Reviewer’s report

Title: Vulnerability of eco-environmental health to climate change: The views of government stakeholders and other specialists in Queensland, Australia

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Reviewer: Peter Berry

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The manuscript Vulnerability of eco-environmental health to climate change: The views of government stakeholders and other specialists in Queensland, Australia addresses an important area requiring investigation related to the impacts of climate change on communities and individuals. The perceptions of decision makers (from public health and related sectors) about the potential impacts of climate change and the capacity to adapt is of great importance for efforts to build resilience, particularly among the most vulnerable populations. The manuscript reports on some useful findings from the focus groups that were held in Queensland in 2008 that will be of interest to those seeking more information about climate change impacts on people, the assessment of vulnerabilities and adaptation processes.

Major Compulsory Revisions

The term “eco-environmental health” needs to be more clearly defined and explained and a stronger rationale is required about the need to develop an eco-environmental health framework

• Page 2 – para 1 – line 4 – what does it mean for Eco-environmental health to be influenced by climate change? Will the “interdependencies” be influenced by climate change or the health of communities, ecosystems and people be influenced? Similarly, on page 6, para 2 it is argued that “Governments and international agencies are increasingly concerned with the potential eco-environmental consequences of emerging issues such as climate change”. Indeed, many new reports have been released that highlight potential impacts of climate change on human health and well-being, communities and livelihoods and ecosystems functions that sustain well-being but I none of these to my knowledge have referred to “eco-environmental health”. Are they discussing the same concepts captured by eco-environmental health?

• Pg 4, para 2, line 6 – replace “The” with “the”. Also, what do you mean by “examples of direct impacts on eco-environmental health”? – impacts on ecosystems, on human health, on the interdependencies or on all of these things?

• Another example of this confusing use of terms– on page 10, para 1, line three – “...increasing temperatures and greater variability pose significant threats to human society” Does this refer to community health? Individual health?
Eco-environmental health? Similarly, page 10, discusses how focus group participants brought up heatwaves as an example of the effects of extreme weather events on eco-environmental health. Why is this not simply an example of impacts on health given that the focus group participant cites 10,000 deaths per year in Europe? What interdependencies are at work during heatwaves?

• On page 6, para 2 a strong case for why assessments of eco-environmental health are needed is not made. It is stated that these are needed “urgently” due to the “complexity” and “multiplicity” of climate change. First, it is not clear why this is urgent if many of the projected impacts are to occur decades from now. The authors should explicit highlight here that we are already seeing impacts on human health and well-being. As well, complexity in and of itself is not an important driver of the need to undertake such assessments. Rather, the issue is the potential severity of impacts. Finally, it is not clear what “multiplicity” means in this context. Text in this paragraph also suggests that while a number of frameworks for vulnerability assessments have been developed such an effort has not yet been made with an eco-environmental health context. However, the authors never clearly show how this type of framework would be different or what it would accomplish that others don’t. So, for example the Health Canada Assessment “Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity” (Seguin and Berry, 2008) employed methods of assessment released by the World Health Organization in 2003 and examined climate change risks to human health and well-being, ecosystem services that support health and a variety of natural hazards that impinge on health – including the interdependencies among all of these. What did it miss by not employing an eco-environmental health approach?

• Pg 5 para 3 – discusses the need for “a consistent set of definitions and frameworks for assessing eco-environmental health vulnerability”. First, the rest of the paper highlights the need to develop a framework. Is more than one needed? As well, the argument that new framework(s) are needed implies that public health and other decision makers want, need, or would have the resources to use this tool. Many in medium or smaller size communities don’t have the resources to undertake full assessments. Finally, the public health sector already has many well development risk management tools and frameworks and well established risk assessment processes and concepts. See Berry (2008) “Vulnerabilities, Adaptation and Adaptive Capacity in Canada” in “Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity”. The manuscript needs to make a stronger case as to how a new framework would benefit existing practices in this sector.

The analysis and reporting of findings from the methods used requires reconsideration

• Page 7, para 2 – the authors should provide some information on the rationale used to choose the participants for the focus groups. How was the choice informed by the requirements of an eco-environmental health approach? Are these decision makers that would be in charge of eco-environmental health policy and program type development? Why include industry? It is also puzzling
that there were so few representatives from public health or health care system fields given that human health impacts are such a core component of this approach.

