk continues to be managed in future. A monitoring and evaluation process should be in place to evaluate policy effectiveness, with a view to continuous improvement.
Watching brief	The evidence in these areas should be kept under review, with continuous monitoring of risk levels, so that further action can be taken if necessary.

Risk severity	Confidence	Policy readiness		
		Very advanced	Advanced	Medium/low
Catastrophic	High	More action needed	Urgent action needed	Urgent action needed
	Medium	Further investigation	More action needed	Urgent action needed
	Low	Further investigation	Further investigation	More action needed
Critical	High	Sustain current action	More action needed	Urgent action needed
	Medium	Sustain current action	Further investigation	More action needed
	Low	Sustain current action	Further investigation	Further investigation
Substantial	High	Sustain current action	Sustain current action	More action needed
	Medium	Sustain current action	Sustain current action	Further investigation
	Low	Sustain current action	Sustain current action	Further investigation
Limited	High	Sustain current action	Sustain current action	Watching brief
	Medium	Sustain current action	Sustain current action	Watching brief
	Low	Sustain current action	Sustain current action	Watching brief

The UKCCRA4 followed this approach, with five urgency scores and algorithmic scoring.

Magnitude	Confidence	Present day	2030s (central)	2050s (central)	2080s (central)
Very high	High/med	Critical action needed	Critical action needed	Critical action needed	More action needed
	Low	Critical investigation	Critical investigation	Critical investigation	Further investigation
High	High/med	More action needed	More action needed	More action needed	More action needed
	Low	Critical investigation	Critical investigation	Critical investigation	Further investigation
Medium	High/med	More action needed	More action needed	More action needed	Sustain current action
	Low	Further investigation	Further investigation	Further investigation	Further investigation
Low	High/med	Sustain current action	Sustain current action	Sustain current action	Sustain current action
	Low	Further Investigation	Further Investigation	Watching brief	Watching brief

Step 2 Assessment of Policy readiness p6/ p9 / Appendix 3: Risk Assessment Template

The approach to the step 2 of policy readiness is set out on page 6. I note that this includes an assessment of *Whether or not the current adaptation policies and actions are sufficient to address the risk, and if not, what is the shortfall between the action that is needed to address the risk and the action that is actually occurring, and what are the benefits to further action in the next six years.* There is also a more formalised template in Appendix 3.

I also note that there has been additional work on this step in an updated Policy readiness scorecard.

However, a common finding among CCRA's is that it is difficult to make this assessment in practice. There is very rarely quantified evidence on how much a policy will reduce the risks. There is also a judgement call to be made on what level of risk reduction is appropriate, i.e., does the level of policy move this down from major to moderate, or from major to minor.

I think the revised policy assessment table is now very comprehensive and robust. There is one minor issue that could be added, which is around the statement of intent, for example, in the CCRA3, a policy was only deemed to be fully sufficient if there were SMART objectives, and that

these were set out for the minimum GWL. Likewise a policy without clear objectives would score lower.

There is also a slightly more complex policy issue here about the appropriate level of policy action and risk reduction, especially where there are existing risks (e.g., existing flooding) as these implicitly have existing societal preferences on the willingness to accept risk/willingness to pay for risk reduction.

To be specific, there is a question of whether a policy should seek to maintain the risk at the current level or reduce it completely. The table as it is now implies it should seek to reduce completely. However, this is unlikely to deliver an economically optimal level of adaptation and it might be more efficient to reduce to a moderate risk level rather than low. This is particularly the case where the risk level has always been moderate (e.g., flooding) in the past.

I believe some consideration of this could be factored in when considering the cross comparability of policy assessment, and I also believe it might be useful to consider this when the commission provides its advice, i.e., to take account of historic risk preferences rather than assuming all risks should be minimised completely.

Opportunities

While the method sets out that it should assess the current and future *opportunities* as well as risks, I believe the structure of the method is likely to underreport on these in Step 1 by merging risks and opportunities together, and that the policy assessment in Step 2 could be enhanced by looking more closely at the policy ask for maximising these benefits.

To expand, there will be some positive opportunities from climate change in NZ. These would include reduced winter heating, reduced winter deaths, benefits to agriculture for certain crops and forestry activities and in certain locations. Some international CCRA's separate out some of these to allow a more explicit analysis (e.g., the UK CCRA have categories for heating demand, as well as opportunities for adaptation goods and services, domestically and internationally). If risks and opportunities are merged within a single category, it is not possible to report on these, and there is a question if the analysis is reporting only the net (aggregate) of positives and negatives).

Moving to the policy assessment, the template in Part 2 asks authors to *Document the potential reduction in future risks (or the realization of future opportunities)*.

However, for a public risk assessment and planned adaptation policy, the key question for the realisation of opportunity is whether the maximum social benefits of this opportunity will be realised through autonomous action or with the current planned actions, or whether additional government action is needed to maximise the socially beneficial outcome.

As examples, it could be that there is a large opportunity, but due to market failures, the government might have a role in helping fully realise benefits (whether these are public or private benefits). It is also possible that left to the market, private actions that seek the opportunity generate external costs and thus maladaptation.

Again, drawing on CCRA3 from the UK, this was assessed by asking the specific question of whether policy was in place to help realise the opportunity, as in the table below.

Table 2.7 Criteria to assess whether risks or opportunities are being managed (in the future).

	Yes (fully)	Partially	No
Opportunities	Opportunity will be fully realised in absence of government intervention OR The enabling environment is in place to fully realise the opportunity.	Opportunity will NOT be fully realised in absence of government intervention and only some elements of the enabling environment are in place.	Opportunity will NOT be fully realised in absence of government intervention and no elements of the enabling environment are in place.

It may be too late to add this, but I believe it would still be useful for the Commission to separately pull out the key opportunities, and document these separately from the risks, and also assess if the policy environment is in place to maximise these.

Limits to Adaptation

Finally, I want to add a note about the potential recognition of the limits to adaptation. Adaptation will not always be able to address climate risks, due to these limits. These can include (IPCC 2022) soft limits to adaptation, where current approaches may be insufficient, but which can be overcome by addressing constraints (be these technical, financial, governance, institutional). There are also hard limits to adapt, where no adaptive actions are possible. For example, some natural systems are getting close to the biophysical threshold levels, and losses may be irreversible once thresholds are exceeded.

None of the international CCRA's yet consider this, but it is likely to be a major issue going forward. It might be useful to signpost this is an omission but also seek to include this in the next CCRA.

Concluding points and summary

Based on the review above, I consider that the NZ CCRA2 method is valid and robust and that overall, it aligns with international best practice.

I believe step 1 on risk scoring is valid and robust, though I note a few issues above. These include some minor clarification issues, but also some issues that could be addressed in the prioritisation and cross-risk analysis tasks. These would include some level of semi-quantitative equivalency analysis in the final ranking, as well as an internal benchmarking exercise with other government assessment, especially the NZ NRR. Looking forward I believe a number of the governance risks do not really belong in the risk step and I would encourage these to be moved to Step 2 in future assessments.

I believe step 2 on policy assessment is also valid and robust though again I raise some minor issues. I think it might be useful to consider current risk levels and the implicit level of residual risk when providing your advice. I also think it would be useful to separate out opportunities and assess these in line with the case for realising maximum benefits.

Finally, I believe the step 3 on prioritisation is valid, but I would raise issues about the deletion of an urgency metric, as well as the greater weight given to strategic judgement by the Commission. I believe it would be possible for the Commission to introduce some elements of urgency consideration in the final analysis and in their advice to government.