



\$442 billion economic loss by 2100: the economic impact of sea level rise and storm surge on Victoria revealed.

By 2100, the impacts of sea level rise and storm surge are predicted to result in a \$442 billion economic loss according to a study led by the University of Melbourne and commissioned by the Victorian Marine & Coastal Council and Life Saving Victoria.

- Impacts on land and property along the Victorian coast are predicted to reach a loss of \$337 billion, with a further loss of up to \$105 billion for wetlands.
- More than 80,000 existing residential, commercial, and industrial properties covering 45,000 hectares will be impacted.
- 144,000 hectares of coastal reserves will be affected as will 288,000 hectares of Victoria's wetlands.
- The cumulative impact will be about \$123 billion by 2040.
- Without action to mitigate before 2040, it will cost ten times more to fix it in 2100 than in 2040.
- Appropriate action over the next decade will dramatically reduce the long-term costs.

The University of Melbourne research shows that by 2100, almost every community along Victoria's coastline will be affected. The residential and commercial areas with the most significant economic impact will be high density areas including Docklands, Port Melbourne and the Bay suburbs. Nearly 40% of the potential economic damages will be sustained by coastal reserves such as public recreational areas along Victoria's 2500 km coastline.

The report also includes modelling by Climate Risk Pty Ltd focussing on the built environment. It suggests that by 2100, 151,000 Victorian properties (residential, commercial, and key infrastructure) could be at high risk of damage from sea level rise and storm surge.

For example, by 2040, more than 16,000 properties in Southbank will be at high risk of damage. And by 2100 this will rise to over 31,000 properties. Docklands will have more than 3,000 properties at risk by 2040 rising to over 37,000 by 2100.

A series of case studies by Climate Risk Pty Ltd, focussing on the Bellarine Peninsula, Wyndham, Williamstown, Hastings and Phillip Island, illustrate the local impact and the potential to reduce the impact through appropriate adaptation.

The costs outlined in the report demonstrate the need to invest today to reduce the long term economic, social and environmental impact.

"We know that climate change is going to hurt many Victorian communities if we do not act," says VMaCC chair, Dr Anthony Boxshall. "This rigorous report clearly and comprehensively documents the economic challenges that Victoria's coastal communities will face from sea level rise and related storm surges. Spending on adaptation over the next two decades could help reduce future risk and save significantly on the estimates of future costs." he says.

In the report Professor Tom Kompas, from the University of Melbourne says, "...the economic damages from sea level rise / storm surge to coastal areas are more than enough to trigger considerable financial instability for many coastal communities and the State of Victoria itself, not to mention the potential loss of life, and damages to food, water supply and environmental assets from sea level rise and storm surge, many aspects of which are not accounted for in our calculations."

In response to the report, VMaCC and Life Saving Victoria have called for the establishment of an independent taskforce to develop and promote a vision and operational blueprint to guide Victoria's response to rising sea levels and related storm surge.

“Our members have observed the discernible influence of rising sea levels on numerous beaches. This evidence underscores an urgent call to action. It is important that we engage in thoughtful preparation to effectively address sea level rise and coastal inundation, thereby mitigating risks, while simultaneously safeguarding the natural allure of our pristine coastline and beaches to ensure we cultivate a safe, sustainable legacy for generations to come,” says Catherine Greaves, CEO of Life Saving Victoria.

Anthony Boxshall, Catherine Greaves and Professor Tom Kompas are available for interview

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Reports and supporting documents on embargo at www.marineandcoastalcouncil.vic.gov.au.

About the report

The Kompas report – formally titled, Economic Impacts from Sea Level Rise and Storm Surge in Victoria, Australia over the 21st Century – was prepared for the Victorian Marine and Coastal Council (VMaCC) with support from Life Saving Victoria (LSV) and the Department of Energy, Environment, and Climate Action (DEECA).

Economic Impacts from Sea Level Rise and Storm Surge in Victoria, Australia over the 21st Century (the Kompas report), was prepared by a group of expert environmental economists from the University of Melbourne, the Australian National University, and the University of Tasmania together with Sydney environmental consultants Climate Risk Pty Ltd.

Using different approaches, the University of Melbourne and Climate Risk Pty Ltd modelled the physical damages and potential economic cost of sea level rise and storm surge on Victoria's bays, and coastal and marine areas, if adequate adaptation measures are not undertaken. Each model was used to derive results for 2040, 2070 and 2100 and to indicate the 40 subregions of Victoria most affected by the impacts of sea level rise and storm surge.

The losses in discounted present value dollars of residential and commercial assets, reserves and conservation areas, infrastructure, parks, industrial and agricultural assets due to sea level rise and storm surge were estimated to be more than \$337 billion in 2100.

Conservative estimates

Different modelling approaches were applied.

The **University of Melbourne** model focused on 88 land use classes in 132 local coastal areas. It drew on spatial data from the Department of Environment, Land, Water and Planning (DELWP) as to the extent of inundation from projected sea level rise (increasing to 0.82 m above pre-industrial levels by 2100) and storm surge (increasing to 19% above sea level by 2100). This is based on the 2014 IPCC estimates.

The **Climate Risk** model concentrates solely on the economic impact to the residential and commercial built environment, along with key infrastructure. It uses 2021 property values and assumes a house market value of \$740,000 and replacement cost of \$320,000. It uses more recent sea level rise projections, from a baseline of 0.00m in 1990, increasing to 1.52m by 2100.

The assumptions used in each model are conservative. Sea levels may rise faster, and housing values may be higher.

Victoria's coastline

Victoria's mainland coastline is 1870 km long. Islands add a further 645 km giving Victoria a total coastline of 2515 km.