Actuaries Institute.

Report - August 2023

Funding for Flood Costs:

Affordability, Availability and Public Policy Options

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The Actuaries Institute acknowledges the traditional custodians of the lands and waters where we live and work, travel and trade. We pay our respect to the members of those communities, Elders past and present, and recognise and celebrate their continuing custodianship and culture.

About this paper

This Report was commissioned by the Actuaries Institute and was prepared by actuaries in a Working Group: Evelyn Chow (Chair), David Barnes, Jonathan Blunden, Julia Davidson, Elaine Pang, William Turvey and James Manton-Hall. We would like to thank the people who generously contributed to this project, including Alison Drill, and Professor Paula Jarzabkowski from the University of Queensland.

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> "A long-term solution to reducing flood risk is through risk reduction activities"

In Australia, flood has caused some of the costliest natural disasters in its history. The devastating 2022 East Coast floods, which ravaged parts of Southern Queensland (QLD) and the Northern Rivers region in New South Wales (NSW), resulted in an insured bill of $6.0 billion (Insurance Council of Australia, 2023), the most expensive natural disaster on record in Australia. In addition, there were enormous uninsured costs during and post-event for government-led disaster recovery and relief activities, economic losses to households and businesses, and damage to lives and livelihoods, which cannot be readily measured.

Flood risk, in particular riverine flood, which is the focus of this Report, plays a significant role in the current pressure on home insurance affordability, although flood insurance remains available in the private insurance market. From the accompanying Report, Home Insurance Affordability Update, it is apparent that flood insurance premium affordability pressure is disproportionately shouldered by the most affordability-stressed households, with 60-100% of households in the most exposed areas (predominantly flood-prone regions in Southern QLD and Northern Rivers in NSW) paying over 50% of their premium to cover the flood risk component.

Three broad categories of methods could be employed to address flood insurance affordability pressure:

1. Risk reduction activities;
2. Cost sharing arrangements; and
3. Government direct cost reduction activities.

The key element of a long-term sustainable solution to reducing flood risk and therefore improving flood insurance affordability is through well-designed, effective risk reduction activities. Investment in risk reduction activities pre-event is well recognised as being able to provide substantial savings on funding post-event. The National Emergency Management Agency (NEMA) finds that every dollar spent on disaster risk reduction provides an estimated $9.60 return on investment (NEMA, n.d.)[1]. In recognition of the growing need to address the high funding costs post-disaster, there have been numerous projects funded by governments. With the formation of NEMA in 2022, we expect greater alignment and end-to-end oversight on risk reduction, prevention, preparedness, response and recovery across all states and territories with the implementation of the United Nations Office of Disaster Risk Reduction (UNDRR) Sendai Framework[2].

Affordability pressure, however, is acute and there is a need to address this urgently. In order to tackle this holistically, short- and medium-term measures are necessary. Government direct actions and cost sharing arrangements could complement in the short- and medium-term to reduce and redistribute the costs, thereby lowering insurance premiums faster than otherwise possible for those who are the most affordability-stressed. Central to any optimal mix of solutions being adopted is that strong risk mitigation activities must be part of the program to extract long-term benefits for all Australians and Australian society.

1. We note this covers all types of natural perils.
2. The **Sendai Framework** for Disaster Risk Reduction 2015-2030 is the key international framework to drive disaster risk reduction to prevent new and reduce existing disaster risks. The framework is seeking a substantial reduction in disaster risk by 2030.

Key findings

Although there are many initiatives and activities currently being undertaken to reduce riverine flood risk and improve preparedness and resilience of communities post-disaster, more could be done. The Institute therefore supports the following policy initiatives, which could be considered alongside the short-, medium- and long-term framework in determining an optimal mix of solutions.

