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Too slow and too difficult? Participatory governance as a lever for climate change adaptation

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Abstract

Statement of the Problem: Interventions for development, sustainability, and/or climate change adaptation have a history of ambiguous outcomes and outright failures. How can interventions, and especially those that involve government, research and stakeholders, including local residents, result in sustainable outcomes that persist beyond the intervention, and move towards climate change behaviour-change in the practice of all participants? Methodology & Theoretical Orientation: The underpinning methodology is transdisciplinary (TD). Critical realism provides a theoretical foundation for discerning causal mechanisms in complex systems using the full range of disciplinary enquiry. The concept of complex social-ecological systems (CSES) provides a lens to forefront the role adaptation and feed-back. Expansive learning provides the mechanisms to guide processes of co-learning and the co-development of knowledge. Strategic adaptive management provides practical on-the-ground steps for stakeholders to participate in an adaptation process. The governance system in each particular CSES provides the contextual possibility of a process that will persist. Participatory governance brings the vitality and relevance of civil society. Eight case studies to probe the challenging question of whether painstaking on-the-ground trust??? Building; activating participatory governance processes; and engaging in reflexive praxis, can catalyse change towards climate change adaption, specifically focusing on water scarcity. Conclusion & Significance: The selected approach is slow, with many pitfalls. There are not many examples of unequivocal success. However, we can demonstrate learning, begin to understand failure more deeply, and most importantly share???Narratives of hope? Pace of progress and the difficulty of persevering. These???Narratives of hope??? Are the landmarks to encourage perseverance until a bigger body of evidence emerges and principles of practice are refined? We have enough examples of participatory governance being a key lever for ongoing change towards climate change adaptation to suggest it is worth persevering. The approach is easy to criticize??? Especially in terms of the pace of progress and the difficulty of persevering with these processes. These???Narratives of hope??? Are the landmarks to encourage perseverance until a bigger body of evidence emerges and principles of practice are refined? Recent Publications 1. Palmer C G, Biggs R and Cumming G S (2015) Applied research for enhancing human well-being and environmental stewardship: using complexity thinking in Southern Africa. Ecology and Society 20(1):53. 2. Lang D J, Wiek A, Bermann M, Stauffacher M, Martens P, et al. (2012) Transdisciplinary research in sustainability science: practice, principles, and challenges. Sustainability Science 7(5):25???43. 3. Folke C (2006) Resilience: the emergence of a perspective for social-ecological systems analyses. Even after introducing significant measures to reduce greenhouse gas (GHG) emissions, some additional degree of climate change is unavoidable and will have significant economic, social and environmental impacts on Canadian communities. To reduce the negative impacts of this change and to take advantage of new opportunities presented, Canadians will need to adapt. Photo courtesy of Agriculture and Agro-Food Canada Climate change adaptation refers to actions that reduce the negative impact of climate change, while taking advantage of potential new opportunities. It involves adjusting policies and actions because of observed or expected changes in climate. Adaptation can be reactive, occurring in response to climate impacts, or anticipatory, occurring before impacts of climate change are observed. In most circumstances, anticipatory adaptations will result in lower long-term costs and be more effective than reactive adaptations. Adaptation is not a new concept: Canadians have developed many approaches to effectively deal with the extremely variable climate. For example, communities in the Prairie Provinces have been designed to withstand extreme differences in seasonal temperatures. Nevertheless, the amount and rate of future climate change will pose some new challenges. The fact that science now allows communities to anticipate a range of potential climate conditions, and therefore take action before the worst impacts are incurred, makes adaptation to future climate change different from how Canadians have adapted historically. Photo courtesy of Jerry Mouland +Adaptation (responding to climate impacts) and mitigation (reducing GHG emissions) are necessary complements in addressing climate change. The fourth assessment report of the Intergovernmental Panel on Climate Change states that while neither adaptation nor mitigation actions alone can prevent significant climate change impacts, taken together they can significantly reduce risks. Mitigation is necessary to reduce the rate and magnitude of climate change, while adaptation is essential to reduce the damages from climate change that cannot be avoided. Single policies and measures can be designed to help tackle both mitigation and adaptation. For example, as the climate changes, a projected higher frequency and intensity of rain storms may increase storm water runoff and the potential for localised flooding in urban areas. Planting street trees is an initiative that municipalities can implement to both reduce storm water runoff (adaptation) and increase carbon storage (mitigation). In other cases, there may be conflicts between adaptation and mitigation goals that can only be addressed in a broader context of community priorities and risk tolerance. For example, increased use of air conditioning can be considered an adaptive measure because it reduces human health problems during heat waves, which are projected to become more frequent in future. However, air conditioning is energy intensive and, depending on the source of the electricity, is likely to increase carbon dioxide emissions. Therefore, in deciding which adaptation action is most appropriate for a particular situation, attention must be paid to its implications for adaptation and mitigation, as well as its cost, efficacy and acceptance by the public. The Earth's climate is changing. Some of this change is due to natural variations that have been taking place for millions of years, but increasingly, human activities that release heat-trapping gases into the atmosphere are warming the planet by contributing to the "greenhouse effect."

The Intergovernmental Panel on Climate Change concludes that the best estimate for global average surface air warming over the current century ranges from 1.8°C to 4.0°C (IPCC 2007). This rate of temperature change is without precedent in at least the last 10 000 years. Consequently, historical climate no longer provides an accurate gauge for future climate conditions.

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