

RETREAT AS A MANAGEMENT RESPONSE TO COASTAL RISK: A CASE STUDY FROM THE FLEURIEU PENINSULA, SOUTH AUSTRALIA

MAJOR FINDINGS AND OUTCOMES:

The uncertainty of the future and how communities and governments will adapt to coastal and other risks will impact future generations, and the state of both natural and built environments. Long-term strategic planning and adaptation actions to compensate for a transformation further into the current risk society will allow for a sustainable future. As Bardsley and Rogers (2010, p. 13) state, 'as individuals and organisations apply adaptation strategies there will be both successes and failures, but a learning orientation to societal change will enable improvements in management over time.' This societal change must develop into a greater enhancement of community engagement and empowerment over their society's respective region. Community knowledge is a powerful tool, and if a community can embrace, understand and appreciate the value of an action, implementation will enjoy a higher success rate. This can greatly enhance the sustainability and protection of a region – especially at the coast, where the cultural association and appreciation is high.

Additionally, a societal change must occur within governance practices. To decrease the vulnerability of systems from climate change and coastal risks, governing organisations and individuals will need to make complex, and possibly unpopular planning decisions, such as planned retreat (Bardsley & Rogers 2010). Adger (2003, p. 388) supports this stating:

The effectiveness of strategies for adapting to climate change depends on the social acceptability of options for adaptation, the institutional constraints on adaptation, and the place of adaptation in the wider landscape of economic development and social evolution.

The future of societies across the world is still uncertain as the risks increase and a transition into the second modernity (Beck 2006, 1999, 1992b) occurs. The science surrounding climate change will continue to remain uncertain until there is an expansion of the data available and a greater understanding of the nature and impacts of the risks. Many governments are using this uncertainty as an excuse to delay both mitigation and adaptation actions and policies – employing a 'do nothing' approach. Governmental reactions to sea level rise on coastal settlements are an example of this, but if pro-active planning and policies do not occur, the key risks to coastal environments such as sea level rise, increased extreme weather events, erosion, a change in wave patterns and other coastal processes may have irreversible impacts on these areas.

As Beck (2010) theorises, there is often a general ignorance surrounding the concern for environmental risks, and climate change. The lack of coastal management action can be seen as an example of this. There are currently significant inconsistencies across Australia with uncertainty towards the role each governing body has. A national approach may help address this, to provide guidelines and certainty for action and equity to adapt to the uncertainty of how climate change will impact on coasts. In addition, as a key characteristic of a Risk Society is risks that are no longer constrained within borders, a national approach will allow for a greater success of risk adaptation and management.

Rising sea levels are also likely to cause significant litigation issues for governments. The most vulnerable to this are local governments due to their involvement in development and planning. Local governments need to introduce further pro-active planning and increased use of the precautionary principle when undertaking planning and development to prevent these future liabilities. A shift from general guidelines and goals, to specific actions, development conditions and policies will help achieve sustainable development in the future. These alterations should be implemented in the case study region of the South Coast on the Fleurieu Peninsula. Here, the relevant councils have currently undertaken minimal action/planning in regards to sea level rise. This demonstrates the inconsistencies which are occurring for local governments across the country. A main reason for this is the lack of provision of funding for many poorer local governments. This is a key issue as without the appropriate funding, risk assessments are not completed resulting in a lack of ability to develop planning and strategies for the future.

Another conclusion drawn from this research is that within policies and planning there is a significant focus on impacts on infrastructure in coastal settlements from climate change and especially sea level rise. The ecological implications must receive greater attention. Climate change and rising sea level will impact on all coastal environments – including marine.

SIGNIFICANCE:

This research has significance for the adaptation and protection of Australia's settlements and infrastructure as the results of this study have supported the literature in determining that climate change risks on coasts will have an immense impact - an impact that has not yet been fully comprehended or received the attention needed from the governing bodies. A CPB member (31/08/2010) supported this stating, '*...and there's every indication at the moment that the Government doesn't think coastal protection is very important at all... .*'

Currently the focus for coastal management in response to sea level rise is infrastructure, such a sea wall. This needs to change. If the rate and impacts of climate change and sea level rise is to the level of 1.1 metres by 2100, or higher (Solomon *et al.* 2008; Parry *et al.* 2007), it will simply become too expensive to protect all infrastructure and property along the coastline. Cities such as Sydney, with considerable coastal infrastructure, may be exceptions to this as a protection option may be more suitable. A retreat option needs to gain greater levels of consideration as is being promoted by the current literature to achieve further adaptation by settlements regarding both infrastructure and natural environments. This has also been identified within the context of bushfires – with the Victorian Bushfire Royal Commission recommending a retreat from certain areas. This was the only recommendation not accepted by the Australian Government.

The community concerns need to be considered when implementing a significant policy such as planned retreat. '*Community engagement and empowerment are vital for sustainable solutions...*' (The Government of South Australia 2006, p. 9). Issues that need to be considered include compensation – paid by whom, and for whom? Whether this be by the varying governments or a combination of – such as in western France after the Hurricane Xynthia (France 24 2010), insurance companies, other bodies, or no compensation – as in Byron Bay, where the planned retreat policy is successful. In addition, Huppertz (2009) suggests the use of transferable development rights – allocating a retreating owner with a right of development at another site.

FURTHER RESERCH SUGGESTIONS:

Due to the limitations previously outlined in this study, there remains a wide scope for further research. It was clear from this research that further study needs to be undertaken in regards to adaptation methods, whether they are retreat, protect, accommodate, or all three, and how they can be implemented in each region. The social and ecological implications of each of these methods also need to be investigated with consideration to how systems will react and change as a result of the rising sea levels. This includes the marine ecosystems – especially the near to shore reef systems and flora and fauna which exist on the beach itself and the near coastal zone.

The social implications that climate change and sea level rise will have on the coastal settlements' populations need to be considered, as people's homes, environment and general lifestyle will change. In addition, the most successful and practical method of educating the public in regards to the impacts and best methods of adaptation and mitigation should be determined. There is a need to convince some members of the community of the reality that it is not a short term issue that will disappear in the immediate future - that it requires long term forward planning. With increased pressure from the public, governments will be forced to not only fund further research, but introduce and actually implement tough policy and initiatives. This action will better equip both the current and future generations for the continually changing climate.

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