1. Given the extreme insurance affordability pressure experienced by some households identified in the accompanying Report, governments should consider with urgency the introduction of cost reduction and cost sharing measures, which could provide short- to medium-term relief for affordability-stressed households.
    a. For immediate relief: governments of all states and territories (except the Australian Capital Territory (ACT)) to consider measures such as:
        i. replacement of insurance taxes, which have a compounding effect on premiums, such as stamp duty, and for NSW Emergency Services Levy (ESL) as well, with alternative revenue sources that are more equitable and efficient. For example, Victoria replaced this in 2013 with the introduction of a Fire Services Property Levy, a property-based levy collected through council rates on behalf of the Victorian government (State Revenue Office, Victoria, n.d.)[3]; and
        ii. other measures such as targeted subsidies which are means-tested.
    b. For interim relief: should an insurance/reinsurance pool be contemplated, consider incorporating best practice features, with risk reduction being one of the key objectives of the pool, given this is the only long-term solution to reducing affordability pressure, acknowledging the potential for a pooling mechanism to mute the risk signal in individual risk pricing.
2. For risk reduction initiatives:
    a. Strengthening and future-proofing of both building codes and land use planning rules to improve the resilience of communities, including by taking into account the changing climate and considering the multi-decade expected lifespan of building structures. Consideration should be given to publication of a freely available disaster (including flood) risk rating system. We note the current development of the Resilience Rating System, which measures the resilience of property and provides tailored adaptation actions by the Resilient Building Council for buildings, and which could be considered for potential incorporation into building codes.
    b. Consultation with impacted communities and drawing on the deep knowledge of First Nations people on land and water management practices to increase the chance of success of proposed projects.
3. For data and analysis:
    a. Governments, agencies and the private sector collaborate and utilise proven technology to collect better, up-to-date data which could be used to improve flood mapping and flood modelling. This data should be freely and readily accessible to homeowners and the general public and provide easy-to-understand information about flood risk exposure at each property.
    b. Consistent and objective use of climate finance frameworks for assessing the merits of different risk reduction projects, prioritisation of those projects and allocation of funds for an optimal set of solutions. This will maximise the benefits, lowering both flood risk and flood costs.
    c. Once the project commences, the climate finance framework used can be integrated in the development of strong reporting, monitoring and governance processes of the project to maintain accountability and effectiveness.
4. For insurers, to provide timely risk-reflective pricing with appropriate financial incentives and risk information to encourage policyholders and communities to mitigate their flood risk. We acknowledge that, in practice, the effectiveness of community-level flood mitigation activities is easier to assess while it is more difficult technically, as well as costly, to establish the effectiveness of individual household risk mitigation actions which have been undertaken. However, the introduction of a disaster (including flood) risk rating system (considered in 2a) for properties incorporated into building codes could be considered to provide an objective, simpler and transparent way to assess the inherent natural peril risk level of a property.

Upon review of the characteristics of flood risk, we conclude that the funding structure and design of the Cyclone Reinsurance Pool (the Cyclone Pool) are not suitable for extension to address the current flood insurance affordability challenge. Flood risk is highly localised and disproportionately affects a relatively small number of households which are the most affordability-stressed, while cyclone risk is more geographically widespread with little differentiation between affordability-stressed and non-affordability-stressed households. Unlike cyclone, the majority of policyholders with little or no flood risk pay no flood premium, meaning it is not possible to fund a flood solution from low-risk policyholders without their costs increasing, which would be a breach of the design rules that apply to the Cyclone Pool.

3. The levy comprises a fixed charge and a variable rate calculated based on the property's classification and capital improved value using the following formula: Levy = Fixed charge + (variable rate x capital improved value) – concession (if eligible)

2. Introduction

2. Introduction

The affordability and availability of home buildings and contents insurance has been of growing concern for at least a decade. Notwithstanding multiple inquiries and reviews and the staged introduction of a Federal Government-backed reinsurance pool for cyclone and cyclone-related flood risk, it is evident that home insurance affordability is under significant pressure and the outlook is for further deterioration.

