

## **Baselining in the Anthropocene: Vulnerability of the EIA process to the climate crisis (Draft for pre-submission for IAIA 2022)**

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### **Summary:**

The climate crisis is making it harder to clearly identify project effects and the rapid rate of environmental change is disrupting the usefulness of traditional baselines. The IEA process must adapt.

### **Abstract**

The climate crisis is having profound impacts on the environment and will have consequences to the EIA processes. It is becoming increasingly difficult to distinguish project effects on the environment from effects resulting from the climate crisis - separating the signal from the noise. Identifying project effects is fundamental to the EIA process. This is further confounded by the rate of change in the environment caused by climate change that is rendering traditional baselines less effective, or obsolete, at predicting environmental conditions when project effects are predicted to occur. These observations require the EIA processes to adapt to the realities of the climate crisis. The objective of a baseline in EIA is to allow for the evaluation of human activities on the environment. The business-as-usual approach for baselines is to measure the past and present conditions, use this to predict future conditions, and evaluate project effects. It would make sense that a baseline without human impacts is the ideal as it would simplify identifying and evaluating impacts. However, there are arguably no environments that are not affected by humans. Further, the past is becoming less reliable at predicting future condition. Some authors have raised the prospect that observations of the current environment may no longer be relevant for predicting future conditions, a "no analogue future". For the EIA process to adapt to the climate crisis projections of future conditions are needed that have greater clarity and new ideas for how to consider project effects are needed. This will require acknowledging that environments and ecosystems will not return to pre-industrial conditions in any meaningful timeframe.

### **Introduction**

The following are my personal observations of how the climate crisis may impact the environmental impact assessment (EIA) process for project specific environmental assessments. These observations are primarily on the use of baselines in the EIA process and how the climate crisis may impact baselines, impact predictions, and the implications this has on decision making. This paper describes my perspectives largely based on my EIA experiences with the Review Board, my life in the North of Canada, and research on the topic, but my views are not necessarily shared by the Review Board.

What we choose to do in Environmental Impact Assessment depends on our understanding of the problems we are facing. This is essentially the intent of this paper, to highlight some of the problems the climate crisis will cause to the EIA system. The climate crisis is casting the notion that the past is a good predictor of the future into serious doubt (Kopf, 2015). For certain areas of the planet that are experiencing the effects of the climate crisis to greater extents, such as northern regions, ecological shifts have been predicted or projected to occur in the near term that will render historical baselines with a diminished value for EIA. This diminished value is due the concept that future conditions may be so vastly different that they will have no analogous historical examples. In other words, the historical

baselines will not represent the future. The EA process will need to adapt to the anthropogenic dominated global environment and to the rates of change that are already observed.

This paper focuses on the role of the climate crisis for the sake of brevity, but the influences of other human impacts should not be ignored when considering impacts on baselines and how they are used. The term Anthropocene is intended to highlight the cumulative impacts that humans have had and will continue to have on the environment. These impacts are epitomized by the climate crisis but also include habitat destruction, overexploitation of natural resources, pollution, invasive species, diseases, and more. Nor should the ways the climate crisis is continuing colonization of Indigenous lands and worlds be overlooked and how it is normalized through baselineing (Suprise, 2020) (Salah, 2022).

## Baselines

There is a growing realization that baselines based on historic data are no longer sufficient for impact predictions due to environmental changes that will occur due to the climate crisis. Many EIA agencies are stating that future conditions must be anticipated and included in baselines. This raises several issues. Firstly, it disrupts the view that baselines are historical conditions only. Many agencies explicitly state that baselines are the conditions that exist before the project or activity proceeds. Secondly, there is little detailed guidance on how future conditions should be anticipated and included in baselines. There also appears to be significant limitations to predicting future conditions based on projections in sufficient detail to allow for meaningful impact predictions (Helmuth, 2014).

To fully grasp the challenges that the climate crisis is bringing to baselines a brief historical context can help. The EA process is essentially about mitigating harm caused by humans through developments on the environment (Aagaard, 2011). To mitigate harm, it must first be predicted. This is accomplished largely through the use of baselines to evaluate project effects and make decisions to eliminate, reduce, or offset impacts. This method of comparing project effects to the environment arose during the early 1970's when the EIA system was formalized (Noble, 2013). The environment that existed during the 19<sup>th</sup> and 20<sup>th</sup> century was remarkable stable. This led to the concept of using historical conditions, the baseline, as a proxy for future conditions, "a knowable past and predictable future" (Ureta, 2020). This has allowed for a fairly good prediction and evaluation of project effects. The climate crisis is disrupting this existing state of affairs.