- Page 17, para 1 – “Findings…suggest that the knowledge needed for developing a framework is insufficient”. What type of knowledge? Also, how can you deduce this from such a small sample size?

- Page 17, para 2 – “The majority of the participants in the current study believe that our climate is changing and that something needs to be done to protect eco-environmental health”. But, what can you actually deduce from this given the very small sample size. It seems the authors are implying that we might take from the results that the majority of such officials in the city, state or country may also feel the same way. However, one can’t make this generalization.

- Page 18, para 2 – Because of the small sample size and many other uncontrolled factors the results of these focus groups are not in fact transferable to other industrialized countries.

- Page 19, para 3 “It has been proven that government stakeholders have substantial knowledge on the impacts of climate change….”. It is not appropriate to report this type of finding or conclusion from a focus group with a small sample size. One would require a much larger survey of stakeholders to test this.

The key findings from the report and implications for development of an eco-environmental health framework and for adaptation policy making should be clarified and expanded upon

- Pg 3, para 2, line 3 – the real question is whether the findings of the report should have implications in climate change and public health decision making. Are there plans by government decision makers to use the information in this way?

- While the authors are not able to generalize the findings from the focus groups to other populations to derive implications for policy making there might be some benefit in providing the reader with how these findings will help inform the other major components of the larger research project currently underway to develop an eco-environmental health framework. This is never discussed explicitly but could be.

Minor Essential Revisions

The paper needs a thorough edit for clarity of language and appropriate use of concepts

- For example, page 7, para 1, line 1 “to provide width and depth to the discussions” What does this mean?

- Another example, page 10, para 3, line 1 “During both focus groups, a rich discussion was focused on direct implications such as….” Direct implications of what? Need to be concise.
On page 12, para 1 “chronic natural hazards” are differentiated from “acute natural hazards”. But what climate-related natural hazards other than drought can be considered chronic? Do the authors agree with this differentiation? By not discussing this observation the implication is that they do and that it should be factored into the framework they are developing.

On page 13, para 2 “With the increasing elderly population and the associated change in burden of disease was understood as a factor decreasing the adaptive capacity in a community”. The sentence is unclear and needs to be reworded. Also, what change in burden of disease is being referred to?

On page 14, subheading for para 2 “Minimizing the Impact” What impact? The impact of climate change on eco-environmental health? Would these not be impacts? Also, the authors should probably indicate that reducing GHG emission would only mitigate such impacts over the longer-term (decades). Finally, “mitigation” should be defined. The climate change and emergency management literatures define this term very differently.

On page 14, para 4 – “it is necessary to look at”. Suggest changing this to “assess” or “examine” based on the input by the focus group participant.

On page 15, para 1, line 1-2 “The participants also highlighted the importance of making sure that people are aware of the problem and the provision of sufficient education” This is unclear. Do the authors mean “…..of the problem and are provided with sufficient education”? Also, what type of education?

On page 15, para 2 – “Natural means” What does this mean? Provide a few examples. How is insulation (often made of synthetic materials) more “natural” than air conditioning – were the participants suggesting that the ecological footprint is smaller?

On page 16, para 1, line 1 – “proposed risks”. Risks are generally not proposed by identified.

On page 16, para 2 – “….the answer would lie in…..” The answer to what?

On page 16, para 3 – “perceptions from government, stakeholders…..” This should be “government officials…”

On page 17, para 2 – “mentioned constructs” What is a construct? Is it different than a “factor” or “variable”?

On page 17, para 3 – line 1-2 – unclear and need to reword. Is the population growth actually escalating or is it sufficient to say population growth?

On page 19 – Conclusion – the conclusion is very short not very compelling.

On page 2 – para 1 – line 1 – “climate change have changed” – awkward – need to reword. Also first sentence is unclear. By definition climate change is a changing of the climate of the Earth

On page 2 – para 1 – line 3 – “community health” – is this the health of people or health of communities?

On page 2 – para 2 – line 1 – when were the focus groups conducted? How many
people?

- Page 2 – para 2 – line2 – “the industry sector”. Unclear – is there only one industrial sector in Queensland Australia.