The accompanying Report, Home Insurance Affordability Update, assessed that 12% of households are considered to be under affordability stress (determined when the annual cost of home insurance exceeds four weeks of gross household income). The estimated home insurance premium for those 12% of Australian households is $3.6 billion, representing a potentially large 'protection gap' for those affordability-stressed households, which either do not purchase adequate home insurance and are therefore under-insured, or not insured.

Such a situation is of national concern; underinsured and uninsured households have significantly less capacity to cope with adverse weather events and natural disasters. This, in turn, reduces the resilience of communities, deepening and extending the hardships brought on by natural disasters. Ultimately, emergency services, government, charities and various means of informal assistance combine post-event to help fill the gap, although some losses are inevitably carried by individuals and businesses.

Previous work by the Institute shows home insurance affordability pressure will further intensify with the changing climate. The Actuaries Institute 2022 Green Paper on housing insurance affordability (2022 Green Paper) noted:

> "Climate change is not just an environmental and financial issue, but also one of socioeconomic equity. Households that are already struggling to pay home insurance premiums will also suffer most from the impacts of climate change on home insurance premiums"
>
> (Paddam et al., 2022, p.6)

Since the Cyclone Pool was conceptualised, Australians have experienced the devastation of other natural perils which sit outside the Cyclone Pool. The Cyclone Pool covers wind-related losses from cyclones, storm surge and resulting floods caused by cyclones. In early 2022, flooding, predominantly riverine flooding, in regions in Southern QLD and Northern Rivers in NSW resulted in the largest natural catastrophe event in Australia, with insured losses of $6.0 billion (Insurance Council of Australia, 2023) as at the date of writing this Report. Later in 2022, extensive riverine flooding in Western NSW impacted many communities. Unsurprisingly, there have been suggestions that the Cyclone Pool be extended to cover all floods.

This Report seeks to inform the debate on flood insurance affordability by considering the merits of several policy options, including proactive risk reduction, cost sharing (pooling) and government direct cost reduction activities. This is not an exhaustive list of options, but these are considered most applicable to the Australian flood context. These options vary in their cost-effectiveness, equity and time horizon for implementation. By considering these options holistically, our intent is to address both immediate cost pressures and the long-term drivers of affordability stress to ensure that Australian communities can enjoy improved financial security and resilience in the face of flooding.

We note that Australia's weather pattern is currently moving from La Niña to El Niño, with a likely decreased risk of flood and increased risk of bushfire. Both perils are very location-specific; (riverine) flood risk is concentrated along river systems and, in the case of storm surge, coastlines, while bushfire exposure is concentrated among buildings and infrastructure which are in close proximity to bushland. As such, the learnings in this Report could also be a source of reference when considering bushfire.

Throughout this Report, references to 'mitigation' actions or activities refer to actions or activities which will lead to the reduction of flood risk; in some literature, the terminology is 'adaptation'. This is not to be confused with mitigation in the context of climate change, which refers to actions to reduce greenhouse gas emissions.

3. Flood insurance affordability

3. Flood insurance affordability

Australia is highly exposed to natural disasters. The Insurance Council of Australia's catastrophe database shows that natural disasters have caused over $34 billion of insurance claims since 2010, split between flooding (38%), storms and hail (34%), cyclones (18%) and bushfires (10%) (Insurance Council of Australia, 2023). The actual damage bill is undoubtably higher, recognising that underinsurance is prevalent in areas most at risk of these natural disasters.

The most recent 2022 East Coast floods were one of the worst flood events recorded with over 20 fatalities and tens of thousands of homes inundated, with severe impacts on those households and communities. Over 240,000 claims have been lodged, with estimated insured losses at $6.0 billion (Insurance Council of Australia, 2023).

There are also substantial intangible and indirect financial costs from flood disasters. A 2021 report by Deloitte Access Economics considered natural disaster costs under several climate change scenarios. The report used three groupings for costs: asset damage (residential and commercial), financial costs (clean-up costs, temporary housing, reduced economic activities, public assets, etc.) and social costs (injuries, mental health and social problems, fatalities, and related issues). Under a low emissions scenario, 35% of projected flood costs are expected to arise from asset damage, and the largest share (37%) from social costs. Home insurance products generally only indemnify claims arising from asset damage and a minor proportion of financial costs, such as temporary housing. It is worth noting that some of the risk reduction measures discussed in this paper will clearly benefit financial and social costs directly, whereas post-event funding such as risk pooling primarily addresses only the same scope of costs as home insurance products.