The climate crisis is resulting in a world where the past is no longer a good predictor of the future. For many projects the use of baselines for impact predictions and evaluation will be problematic as the future becomes less like the past. However, for certain geographic areas, and for projects that have a shorter lifespan the use of historic baselines will likely suffice for impact assessment predictions.

There are many other issues associated with baselines that should be considered and include, to name a few: (Rodrigues, 2019) (Salah, 2022) (Suprise, 2020) (Ureta, 2020) (Hirsch, 2020) (Barandiaran, 2020) (Kopf, 2015):

- oversimplification of complex environments
- normalizing human impacts on the environment, shifting baselines
- the separation of humans and their effects from that of an idealized nature
- underestimation of human influences on the planet and it's historical extent

### Making sense of a climate changed future

There is a growing recognition and need for projections of future conditions that have sufficient precision to allow for impact predictions. Climate projections tend to provide long-term averages of climatic conditions that may provide a false picture of the future. This is due in part to conflating climate with weather. Long-term averages of climate conditions are not the same as weather and is not terribly helpful for impact assessment. The effects of weather, and extremes in weather, matter to wildlife (Helmuth 2014). For instance, projections of average arctic warming on their own may allow for a rough understanding of what habitat will be like, but likely not a good enough understanding of wildlife distribution and abundance to make impact predictions. To predict abundance and distribution a better understanding of weather and extremes in weather is needed. Understanding extremes in temperature precipitation is critical as a short-term events like a heat wave or icing event could have dire consequences for species survival.

To get a better understanding of how wildlife will respond to environmental changes the species vulnerability must be assessed. Work on this is being done globally. However, this must be followed with an assessment of their adaptive capacity to expected future conditions. This type of analysis is rare and is not present for species in northern Canada.

### Separating the signal from the noise

Predicting and attributing causation to environmental effects is central to the EIA process. This is becoming increasingly difficult to do because of the climate crisis. Distinguishing project effects from climate change effects, natural factors, or cumulative effects from other past, present and reasonably future projects is challenging. Attempts to do this using historical examples is difficult given empirical data. Attempting to do this using projections is even harder. For instance, predictions and projections that the near-term future environments will be dramatically different and that the effects of the climate crisis may overwhelm the effects of a project will seriously hamper our ability to predict effects (Helmuth, 2014) (Kavik-Stantec, 2020). How will the EIA process adapt to a situation where project effects are 'drowned' out by climate crisis?

Recent baselines used for EIA already have the effects of climate change baked into them. Can these climate-changed project specific baselines be used to identify the effects of climate change? Likely not. This is best accomplished through a specific 'climate change effects assessment'. This would allow for the identification of effects from the climate crisis. The discussion of the implication of the climate crisis on cumulative effects assessment is similar to project specific EA but this paper will not provide an analysis of this.

### Deciding if effects are acceptable

For EIA decision makers to make wise decisions about projects undergoing EIA accurate predictions are needed. This is the ideal that EIA strives for but is rarely the reality. The climate crisis is rendering the ability to make accurate predictions about future environmental conditions increasingly difficult. Without the ability to have accurate future baselines how can accurate predictions be made and how can decisions about the significance of effects be made?

This is further complicated by the values that decision makers use for deciding if impacts are acceptable and ideas around harm to the environment. These values are tied to historical baselines and notions of 'natural' environments that are free of industrial/modern human influence. These baselines are used as

a benchmark for evaluating environmental harm but are being disrupted given the environmental trajectory that humans have brought about.

This idea of 'harm' requires, for many people, separating humans from the environment and formulating concepts about 'natural' environments that exist without human impacts. The climate crisis is blurring this separation as there are essentially no more untouched or 'natural' environments. Where human destruction of environments occurred from overexploitation, habitat destruction, and pollution there remained an ideal that with careful management environments could return to a 'natural' state. The climate crisis is rendering this type of thinking less realistic and casting serious doubts that in any meaningful time frame that a return to a stable environment is attainable. What does this mean for the EIA process is something that requires serious thinking. Ideas of how impacts are deemed acceptable may need to shift from backward looking concepts of nature to forward looking goals of what is possible given the realities of the climate crisis.

## Conclusion

Like ecosystems and species, the vulnerability of the EIA process to the climate crisis needs to be assessed. From setting and using baselines, to impact predictions, and how we determine if project impacts are acceptable. Further, the climate crisis means there is no going back to idealized states of nature. This means we must also critically look at how we determine if project impacts are acceptable and what values we use to do this. To adapt the EIA process will need focus on better understanding future conditions and focusing on objectives for what we want as our future while understanding the profound limitations the climate crisis will have on what we can achieve. Through the EIA process projects must be assessed against these objectives with an ever-diminishing place for historic baselines.

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DRAFT paper for pre-submission for IAIA 2022. Baseline in the Anthropocene. May 1, 2022. Simon Toogood

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