Coastal Adaptation to Climate Change in New Zealand

Submitted by helen.rouse on April 10, 2012
Author Name(s):
Helen Rouse, Terry Hume, Rob Bell, Robin Britton, Jim Dahm, Paula Blackett
Authors in System:
Helen Rouse

Project Background

Project Details

Project Implementation

The CACC project (2008-2012) aims to create the necessary information and tools to enable adaptation to the impacts of climate-induced change on the coastal environment. The project includes three main work streams:

1. Building a national coastal sensitivity profile;
2. Engaging and informing communities; and
3. Encouraging best practice planning.

The processes, resources, and information used and outputs from these work streams differ. International literature reviews from a variety of sources such as peer-reviewed journals and internet sources to build a theoretical underpinning to project approaches were used. Where possible, the project team used international case studies to help identify likely success factors.

Building a national coastal sensitivity profile

The national coastal sensitivity work builds on international literature regarding coastal hazards and coastal vulnerability. The term “sensitivity” is used to reflect the mainly physically-based nature of the New Zealand mapping exercise. Using an existing high resolution physical-based coastal classification of the New Zealand coast based on morphology (sediments, geomorphic character, hinterland characteristics, morphology controls) the coast was mapped at a scale of 1:50,000. The project team expanded and improved on this work to deliver a consistent national-regional level assessment of coastal sensitivity. The result was a Coastal Sensitivity Index (CSI), which provides a snapshot of the potential sensitivity of New Zealand's non-rocky coastline to coastal inundation (flooding) and coastal erosion as a result of climate change in the future. The CSI can be viewed as maps of coastal inundation and coastal erosion using the Coastal Explorer website.

Engaging and informing communities

As part of the engaging and informing communities work stream, the project team has looked at international literature on the topic, and undertaken work with case study communities in the

Coromandel area of the Waikato region of New Zealand. A two-stage method for engaging with the community at Whitianga was designed. First, at an Open Day, the team used projections of sea level rise driven changes to coastal inundation, erosion, and habitat change on large aerial photo boards to run a participatory mapping exercise. The purpose was to elicit input as to valued aspects of the Whitianga community that might be at threat from climate change. At a follow-up workshop, participants explored potential for adaptation options to provide 'solutions' to these issues, exploring who the winners and losers would be for each option, and what would be required to enable the options to be implemented.

The project team also worked with the Mercury Bay Area School to develop a cross-curriculum unit that meets New Zealand Curriculum requirements for 'links between learning areas.' The unit was taught to a mixed ability Year 10 class for a seven-week period, averaging 14 hours per week spread over Science, Mathematics, English, and Social Studies timetabled classes (approximately 100 hours in total).The real world context of coastal adaptation to change, opportunity to work with other teachers across the school curriculum, tailored design of class experiments and local field exercises, and access to the collective expertise of the CACC team made this collaboration a success. For more information see the project page.

Another case study was conducted in a Māori community, Ngaiti Whanaunga, at Manaia. A similar process of engaging with the community through hui (community meetings) and structured interviews, using maps as a focus point for discussion, was used in this work. the final report is available on the CACC website.

For this work stream, the project team has drawn together theory from international literature, overseas experiences with engaging coastal communities about climate change issues, and the aforementioned case studies to build a recommended approach to engaging communities on coastal adaptation issues in New Zealand. The 'Making it Work' approach identifies four key inputs to successful community engagement: the right team, the right data, the right support, and the right resources.

