

Planning for sea-level rise and coastal flooding in SEQ

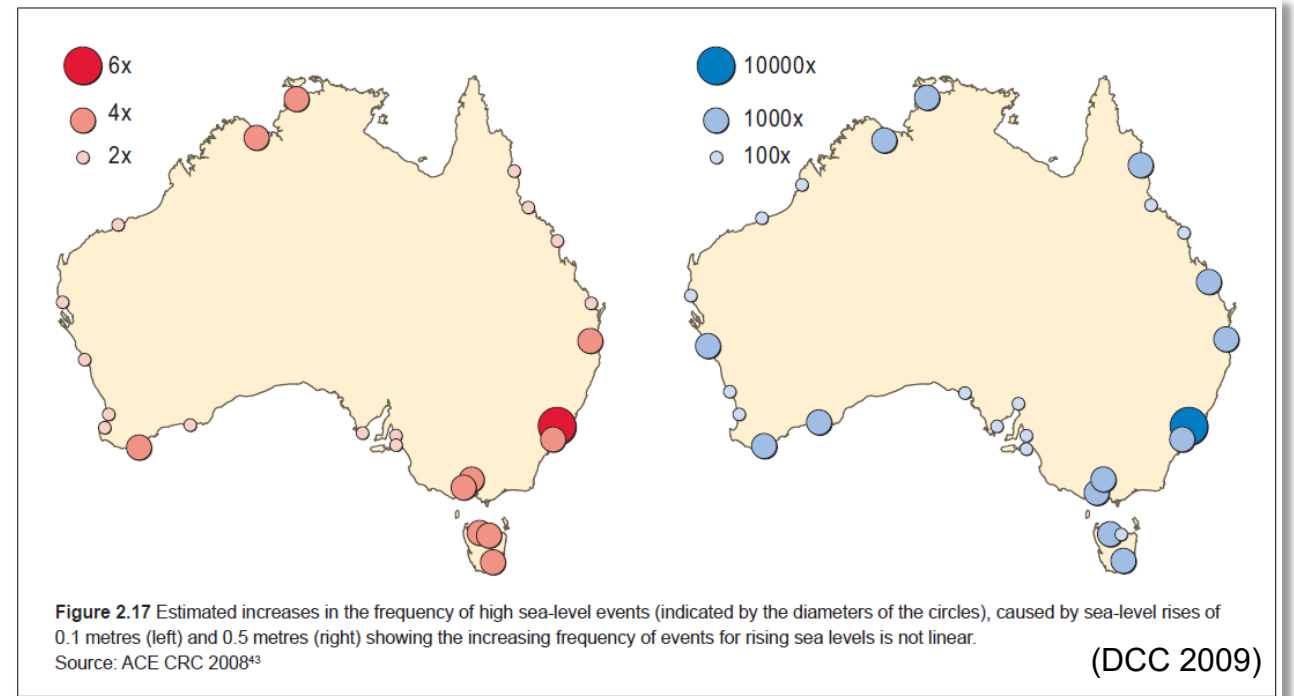
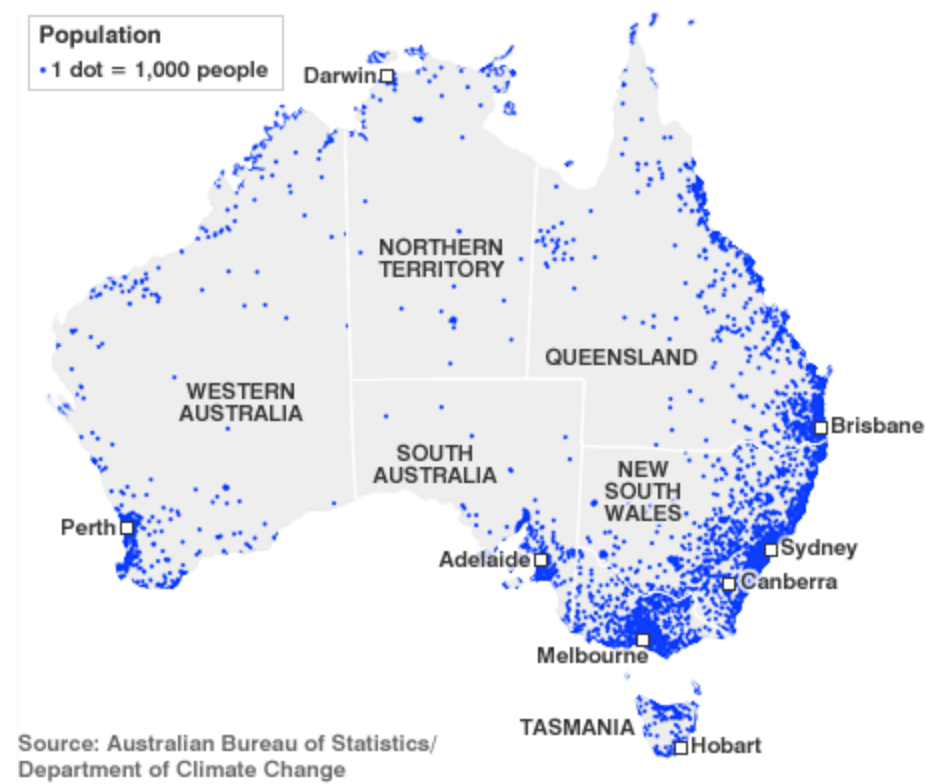
SEQ Community Alliance forum
15 October 2022

