

All at sea: Navigating the legal waters of climate change impacts on the Australian coast

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The impact of climate change on coastal development has become legal minefield. The fear of future liability for climate change impacts is hampering coastal development in many vulnerable locations. Local and state government agencies risk virtually-certain legal challenge if they constrain development rights in order to protect against climate change risks. If they continue to allow development on coastal land, they chance the potentially-costlier risk of extensive liability to future landowners. Courts in four states have considered the relevance of climate change projections to development assessment processes. They have upheld the decision of councils to refuse development consent in places where a clear coastal management plan is in place and have overturned approvals where councils have failed to give appropriate consideration to climate change impacts.

Five Australian states have now developed coastal policies or planning instruments that require development authorities to consider the impacts of climate change on new development.

Added to these choices about new development is the question of how, if at all, existing properties should be protected from the increased coastal hazards, and who should pay for such protection. The options for safeguarding against sea-level rise are more limited where historical development has created a massive infrastructure legacy in vulnerable coastal locations. The choice between coastal fortification, restrictions on redevelopment, and new mechanisms to fund the costs of repair, retrofit, relocation and retreat involve careful assessment of the costs of constructing and maintaining such works, as faulty or poorly maintained structures are likely to create their own liabilities.

With such a wide range of local and state approaches to planning for climate change impacts, and uncertain legal implications of each choice, there is growing pressure to develop nationally-consistent guidelines.

Tools for the Rationalisation and Management of Data Collection – The Semantic Reef

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The Semantic Reef project is an eco-informatics application that aims to combine multiple environmental datasets to test ecological hypotheses and to derive information about environmental systems. The intention is to develop an automated data processing, problem-solving and knowledge discovery system that will assist in developing our understanding and management of coral reef ecosystems.

Remote environmental monitoring (including sensor networks) is being widely developed and used for collecting real-time data across widely distributed locations. As the volume of raw data increases, it is envisaged that bottlenecks will develop in the data analysis phases, where current data processing procedures still involve manual manipulation that will soon become unfeasible to manage. Research communities, such as the Semantic Web and Knowledge Representation fields, aim to address this “data deluge”, through the development of the automated data synthesis technologies and use-case implementations such as described here.