- Pg 2, para 3, line 3 – “a range of different methods for assessing vulnerability were reported....” – methods being used or suggested by the specialists?

- Pg 2, para 3, line 6 “changes in burden of disease” – is this from climate change or other trends which then exacerbate climate change impacts?

- Pg 2, para 3, line 6 – “changes in the vulnerability in particular areas” – too unclear – need to provided more detail.

- Pg 4, para 1, line 5 – delete “The”

- Pg 4, para 2, line 3 – “the effects include” Be specific – the effects of what?

- Pg 4, para, line 8 – the sentence implies that only the Melbourne bushfires caused increased mortality/morbidity but this is not true

- Pg 4 para 3, line 1 – how are bushfires a more indirect impact of climate change than impacts on air quality?

- Pg 4, para 3, line 3 – what is “socioeconomic infrastructure”? Need to provide examples.

- Pg 4, para 3, line 5 – confusing – could something be harmful to eco-environmental health and not impact on human health and well-being?

- Pg 5, para 1, line 1 – suggest inserting “some” before “vector-borne”

- pg 3, para 1, - delete “development of early warning systems” – this is part of “emergency preparedness and planning” Also, emergency preparedness, often referred to as emergency management, includes “planning”

- Pg 3, para 1, line 4 – “literature reviews” – not sure this is a particularly innovative method for eco-environmental health vulnerability assessment. Why not use an example that might be more unique to the climate change impacts and adaptation field?

- Pg 3, para 2, line 2 – suggest inserting “potential” before “impact”

- Pg 5, para 1, line 5 – “It is therefore likely to facilitate increased transmission of other vector-borne diseases such as...” It is better to say – likely to increase the risks of such diseases. Whether there is increased transmission of diseases is very strongly mediated by the health system response. This is why many experts believe developing countries that often have less robust public health and health care services are much more vulnerable to these types of impacts. Should also indicate where risks of such diseases are expected to increase – in all countries or some countries?
• Pg 5 para 2 – discusses “vulnerability” and then highlights factors important for “risk assessment”. Do the authors mean “vulnerability assessment”? These are two different things.

• Page 8, para 1 – it would be clearer and of greater value to the reader if you listed the actual questions used

• Page 9, para 1 is quite vague and needs to be rewritten. Three areas of themes are highlighted and then six themes are listed but it is not quite clear how the individual themes fit into the areas and why this is important.

• Page 9, para 3 “that supposedly is the worst drought”. Was this recorded to be the worst drought? Is this a participant’s point or the author’s?

• Page 11, para 4 – text in the second half of this paragraph is very unclear. It is not clear what is meant by “a sign of non-vulnerability” or the “eco-environmental health of the population”. Also, what does it mean to “know what you are measuring”. This needs to be made clear for the reader.

• Page 12, para 3, line 1 – “some participants believed that it is not vulnerability to the hazard that changes, but rather the frequency and severity of the hazard. This does not follow as vulnerability is a function of, among other things, hazards. It is not clear if the authors accept the point made by the participant and if it will be used for development of their framework.

• Page 16, para 2 “There was agreement within one focus group that in a framework for assessing vulnerability of eco-environmental health to climate change, an important aspect would be to look at the impact of storms, bushfires….”. The decision to include specific hazards for analysis would generally be made within the context of conducting a vulnerability assessment and not in developing an actual assessment framework, which would need to be at a higher level of generality.

• Page 18, para 1. It is not clear why there is now an international focus to the discussion when most of the paper has discussed domestic issues. An explanation for why this example is relevant is needed. Also, why are people vulnerable to sea level rise singled out at this point in the paper? Is this a major issue for Australia as well?

• Page 18, para 1. “In terms of developing a framework to assess vulnerability….there has been little research on the perceptions of public health specialists and climate change specialists in relation to this issue”. Are the authors relating to the issue described above – the vulnerability of older populations? If so, why should this matter? The assessment of the existence and effectiveness of current programs in a jurisdiction aimed at preparing and providing support to seniors for emergencies would be more helpful. Also, the finding from the focus groups that the public lacks awareness of the implications of climate change should be supported with findings from public opinion polls before the authors advocate that this consideration be integrated into policy
making decisions. Also, the text seems to shift back and forth between requirements for developing and framework and for devising new policy. These are not the same thing.