Dr Ayşın Dedekorkut-Howes
Griffith School of Engineering and Built
Environment & Cities Research Institute

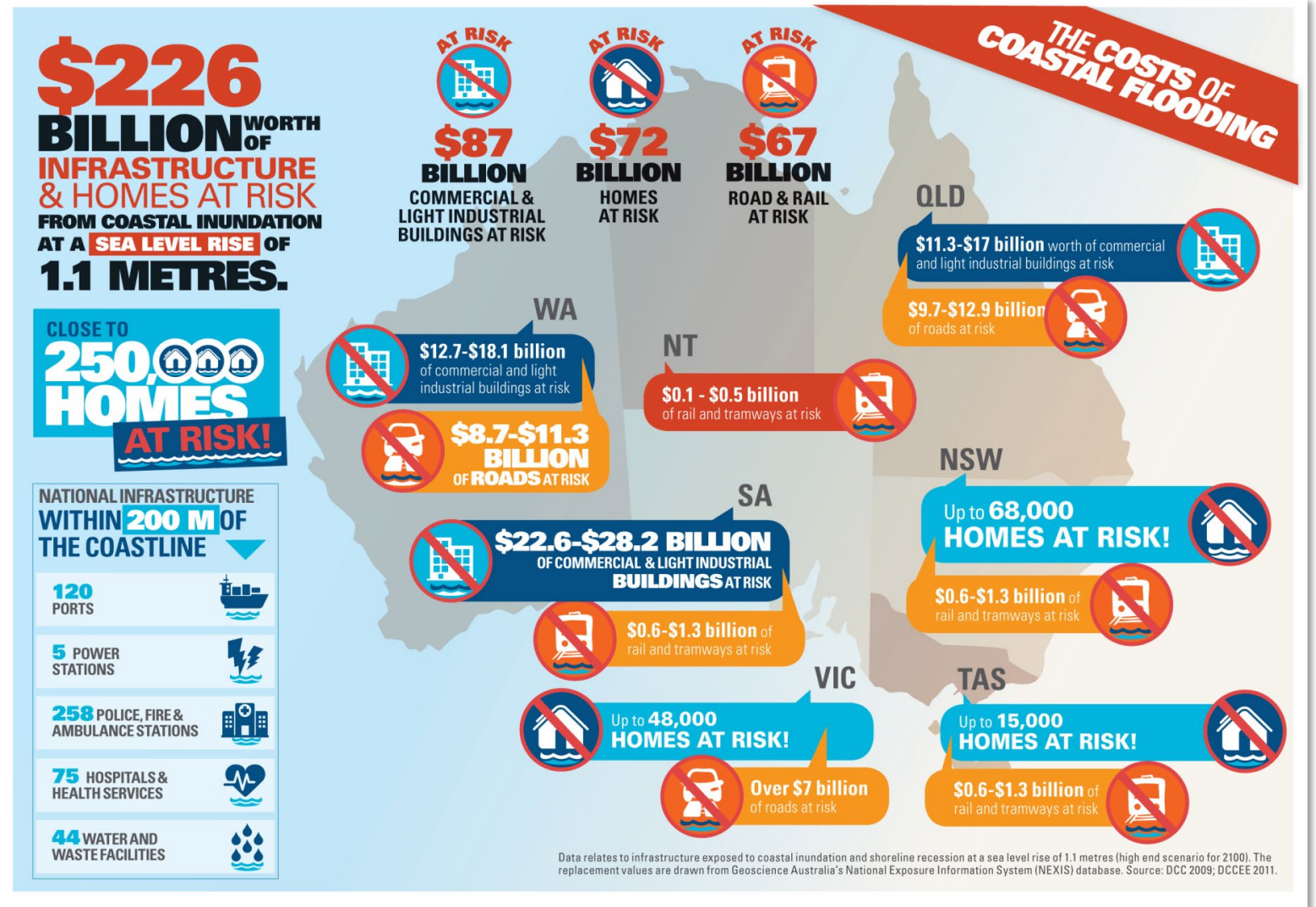


Coastal Vulnerability

- Around 85 per cent of Australian population lives in the coastal region
- Under a high emissions scenario global mean sea level would likely rise by 0.6 to 1.1 meters by 2100, with stringent mitigation by 0.3 to 0.6 meters.



Costs of Coastal Flooding



Hughes and Steffen, 2014.
Counting the Costs: Climate Change and Coastal Flooding. Climate Council of Australia Limited.

Costs of Coastal Flooding

COASTAL FLOODING: THE SLEEPING GIANT OF CLIMATE CHANGE RISKS

HURRICANE KATRINA

IN THE USA CAUSED ABOUT

\$US100 BIL

IN DAMAGES AND

2,000 FATALITIES.

IN AUSTRALIA,

A 1.1 M SEA LEVEL RISE

EXPOSES MORE THAN

\$226 BIL

WORTH OF INFRA-STRUCTURE TO

COASTAL FLOODING+ EROSION.

IGNORING CLIMATE CHANGE

COULD COST THE WORLD

US\$1 TRIL PER YEAR,

THROUGH COASTAL FLOODING ALONE. THAT'S ABOUT THE SIZE OF AUSTRALIA'S

ENTIRE ECONOMY.



Hurricane Sandy, New Jersey coast, October-November 2012



Storm surge then and now



Results of coastal erosion in Wamberal 1978.

Wamberal, NSW, 1978

(DCC 2009)

Photo credit: Gosford City Council



© Damian Shaw/Daily Mail Australia

<http://www.dailymail.co.uk>



<http://www.sbs.com.au/>

Collaroy, Sydney, NSW, 2016

Disaster preparation then and now...



Car bodies used to try and stop the progress of erosion on the Gold Coast, 1967.

Photo Credit: Gold Coast City Council Local Studies Library



Forty-four gallon drums filled with concrete to prevent further beach erosion on the Gold Coast, 1967.

Photo Credit: Gold Coast City Council Local Studies Library



What are we doing well?