Encouraging best practice planning

The third work stream in the CACC project is encouraging New Zealand's local authorities to plan for and implement adaptation options to prepare for climate change impacts on the coast. As part of this work stream, the project team undertook an evaluation of planning, policy, and institutional processes in 2009. Written and verbal interviews were conducted with 30 regional, unitary, and district/city councils. Using that work and a more general international literature review as the underpinning, some guidance materials to help councils and communities have been developed. The guidance, *Pathways to Change*, includes a four-step process developed by the CACC team to help councils and communities adapt. The four steps are:

- Step 1. Awareness and Acceptance
- Step 2. Assessment
- Step 3. Planning a way forward
- Step 4. Implementation, Monitoring and Review

The CACC project was undertaken by a NIWA-led partnership. The research team combines the skills of coastal/climate scientists, engineers, social scientists, planners, and educational professionals from NIWA, AgResearch, the University of Waikato, and consultancies (Jim Dahm from EcoNomos and a planning consultant, Robin Britton). A key to the success of the case study work has been the input from key stakeholders Waikato Regional Council, the Thames Coromandel District Council, and coastal communities in Whitianga and Manaia. Partnering with the councils has been vital to ensure the

project is grounded in the realities of management of coastal issues and climate change, which in New Zealand are the responsibility of those councils. Māori researchers from the NIWA Māori Development Unit Te Kūwaha led the project work with Ngati Whanaunga at Manaia.

Project Outcomes and Conclusions

Outcomes from the CACC project include:

- More informed, proactive communities and councils developing local adaptation strategies to climate change;
- The inclusion of these strategies in regional and community coastal planning documents; and
- Evaluation and monitoring of the uptake and performance of adaptation strategies.

Emphasis during the final year of the project (2012) was to 'roll-out' project resources/products to help achieve these outcomes more broadly in New Zealand. Outputs from the Building a national coastal sensitivity profile work stream include:

- GIS maps available on the Coastal Explorer website, and
- the overview report *Coastal adaptation to climate change: mapping a New Zealand coastal sensitivity index*.

Outputs from the engaging and informing communities work stream include:

- a report detailing the community case study in Whitianga – *Engaging with communities on coastal adaptation to climate change: Whitianga experience*;
- a report summarising our case study work with Ngati Whanaunga in Manaia, Coromandel Peninsula - *Examining community risk, vulnerability and endurance at Manaia Settlement, Hauraki-Waikato, Aotearoa-New Zealand;*
- a paper summarizing the Whitianga case study – *How can we engage with coastal communities over adaptation to climate change?: A case study in Whitianga on the Coromandel Peninsula* – that was delivered at the New Zealand Planning Institute conference in April 2010;
- an article describing the Mercury Bay Area School study, published in the New Zealand Science Teacher journal Issue 127, NZST (NZASE); and
- a summary research report *Engaging communities: Making it Work*, which draws together theory from international literature, overseas experiences with engaging coastal communities about climate change issues, and case studies undertaken with New Zealand communities, to build a recommended approach to engaging communities in coastal adaptation issues in New Zealand.

The encouraging best practice planning work stream has produced:

- a report, *Local Government planning practice and limitations to adaptation*, documenting the results of the evaluation of planning, policy, and institutional processes survey of councils; and
- a guidance document called *Pathways to Change*, which identifies a four-step process to help councils and communities adapt to climate change at the coast.

There have been a number of challenges with the work to date. Some of them relate to internal project resourcing and staffing in particular (i.e. departure or unavailability of staff with the skills to complete certain project tasks). Fortunately the research team has a lot of complementary skills, and access to other researchers within the partner organizations. Other challenges lie in the type of research. Undertaking the case studies with communities raised some issues; an example is the (not

uncommon) issue of attracting people to public events, and ensuring the 'right' mix of interests in the community group. The topic of climate change is of course full of complexity and scientific uncertainties, and the communication of these issues in such a way as to enable the community to have some appreciation of these issues without distracting from the broader discussions about adaptation options was a matter of some consideration. In the end, the two-stage method tested in Whitianga used best-practice national guidance estimates of sea level rise for the 2040s and 2090s, and allowed for one-on-one communications regarding uncertainties in those estimates.

Writing up of the project for a peer-reviewed journal is still a work in progress...

Effort Stage:
Completed
Timeframe:
3-5 years

Recommended Citation

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Language Undefined

Project Photos:

EcoAdapt and CAKE Network

User Rating:

No votes yet