3.1 Flood as a natural peril

Although each type of natural hazard has the potential to cause major damage, the distribution of potential damage between households varies significantly. Earthquake and storm risk, for example, are widely distributed. By contrast, a given flood, bushfire or cyclone event is likely to be more localised and impact a smaller proportion of households.

In Australia, a standard definition for flood in insurance policies was introduced in June 2012 (Insurance Council of Australia, n.d.).

> The most recent 2022 East Coast floods were one of the worst flood events recorded.

It is generally accepted in the Australian context that a flood is classified as one of three types:

1. riverine or fluvial flood – caused by excessive increases of the water level of a river or a body of water, e.g., a lake inundating neighbouring lands due to heavy rainfalls. This type of flood can last for days, causing widespread damage in the immediate surrounding areas, especially for floodplains;
2. flash or pluvial flood – caused normally by intense heavy rainfall, which overwhelms drainage systems, e.g., in urban areas, over a short period of time. However, this type of flood can be severe and dangerous due to the intensity and speed of the water; and
3. coastal flood or storm surge – caused by sea-level rise due to windstorm events (e.g., cyclones), king tides or tsunamis.

Not all types are necessarily covered by insurance policies. Coverage is dependent on insurer and policy type.

In this Report, we focus on potential solutions related to riverine floods. In a changing climate, with more frequent heavier rainfall expected, riverine flooding risk is expected to increase and could spread to areas that are currently lower risk (Paddam et al., 2022)[4]. It will not be possible to fully avoid or mitigate these risks as they evolve, and any relief measures should be designed to be able to support a changing risk profile.

Flash floods tend to be isolated weather events with less predictability of location. Coastal flood is largely caused by high and rising seas and will be particularly impacted by climate change. A number of nature-based solutions are being employed to lower the impact of this risk, but there is limited scope for financially feasible mitigation activity, e.g., construction of seawalls, given Australia's extensive coastline.

Floods of any type are covered by the Cyclone Pool if the damage results from a cyclone, subject to certain coverage limitations such as elapsed time. Where flood is referred to for the remainder of this Report, those references are made in the context of riverine flood only unless it is expressly stated otherwise. We have not separately considered riverine flood costs that are now covered by the Cyclone Pool.

4. Specific projections of the change in insurance affordability pressure under alternative long-term climate change scenarios are shown in section 4.1.5 of Paddam, S., Liu, C. & Philip, S. (2022). Home insurance affordability and socioeconomic equity in a changing climate. Actuaries Institute. Sydney.

3.2 Home insurance affordability update

In a market seeking to charge risk-based prices, perils that impact only a small number of households in a very severe way present a challenge for insurance affordability. The expected cost of damage per year for the most impacted households can be extremely high. In contrast, non-impacted households may have negligible flood cost in their premium. Thus, exposure to flood can be a major differentiator in insurance prices.

The accompanying Report, section 4.2, identifies 171,000 households with affordability stress and with flood contributing more than 50% of their home insurance premium. The majority of these households reside in areas which are subject to high exposure to riverine flood. These areas correspond to Local Government Areas (LGAs) in the Northern Rivers and inland NSW, large areas of Southern QLD, and some parts of Victoria, South Australia and Western Australia. That Report estimates that the total flood premium for this group of 171,000 households is $1.5 billion per annum, including expenses, taxes and other insurer costs, and after the estimated impact of the Cyclone Pool, if they were to be fully insured. These households on average have a flood premium of $8,800, which is unlikely to be affordable.