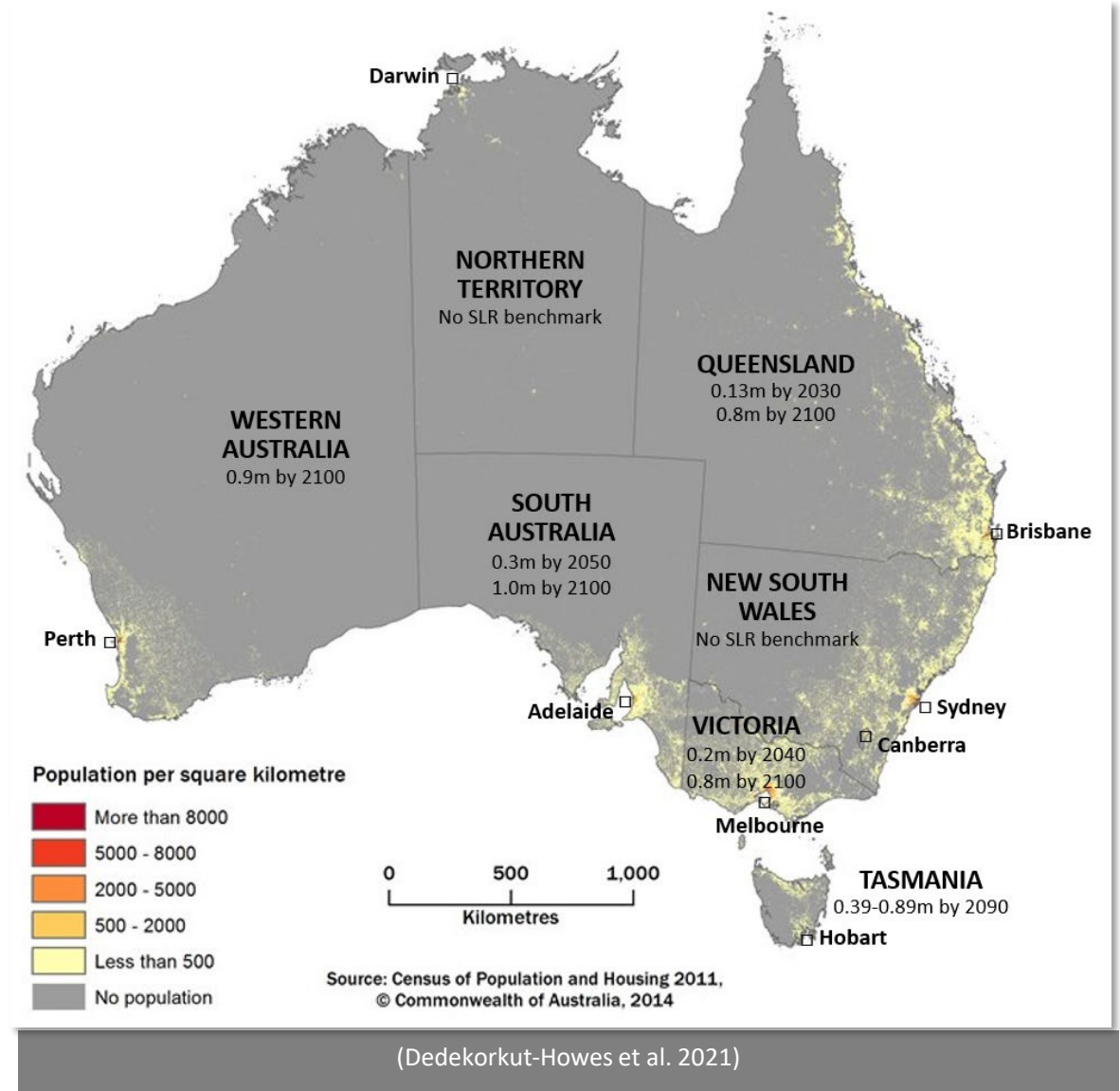
- Funds development of a Coastal Hazard Adaptation Strategy (CHAS)
- All coastal Queensland councils are eligible
- 20 plans completed so far
- A few more are in progress

