# Climate Change Adaptation Research Grants Program
## - Emergency Management Projects

**Project title:**
Recovery from disaster experience: its effect on perceptions of climate change risk and on adaptive behaviours to prevent, prepare, and respond to future climate contingencies

**Principal investigators:**    Dr Helen Boon
**Lead organisation:**    James Cook University

**Objectives**:
- Identify private and public sector groups' *beliefs, behaviours* and *policies* that have supported *community resilience* to a disaster event.
- Construct a model with findings to help implement appropriate and equitable emergency management policies and mitigation strategies for climate change events.

**Project design and methods**
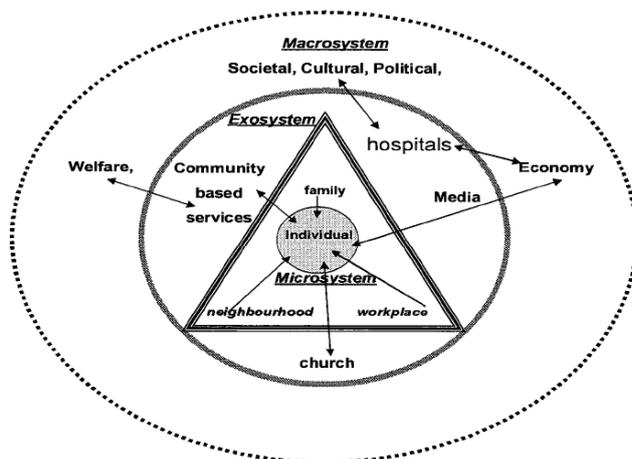


*Bronfenbrenner's bioecological theory*
The model shown here is a summary of Bronfenbrenner's conceptual framework upon which the research design will be based.

*We will populate each level of the model through*
a) qualitative data via focus interviews for each case study site and
b) quantitative data derived from the empirical qualitative data (and the available literature) to construct survey instruments to apply to a larger sample from each site for generalisation

Our approach, widely supported (e.g., Handmer, 2003), rejects a vulnerability focus for the more positive approach of resilience, or the capacity to cope and adapt. This is more acceptable than a negative focus on vulnerability, aligns with climate change researchers' approach and addresses research priority 2.3.

Our four selected case study sites are an excellent selection to model future climate change impacts because they represent both rapid and slow onset events. This selection will give us a good data base from which to compare and contrast people's reactions and adaptive capacity to the different types of events, as well as perceptions of the climate change (2.1 and 2.2).

Our methods will provide a model to predict probable psychological, social and economic consequences that will flow through the community depending on the policy, statutory and governance arrangements that are adopted. We will achieve this through case studies, with a combination of focus interviews, surveys and Rasch and Structural Equation Modelling techniques to model and measure factors of psychological and social adaptation, behavioural and lifestyle adjustments. These techniques, *well established in educational and psychology research,* construct probabilistic models of social change and are applicable to the study of natural hazard impacts and climate change. Rasch analysis provides a rigorous quantitative means to develop interval scales for knowledge, beliefs, values, and attitudes. Being based on probabilistic estimates it is well suited to develop models for decision making under uncertainty. Data obtained from surveys is checked for validity and reliability, and sample-independent and item independent scales are

constructed. There will be several scales to measure perceptions of: risk, resource access, engagement in mitigation activities, organisational linkages, available social supports, self-efficacy and other factors empirically derived form the focus interviews. Since resilience building is most effective when it draws on existing strengths within communities, particularly in social capital and governance, it is important to identify relevant perceptions to plan intervention strategies in a changing hazard environment. These scales have the advantage that they can compare populations *cross-sectionally* and *across time,* and can be added to should the need arise.

*Our mixed method research design is shown below (Cresswell, 2003).*
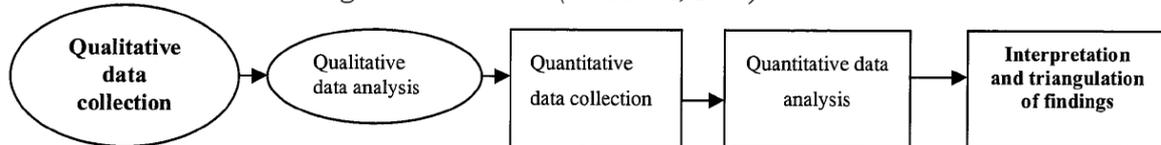


Case studies are a multi method approach for gathering data with respect to specific instances of a case and thereby are suited to the project's goals (Stake, 1994). To address research aims we will identify key local personnel in the four case study sites with the assistance of our local partner organisations. In-depth qualitative data will be collected through focus group interviews at each site to gather data on factors which have influenced post disaster recovery, as well as to gauge their perceptions of the local community level of resilience We envisage a minimum of four or five focus groups, each with 6-8 participants, in each case study community, with each group representing different sectors of the community (e.g., community leaders, emergency response personnel, business and management personnel in profit and non-profit areas affected by natural disasters, a cross-section of local citizens, youth). The particular sectors and the identification and recruitment of participants will be strategically determined in consultation with local personnel. The questions posed to the focus groups will address their understanding of any relationship between climate change and natural disasters, their level of resiliency and preparedness and sense of efficacy (or despair and hopelessness) in responding to climate change and dealing with natural disasters, the factors that influence such resilience and efficacy or lack thereof, and their perceived needs for different kinds of support to respond to natural disasters. The data will be triangulated; there will be both individual case analysis across community sectors and cross-case analysis to identify similarities and differences across communities and the different kinds of disaster experiences. Further analysis to interpret and explain these themes will be conducted by drawing on relevant intemational literature. In addition, we will be examining policy records and council disaster and recovery response plans in the four localities. We have enlisted the support of the four local State Emergency Services and councils to expedite and facilitate this process. Their infrastructure, economic, social and environmental recovery groups will give us insights from their differing perspectives. Their input will be included in the survey and will be subject to assessment by the general population. This evaluation of the processes employed by emergency management will help them re-align or conceptualise their approach to future emergency events. Such an approach has been used in previous studies examining post-disaster recovery and resilience perceptions

The output of these analyses will be an empirically and conceptually informed examination of the level and kinds of understanding of, and preparedness to cope with, climate change events arising from these four communities, supported by descriptive and explanatory case studies of each community.