After the flood risk component, the next biggest single contributor to premium affordability stress is taxation – Goods and Services Tax (GST) and state-based insurance taxes, stamp duty and ESL. Table 3.1 below shows that taxes add over 20% to the final premium in all states and territories except ACT. This figure is highest in NSW due to ESL, where taxation accounts for an additional 32-50% of the total premium. Since these taxes have a compounding effect on premiums, policyholders who face the highest natural hazard risks and pay the highest insurance premiums also pay the most taxes. Taxes therefore exacerbate home insurance affordability pressures. Noting that GST is intended to be a tax which is broad-based across most goods and services, references to insurance tax in this Report refer only to stamp duty and ESL.

Table 3.1 – Taxes and government levies applicable to home insurance by state and territory

	Estimated mean by state							
	NSW	VIC	QLD	SA	ACT	NT	TAS	WA
GST	10%	10%	10%	10%	10%	10%	10%	10%
Stamp duty	9%	10%	9%	11%	0%	10%	10%	10%
Fire and ESL	10-25%	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Total tax (including GST)	32- 50%	21%	20%	22%	10%	21%	21%	21%

4. Current environment – Insurance market, private and public sector development

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Australian flood insurance product offerings are relatively standard, reflecting the regulatory environment and customer demand. When purchased, flood insurance is usually provided as an embedded coverage or on an opt-in/opt-out basis within home insurance products, sometimes with a flood sublimit or other coverage limitations.

In recent years, following a number of severe natural disasters, all levels of government have increased their focus on disaster resilience and risk reduction. NEMA has found that every dollar spent on disaster risk reduction provides an estimated $9.60 return on investment (NEMA, n.d.). While we acknowledge that it is not practical or even possible to remove all risks, it is crucial that a national framework, as is required following Australia's adoption of the UNDRR Sendai Framework, be utilised to ensure these risks are well-understood and well-managed.

4.1 Flood insurance availability

Flood insurance is generally available in all parts of Australia for households and businesses. Coverage in high flood risk areas tends to be offered on either a mandatory or an opt-out basis. As discussed in the accompanying Report, affordability-stressed households are disproportionately affected by flood risk, resulting in premiums with a very high flood component and rendering these covers unaffordable for many households. A consequence of this is the prevalence of underinsurance or absence of insurance.

Insurers may offer some incentives for risk reduction for either individual mitigation activity, such as raising a house on stilts, or government-led community-level activity, such as construction of new flood levees. The latter has successful examples (refer to section 5.1.2) which result in substantial premium savings. However, the extent of mitigation must be significant to have a meaningful impact on premiums. Data availability to insurers on individual household-level mitigation activity, on the other hand, is currently limited. There is an opportunity for further collaboration between insurers, government bodies and agencies to make this data collection more efficient and reliable, including that there are scalable solutions for communities.

4.1.1 Product innovation and development

Product innovation can potentially improve insurance affordability and provide opportunities to increase customer resilience to natural perils. In general, product innovation has been limited within the Australian market, and there appears to be scope for further innovation.

The most common policy type offered is a sum insured policy, with a safety net option being increasingly offered. A safety net feature allows pay out of a higher rebuild cost if the sum insured turns out to be inadequate. Efforts to expand coverage to improve resilience may come with premium increases reflecting the risk of higher payouts. One useful example is Suncorp's 'Build it Back Better' policy benefit introduced in October 2019. Under an eligible home insurance policy, if the home is damaged by an insured event where the assessed costs are more than $50,000 or 10% of the sum insured, additional resilience options are offered to help protect against severe weather (Suncorp, n.d.). This is similar to the concept used within protection gap entities in France and Switzerland, which ensures insurance payments are used to build back in a more disaster-resilient way (Jarzabkowski, 2022).

One straightforward product adjustment that could help address affordability pressure is the use of higher deductibles (excesses). Australian deductibles are lower than many international home insurance markets due to market practice of both insurers and policyholders. This means that some households are paying to transfer relatively small claim amounts which they may be able to comfortably weather themselves. Considering the taxes applicable to premiums, the benefit to households of insuring with a low deductible may be limited since no taxes are payable on a retained deductible. However, this may not be a practical solution to address flood insurance affordability as many households which are subject to high flood risk are already affordability-stressed and are on relatively low income.