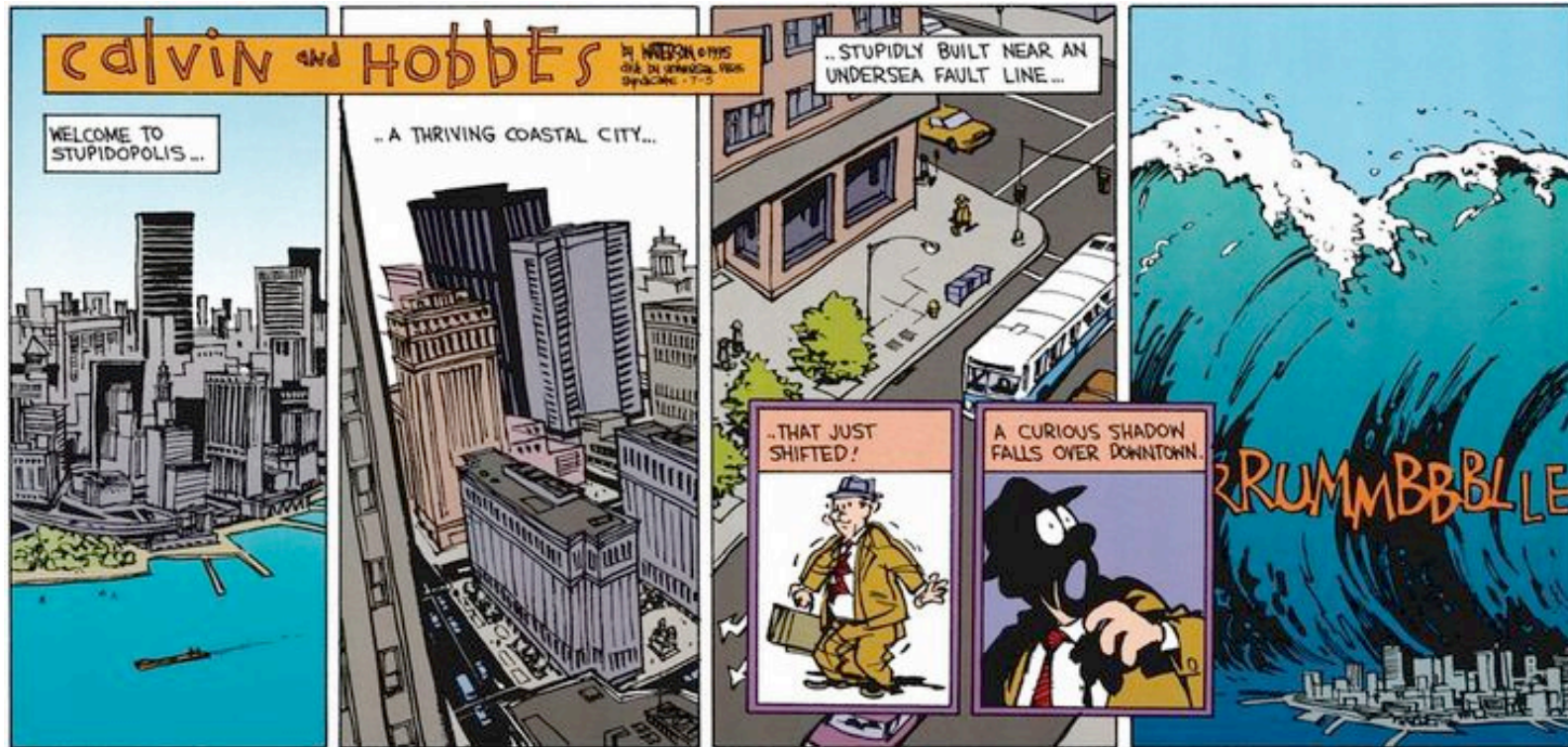
... but funding is needed for implementation



State Sea level rise benchmarks

- Vary through time and space
- 2009 (SCCCWEA)
 - **South Australia:** median sea level predictions of the IPCC— 0.3m sea level rise by 2050, and 1 metre sea level rise by 2100
 - **Tasmania:** variable based on a 1% annual exceedance probability
 - **Queensland:** 0.3m rise in sea level over a 50 year planning period
 - **Western Australia:** 0.38m when assessing the potential for erosion on sandy shores
 - **Victoria:** not less than 0.8m by 2100
 - **New South Wales:** 0.4m by 2050 and 0.9m by 2100
- 2014 (Reisinger et al., IPCC AR5)
 - Western Australia, South Australia, and Victoria have mandatory State planning benchmarks for 2100, with local governments determining how they should be implemented.
 - Long-term benchmarks in New South Wales and Queensland have either been suspended or revoked, so local authorities now have broad discretion to develop their own adaptation plans.





Bill Watterson, 1995

Lessons not learnt – AKA what can we do better?

Climate Adaptation Policy Roller Coaster

2012-2015 policy reversals

National level

- Climate Commission abolished
- Climate change reduced from departmental status to a unit within the Department of Environment
- Greenhouse gas emission trading scheme abolished

State level

- Queensland Office of Climate Change abolished
- Sea-level rise, increase in the maximum cyclone intensity and local government coastal hazard adaptation strategy requirements removed
- Climate variability replaced climate change

