Uncertainty Disclosure and Consideration in environmental assessment: An agenda for research and practice

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The EA process demands that impacts are predicted and mitigation measures prescribed, even though it is understood that the future is uncertain and knowledge incomplete. Uncertainty is unavoidable in EA practice and decisions. Understanding the nature of uncertainty and its communication are thus important to ensuring the quality of EA. This paper explores, first, how the research community has addressed uncertainty in EA and, second, how the practitioner community considers and communicates uncertainty and the implications for drawing conclusions about a project's impacts and subsequent project decisions. We focus on two case studies of hydroelectric development projects in northern Canada: the Bipole III transmission right-of-way project and the Keeyask Hydroelectric Generating Project. Our results show that despite considerable attention in the academic literature to addressing and communicating uncertainty in the process and practice of EA, specifically impact prediction and mitigation, claims about impact predictions and the effectiveness of mitigation can often appear much more robust than warranted. Confidence levels when drawing conclusions are often questionably high. The EA community must respond, specifically with conceptual guidance for addressing uncertainty in EA; guidance on how best to communicate uncertainty in EA practice so as to ensure informed decision making; and theory building to better understand and explain uncertainty avoidance behavior in EA.

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