Community-based Responses to Marine Hazards and Advice on Hazard Responses for Coastal Communities

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Project Description

Coastal communities are facing an increasing range of marine hazards, from rapid disasters, such as floods, hurricanes, tsunamis and oil spills, to longer-term change, such as sea level rise and ocean acidification. Our research is asking what people in coastal communities have done, and can do, to respond to threats from the ocean. We see responses as including a wide variety of interventions that aim to decrease vulnerability and/or increase community resilience to hazards.

Phase I. A global assessment of community-based responses to hazards

To shed light on how communities, respond to hazards, we initially took a broad perspective on hazards, whether marine or terrestrial, in compiling a global database of published case studies, to learn what communities all over the world are doing to respond to any kind of hazards.

The data was extracted through a systematic review of peer reviewed journal articles, and is being analyzed both qualitatively and quantitatively. The qualitative analysis produced a classification of community-based hazard response types, which we believe to be the first such inductive classification based on a global dataset.

That typology is being used within a quantitative analysis to assess the frequencies with which each response type is used, for each type of hazard, region of the world and national circumstances, including economic and/or development level, and governance. We have found that while all response types are used widely, the diversity of responses adopted at a community level is strongly dependent on the respective national measures of income and governance.

Phase II. Assessing marine hazard responses in Canada's coastal communities

The second phase of this research aims to gain a better understanding of the current reality of marine hazard responses in Canada's coastal communities and to assist communities in selecting appropriate responses for the future.

There is currently momentum in Canada to improve communities' resilience to hazards, especially in the context of a changing climate. Many communities have developed or are in the process of developing adaptation and mitigation plans through disaster risk reduction (DRR) initiatives and/or climate adaptation initiatives. Programs such as the Partnership for Climate Protection (PCP) and the Building Adaptive and Resilient Communities (BARC) provide a streamlined 5-milestone methodology as well as technical assistance to assist communities to plan and implement responses. These programs are gaining in popularity and are based on a

rigorous process, but there is limited guidance provided to help community-level decision-makers select the best options for their community.

This research program will address this gap, by exploring coastal communities' priorities in terms of overall goals, and identifying current responses to hazards and constraints to implementation. These results will be compared with those from the global analysis of Phase I, to identify potential hazard strategies that could be further developed in the Canadian context to complement existing response portfolios, taking into account challenges to implementation.

A second aspect of the Phase II research involves investigating local communities' priorities in terms of what to protect from hazards in general (including those exacerbated by climate change) and what consequences to avoid, together with the underlying values relating to those choices. This reflects the recent realization by some Canadian municipalities that a lack of political buy-in is one of the most important constraints in implementing climate change adaptation plans (ICLEI Canada, 2016). It is expected that directing attention to what people value most, and using this information to select responses to implement, should improve the legitimacy of and support for hazard response decisions. Our goal is therefore to test a methodology to elicit local priorities and values that could then be used by other communities to assist them in the difficult task of prioritizing responses within the constraints of limited budget and resources.

Finally, a third goal of Phase II is to test the usefulness of a multi-hazard approach to planning for local communities. It is anticipated that considering the local consequences of all relevant hazards together, regardless of their underlying cause, will allow communities to identify key response strategies that have the potential to be effective against a suite of hazard impacts.