Local level

- Gold Coast Council's climate change department was abolished

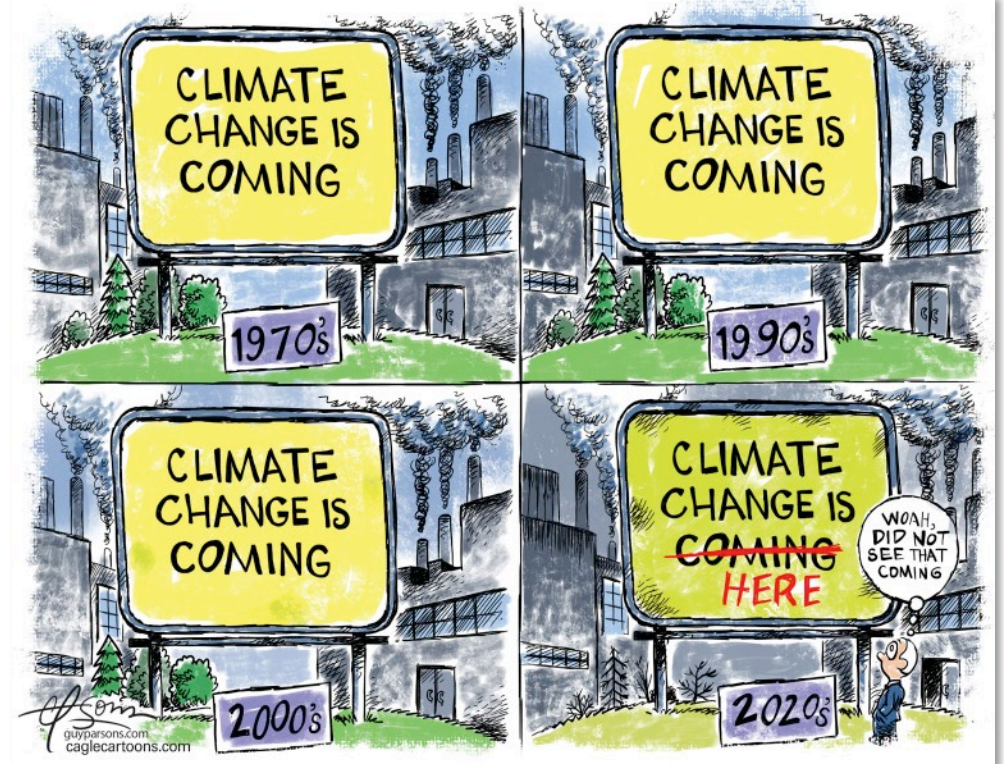


(Howes and Dedekorkut-Howes, 2012; 2016, Dedekorkut-Howes and Howes, 2014)

National and State Leadership is Necessary!

- No national coastal policy
- Widely varying views of political parties on climate change result in reversals of climate policy when governments change.
- Lack of national guidance and leadership is resulting in uneven climate adaptation responses across jurisdictions undermining what adaptation plans there are.
- Effective long-term adaptation policy and planning requires bipartisan commitment and consistent political will across political parties to prioritize the problem and commit significant public resources to a response.