Parametric insurance has become increasingly used in high peril areas internationally. Chinese insurers, for example, provide parametric flood coverage by triggering payouts from excess rainfall indices, and there are local Chinese government parametric schemes that respond to high water levels in defined locations. While not yet available for flood insurance in Australia, there have been other examples such as Redicova, a cyclone parametric cover launched for Northern Australia in 2021 (Wood, 2021). In New Zealand, there are earthquake parametric products to assist with emergency costs.

Parametric insurance has a number of benefits over traditional insurance, such as easier administration and claims processing, faster payouts and potential to be more affordable for customers in high-risk areas. These advantages must be considered alongside the disadvantages. Most importantly, parametric coverage is exposed to basis risk, as it is typically limited in amount and payouts, which may prove to be inadequate to indemnify the actual losses incurred by the customer.

Parametric insurance is not a solution to home insurance affordability on its own. There is merit, however, to consider how parametric insurance can be used to complement traditional indemnity insurance, specifically how parametric insurance could be used to support payment of a large excess or to supplement existing limits of a policy. International examples include payments for emergency relocation or increased cost of working, or commercial parametric insurance where traditional indemnity products are unavailable.

4.2 Recent government activity

In recent years, there has been a greater focus by government bodies in Australia to improve disaster mitigation and resilience activities.

In particular, Australia adopted the UNDRR Sendai Framework for Disaster Risk Reduction 2015-2030. This is the key international framework to drive disaster risk reduction in order to prevent new and reduce existing disaster risks, seeking a substantial reduction in disaster risk by 2030. The National Disaster Risk Reduction (NDRR) Framework released in April 2019 is the domestic implementation of the Sendai Framework. The Sendai Framework has seven clear targets and four priorities for action to prevent new and reduce existing disaster risks. Its stated aim is: "The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries" (UNDRR, 2015).

A mid-term review was performed in 2022 to assess the progress to date of Australia's implementation of the Sendai Framework, running concurrent to the development of the Second National Action Plan. The review found that there has been significant progress on reducing disaster risk, but that more is needed to meet the vision of the Sendai Framework. The report noted that this was especially true given the increasing rate of severe disasters. Specific focus areas included better alignment on disaster risk reduction strategies, frameworks and plans across all levels of government, and investment in the necessary decision support mechanisms to address complexity and contestation in decision-making (National Emergency Management Agency, 2022).

A recent key development by the Australian Government is the establishment of the Disaster Ready Fund (DRF), providing up to $1 billion over five years from 1 July 2023 to improve Australia's resilience and reduce risk from natural disasters. The DRF Round One funding allocation of $200 million, with matching funding from states and territories, was announced in June 2023, with around half of the Commonwealth funds allocated to flood mitigation and risk reduction activities (National Emergency Management Agency, 2022).

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Other activities include:

- The Northern Rivers Reconstruction Corporation, established by the NSW Government, developed the Resilient Homes Fund in October 2022 to improve the resilience of homes in high-risk flood areas across the Northern Rivers. Under that fund, $800 million has been committed by the Australian and NSW governments. Of this, $700 million is dedicated to the Resilient Home Program to help homeowners in high-risk flood areas to either buy-back their homes, raise the homes or retrofit to make them more resilient to flooding. The remaining $100 million has been committed to the Resilient Lands Program to deliver a supply of suitable land to deliver housing options in the Northern Rivers.
- The QLD Resilient Homes Fund with $741 million in funding was developed by the Australian and QLD governments following the 2021/2022 floods in QLD. It comprises three programs: Resilient Retrofit Program, Home Raising Program and Voluntary Home Buy-Back program, and aims to provide funding for the repair, retrofit, raise or buy-back of eligible properties (Queensland Resilient Homes Fund, N.D.).
- Another promising example relates to better data and utilisation of technology to enhance flood risk management. A Queensland Reconstruction Authority (QRA) $6 million project is creating accurate and up-to-date surveys of the physical terrain critical in the development of flood studies by employing Light Detection and Ranging (LiDAR) technology. The data has been used in the recent completion of the Queensland Statewide Assessment of Flood Risk Factors (SAFRF) Technical Report (Flood Risk Management Team, Resilience and Recovery, Queensland Reconstruction Authority. 2023, May). These flood risk factors provide a comprehensive assessment of flood risk management needs at the local council level.

