PUBLIC HEALTH COMMUNICATION CENTRE AOTEAROA

Cyclone Gabrielle joins list of Aotearoa NZ’s ‘sudden mass fatality events’

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Summary

This Briefing considers the deaths caused by Cyclone Gabrielle in the context of previous 'sudden mass fatality events' in Aotearoa New Zealand since the year 1900.

But fatalities are just one aspect of the wider harm to health and wellbeing from Gabrielle – which includes impacts on mental health and a major economic burden to the country. Given the scale of the impacts, there is a need for a broader inquiry to the impact and governmental/societal response to Cyclone Gabrielle than the current inquiry focused on forestry slash and land use.

Some of the potential policy implications for preventing such climate-change related extreme weather events includes improved institutional arrangements (for resilient infrastructure and appropriate land use), managed retreat from vulnerable areas, eliminating forestry slash, and making cities ‘spongier’.

Eleven people tragically died in the flooding from Cyclone Gabrielle.

This means Gabrielle joins the list of Aotearoa NZ’s ‘sudden mass fatality events’. In this article we discuss Cyclone Gabrielle in the context of these other events, and reflect on how we, as a country, might avoid the list getting longer.

Sudden mass fatality events can be broadly defined as those events leading to death of 10 or more people. ‘Sudden’ in this context means substantially occurring in the space of around 24 hours, and thus excludes ongoing events such as pandemics and wars which can lead to a sustained loss of life over months or years.

The history and epidemiology of Aotearoa NZ’s mass fatalities from 1900 onwards was systematically assessed in 2017.[1] The resulting list was updated in 2019 in the wake of the Christchurch Mosque shootings, bringing the total number of events up to 57.[2] Since then, NZ has seen two further sudden mass fatality events: the Whakaari/White Island eruption, and Cyclone Gabrielle. That makes 59.

These events are displayed in the interactive graphic below (larger version here). The size of each bubble represents the total number of deaths, moving forwards in time from left to right. Hover over a bubble to display more detail.

Gabrielle is likely to be the highest flood event death toll since 1900 after the Kopuawhara flash flood in 1938 (21 deaths). It caused more direct storm-related deaths than Cyclone Giselle in 1968 (six deaths – in four parts of the country), although this cyclone played a major role in the sinking of the *Wahine* (53 deaths).[2]

Beyond fatalities, there will also have been other impacts on human health and wellbeing. In the short term these would be due to evacuations, power outages, and damage to water, sewerage, and transport networks. The majority of the longer-term direct health burden of Cyclone Gabrielle will probably be on the mental health of those impacted by the damage to homes and properties, and from job losses. There is also the potential for future

psychological stress from large-scale retreat and continued vulnerability to storms.

Gabrielle may have been the costliest extreme weather event on record for Aotearoa NZ in insurance claims terms, with total damages estimated to be at least NZ$13.5 billion (although such estimates may rise in the future as further repair work progresses).

Learning from disasters

The majority of New Zealand's sudden mass fatality events were followed by official inquires[1] – especially those with 20+ deaths.[3] These investigations have often lead to changes in policies, safety regulations and changes in practices, for example changing building regulations to prevent injuries in earthquakes. Nevertheless, some lessons were not learnt[3] and in particular, it took multiple earthquakes before relevant building regulations were required in this country.[4]

Fortunately, the Government has announced that there will be an inquiry investigating the 'storm damage and its causes, current practices and regulatory and policy settings' relating to Gabrielle. The core focus of this appears to be on the role of forestry slash and land use in compounding the impact of Cyclone Gabrielle. This is too narrow and a broader inquiry is needed to encompass all aspects of Cyclone Gabrielle's impact and the wider governmental and societal response.

Government policy actions needed to prevent climate-related storm and flood events

Climate change due to greenhouse gas emissions makes weather events such as Gabrielle more extreme.[5] It is therefore critically important that Aotearoa NZ meets its international commitments to mitigate climate change by reducing its greenhouse gas emissions – and ideally become a leader in this regard. But further adaptation to build resilience against future extreme weather events is also required. The following are some key potential measures:

1. A major **shift to long-term thinking** by governments with the appropriate institutional arrangements (as discussed in this previous Briefing[6]). In particular, there is a need for long-term thinking around resilient infrastructure (ie, covering water, sewerage, communications and transport networks).
2. Either a total revamp of the power, structure and funding of the **Ministry for the Environment**, or a **new overall land-use agency** with the funding and powers to better carry out the role of reducing the government's recognised nationally significant risk of floods and soil erosion. Such government agencies need to drive changed land use in river catchments throughout Aotearoa NZ. There needs to be substantially enhanced indigenous forest cover and diverse forestry plantation design (with reduced reliance on *Pinus radiata*).
3. Government supported **managed retreat** from areas that are particularly vulnerable to flooding and slips (as per a recent Report by Prof Jonathan Boston[7]). Fortunately, the Prime Minister and Climate Change Minister have stated that the Government is incorporating managed retreat into its Climate Change Adaptation Bill and disaster response policies.
4. Enforced regulations to eliminate **forestry slash** in vulnerable areas to reduce the damage to infrastructure (eg, bridges and roads) and to properties. Hopefully specific recommendations will be forthcoming from the current inquiry.

5. Actions to avoid flooding in cities by making them better able to absorb water – that is be 'spongier'.[8]

What is new in this Briefing?

- The burden of deaths from Cyclone Gabrielle is discussed in the context of previous 'sudden mass fatality events' in Aotearoa New Zealand.
- In addition to the death toll, the majority of the longer-term health burden of Cyclone Gabrielle will probably be on mental health of those impacted from the damage to homes and properties, and from job losses.

Implications for public health practice and policy

- There is a need for:
- A **broader inquiry** into the impact and governmental/societal response to Cyclone Gabrielle, rather than the narrow one currently underway (on forestry slash and land use).
- A major **shift to long-term thinking** by governments with the appropriate institutional arrangements (eg, to build resilient water and sewerage infrastructure).
- Improved **institutional arrangements** to better carry out the role of reducing the government's recognised nationally significant risk of floods and soil erosion.
- Government supported **managed retreat** from areas that are particularly vulnerable to flooding and slips.
- Enforced regulations to eliminate **forestry slash** in vulnerable areas.
- Actions to avoid flooding in cities by making them 'spongier'.

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