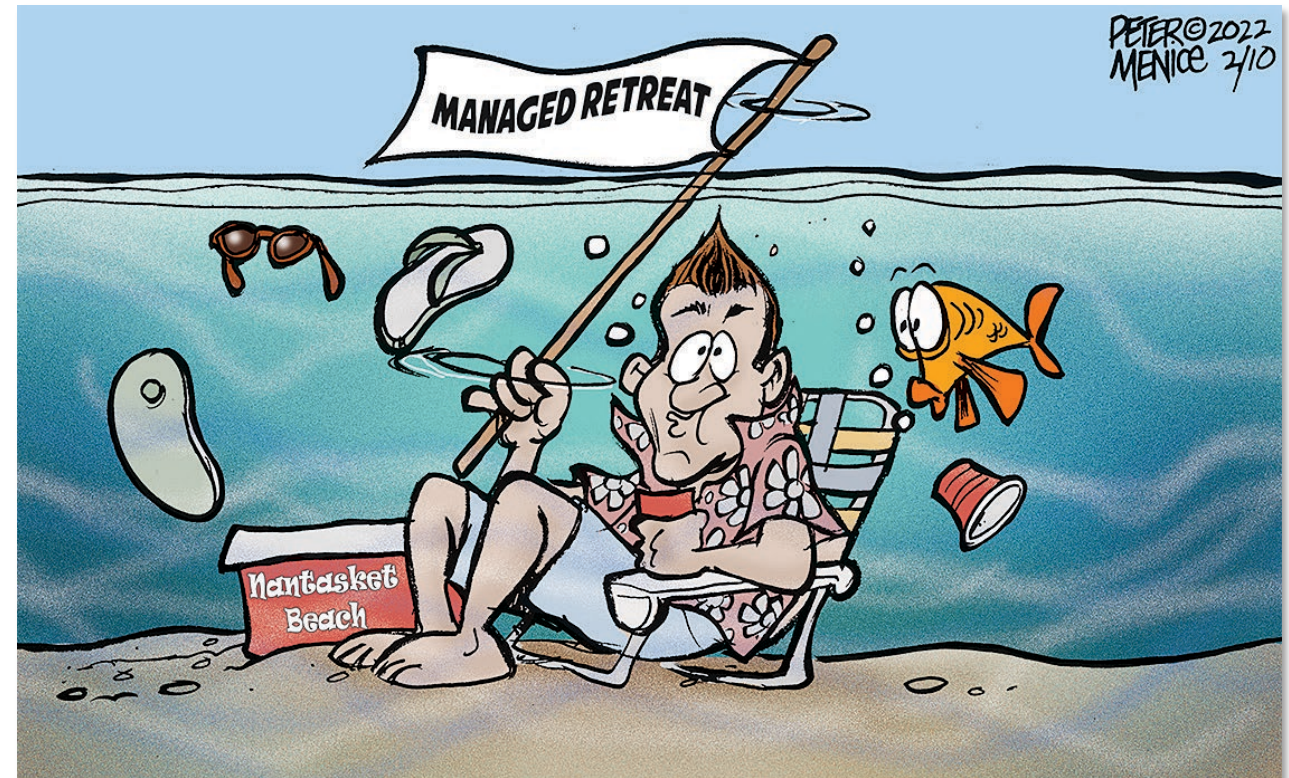
(Dedekorkut-Howes et al. 2021)



Retreat a taboo?

- Managed retreat implemented only in less populated areas as an ad hoc response to a disaster
- Byron Bay's attempt failed due to community backlash
- Planning regulations, local political leadership, collaboration between all sectors involved, community participation, and ongoing assessments are important for the success of resettlement process
- The common approach used in Australia is relocation through voluntary buy-back schemes particularly after disasters.
- Retreat discussions are politically charged and controversial

(Torabi and Dedekorkut-Howes 2021)



the LAST RESORT

How do we enable local adaptation?

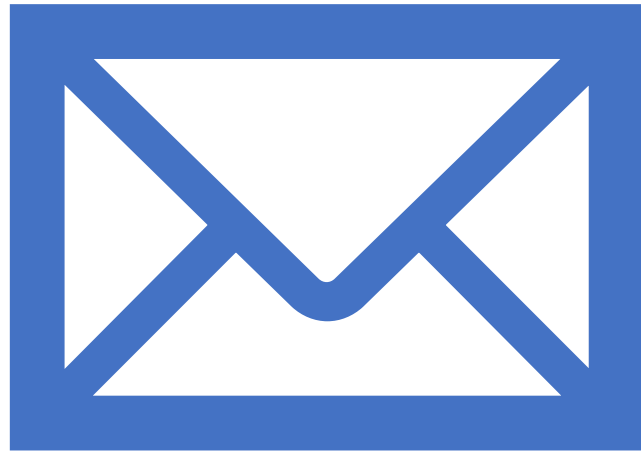


fritsahlefeldt.com

- Guidance from higher level governments (Torabi et al., 2017a, Dedekorkut-Howes and Vickers 2017, Dedekorkut-Howes et al. 2021)
 - State adaptation strategies, regional plans
 - Clearer legislative guidance to reduce liability and court challenges (IPCC 2014)
- Vertical, horizontal and temporal policy consistency at all levels (Torabi et al., 2017a, Dedekorkut-Howes and Vickers 2017, Howes and Dedekorkut-Howes 2016)
 - e.g. Consistent sea level benchmarks through time and across jurisdictions
- Integrated approach by all levels of government (Torabi et al., 2017a)
- More transformational and proactive responses are needed (Davidson et al. 2016)
 - Altering land use and avoidance of exposure to future flooding
- Education and awareness of politicians, professionals and public (Hurlimann, 2009)

