

# CLIMATE CHANGE AND COASTAL EROSION, PLANNING FOR RISK & RESILIENCE.



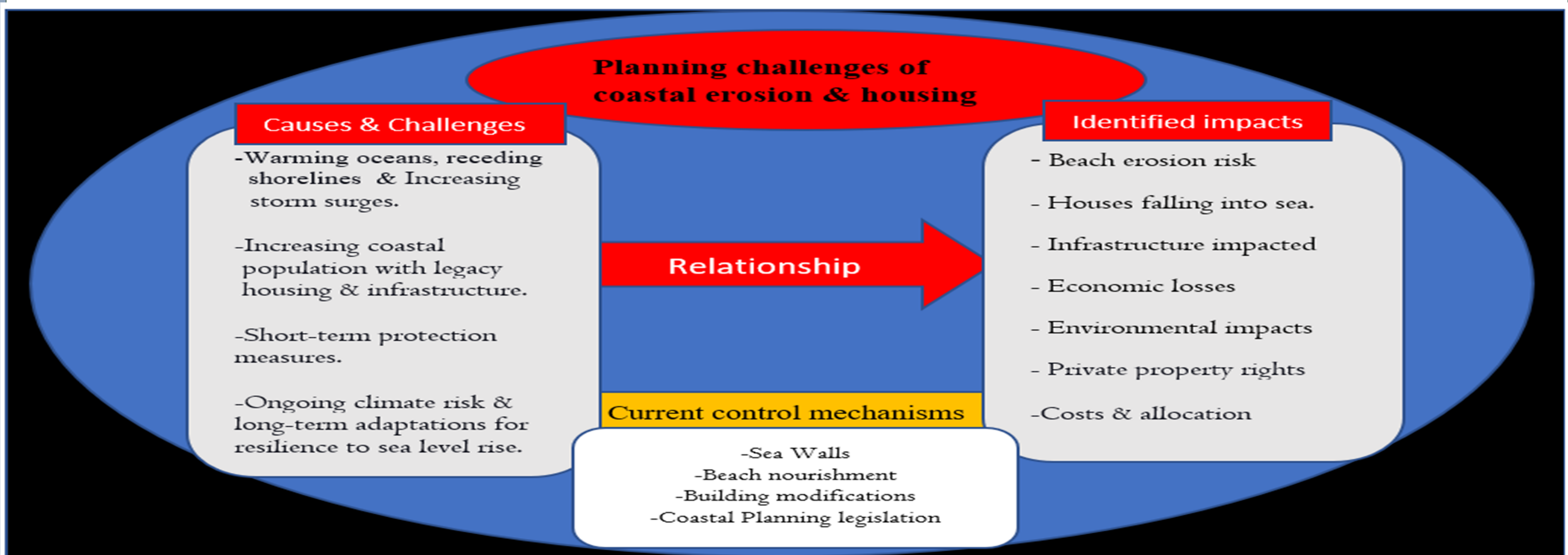
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**Introduction:** As the world moves into a climate-affected future, there needs to be a shift in urban planning for coastal communities to address the increasing climate risk of sea level rise and coastal erosion. In addition, governments must look beyond coastal engineering adaptations to facilitate the safety and long-term resilience of property owners in coastal zones in an environmentally and socially sustainable manner.

Land-use planning must be at the forefront in addressing the risk faced by coastal erosion and the impact of adaptations on environmental sustainability. However, when a system geared for private rights, economic growth and increased housing is pitted against the looming increases in sea-level rise, storm surges, and coastal erosion, is the current iteration of coastal planning legislation and policy functional for the 21st century? Do local councils adhere to the national risk hierarchies that follow the Sendai Framework for Disaster Risk Reduction "To enhance efforts to strengthen disaster risk reduction and to reduce disaster losses of lives and assets" (UN, 2015,p 1).

**The Aims:** This research examines how local government planning policies can address the risks of legacy housing developments in coastal erosion zones and explore the potential of sustainable 21st-century adaptations to rising sea levels and storm surges, with the aim to support local councils and communities in a move towards a resilient future, where over-investing in post-disaster reconstruction is reduced for beachfront development.

**The Planning Challenge:** While inundation from sea-level rise is considered the greater risk to coastal environments, the impact of erosion and alterations to coastal geomorphology from storm surges exacerbated by sea-level rise have the potential to cause the greatest immediate threat. (McInnes, et al., 2003; Marshall et al., 2011). This threat leads to multiple planning challenges for the beach front development and the local government as displayed below.



NEWS & RESEARCH

\$25 billion in Australian residential property exposed to high coastal risk

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## Actions:

- **Natural hazards of shoreline recession, coastal erosion and inundation present a current and future threat to coastal development and public wellbeing. Such hazards must be critical urban planning considerations, yet new coastal property developments continue in high-risk erosion zones.**
- **Local councils are formulating coastal adaptation strategies, including grey infrastructure and sand nourishment which are not environmentally and economically sustainable management practices over the long term (Parkinson & Ogurcak,2018).**
- **Climate change demands that land use planning be based not only on the knowledge of past events, but also on the future alternative land uses to incorporate more flexible responses that foresee future changes and potential impacts (Barnhizer,2003).**
- **Whilst options of rolling easements and sea walls may enable housing to remain on beach fronts. Planned retreat, (including buybacks and land swaps), is the most logical long-term option to reduce risk, and is likely to become an imperative in the future planning of settlements. When will governments start planning for climate receiver cities in Australia?**
- **This research continues to explore how governments can implement risk strategies for coastal development for 2050 and beyond whilst adapting to coastal hazards today.**

References: Barnhizer,(2003). Giving's recapture: Funding public acquisition of private property interests on the coasts. *The Harvard Environmental Law Review*, 27, 295-519.

Marshall et al,(2011).Coastal construction trends in response to coastal erosion: An opportunity for adaptation. *Journal of Coastal Conservation*, 15(1), 61-72.

McInnes, et al.,(2003). Impact of sea-level rise and storm surges on a coastal community. *Natural Hazards*

Parkinson & Ogurcak,2018,Beach nourishment is not a sustainable strategy to mitigate climate change, *Estuarine, Coastal and Shelf Science*

*The Sendai Framework for Disaster Risk Reduction 2015-2030, The United Nations Office for Disaster Risk Reduction*