References

- Davidson, J. L., C. Jacobson, A. Lyth, A. Dedekorkut-Howes, C. L. Baldwin, J. C. Ellison, N. J. Holbrook, M. J. Howes, S. Serrao-Neumann, L. Singh-Peterson, and T. F. Smith. 2016. Interrogating resilience: toward a typology to improve its operationalization, *Ecology and Society*. 21(2):27. DOI: 10.5751/ES-08450-210227 <http://www.ecologyandsociety.org/vol21/iss2/art27/>
- Dedekorkut-Howes, A., E. Torabi, and M. Howes. 2021. Planning for a Different Kind of Sea Change: Lessons from Australia for Sea Level Rise and Coastal Flooding. *Climate Policy*. 21(2):152-170. DOI: 10.1080/14693062.2020.1819766
- Dedekorkut-Howes, A., E. Torabi, and M. Howes. 2020. When the tide gets high: A review of adaptive responses to sea level rise and coastal flooding. *Journal of Environmental Planning and Management*. 63(12): 2102-2143. DOI: 10.1080/09640568.2019.1708709
- Dedekorkut-Howes, A. and J. Vickers. 2017. Coastal Climate Adaptation at the Local Level: A Policy Analysis of the Gold Coast. In *Climate Change Adaptation in Pacific Countries: Fostering Resilience and Improving the Quality of Life*. W. Filho (ed.) Springer. pp. 401-415.
- Dedekorkut-Howes, A. and Howes, M. 2014. Climate Adaptation Policy and Planning in South East Queensland. In *Responding to Climate Change: Lessons from a hotspot*. P. Burton (ed.) Collingwood, VIC: CSIRO Publishing. 59-67.
- Department of Climate Change. 2009. *Climate Change Risks to Australia's Coast: A First Pass National Assessment*. Commonwealth of Australia.
- Howes, M. and A. Dedekorkut-Howes. 2016. The Rise and Fall of Climate Adaptation Governance on the Gold Coast, Australia. In *Climate Adaptation Governance in Cities and Regions: Theoretical Fundamentals and Practical Evidence*. J. Knieling (ed.) Hamburg: John Wiley & Sons, Inc. pp.237-250.
- Howes, M. and A. Dedekorkut-Howes. 2012. Climate Adaptation and the Australian System of Government: The Gold Coast Example. In *Environmental Policy Failure: The Australian Story*. K. Crowley and K.J. Walker (eds). Prahran, VIC: Tilde University Press. pp. 116-130.
- Hughes, Lesley and Will Steffen. 2014. *Counting the Costs: Climate Change and Coastal Flooding*. Climate Council of Australia Limited.
- Hurlimann, A.C., 2009. Responding to environmental challenges: an initial assessment of higher education curricula needs by Australian planning professionals. *Environmental Education Research*, 15(6), pp. 643-659.
- Reisinger, A., R.L. Kitching, F. Chiew, L. Hughes, P.C.D. Newton, S.S. Schuster, A. Tait, and P. Whetton, 2014: Australasia. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1371-1438.
- Standing Committee on Climate Change, Water, Environment and the Arts, House of Representatives (SCCCWEA). 2009. *Managing our Coastal Zone in a Changing Climate: The Time to Act is Now*. Report on the inquiry into climate change and environmental impacts on coastal communities, Parliament of Australia, Canberra, ACT, Australia, 368 pp.
- Torabi, E., A. Dedekorkut-Howes, and M. Howes. 2017a. Not Waving, Drowning: Comparing Local Government Initiatives on Climate Change Adaptation and Disaster Risk Management. *Urban Policy and Research*. DOI: 10.1080/08111146.2017.1294538
- Torabi, E. and A. Dedekorkut-Howes. 2021b. When It's time to let go: Re-imagining coastal urban living in the face of rising seas. In *SeaCities: Urban tactics for sea-level rise*. Joerg Baumeister, Edoardo Bertone, and



Thank you.

Questions?

Aysin Dedekorkut-Howes

a.dedekorkut@griffith.edu.au