The above are a few examples of current initiatives and projects. We expect that the formation of NEMA in 2022 will provide greater alignment and end-to-end oversight of risk reduction, prevention, preparedness, response and recovery across all states and territories. Greater transparency over investment of funds for resilience, risk reduction and recovery is also required to better understand the effectiveness of these investments and improve ongoing governance. This could be enhanced by the employment of climate finance frameworks (Drill et al., 2023) (e.g., real options approach or cost benefit analysis,) to assess proposed projects, inform decision-making and set up monitoring and reporting systems once a project commences. The expected impact of climate change under a range of climate change scenarios should be incorporated into decision-making under those approaches or analyses.

5. Methods to address affordability pressure

5. Methods to address affordability pressure

Measures to address insurance affordability pressure fall into three main categories:

- **Risk reduction:** Mitigating or avoiding flood risks will naturally lower flood insurance premiums. This is the **only** approach which reduces (rather than shifts) the cost, together with the indirect financial and social costs of these disasters experienced by individuals, communities and society.
- **Cost sharing:** If lower-risk households (who tend to experience less affordability pressure) contribute more funds, this eases the burden on highest-risk households, i.e., there is cross-subsidisation between the two. In the aggregate, this does not reduce the underlying risk, but it relieves the most acute affordability stress at a point in time for those who reside in flood-prone areas.
- **Government direct cost reduction:** Governments can implement targeted subsidies and tax reforms which have an immediate impact on premium affordability. More generally, governments can directly intervene through legislation or regulations to implement policies accelerating the lowering of affordability pressure.

While risk reduction measures are a preferred first line of defence against natural peril risks, these are not always possible, can be very expensive and may take time for the full benefits to flow through to premiums. The other types of measures – cost sharing and government direct cost reduction – must therefore also be considered.

Furthermore, both public and private sectors, including governments, insurers, businesses and expert organisations, should collaborate in sharing data and knowledge further educating the public and elevating proactive disaster risk management into the public consciousness.

5.1 Risk reduction

Flood is particularly well suited to community-level mitigating actions to lower flood risk through the building of levees or similar. Flood is a 'boundary' peril, and there are economies of scale to be realised in building infrastructure that protects whole communities rather than individual homes. Individual mitigations in some cases also have a role to play, such as the raising of house levels.

This section presents updates to risk removal and risk reduction methods identified in the Institute's 2020 Research Paper on property insurance affordability.

In determining the effectiveness of a risk reduction option, it is imperative to first identify the level of flood risk for different areas. This assessment should go beyond today's view and take on a much longer assessment timeframe, say for the next 50 years, to ensure the action(s) undertaken would provide for long-term sustainable benefits and resiliency.

For a specific location, this could involve:

- gathering robust and up-to-date data to understand flood risk factors;
- enhancing flood mapping and models, with sufficient granularity to identify specific addresses at extreme risk;
- using climate finance frameworks such as real options approach or cost-benefit analysis to assess and compare the merits of available options to inform optimal selection and allocation of funds;
- incorporating the impact of climate change on flood risk into decision-making to ensure long-term resiliency of the option; and
- ensuring appropriate governance on zoning and land use planning to consider flood risk.

The above should be done in conjunction, and in consultation, with:

- Australia's First Nations community, who have a deep traditional understanding of land and water management. Echoing section 6.5 in the 2022 Green Paper, the Institute supports councils developing stronger relationships with Aboriginal land councils and traditional custodians of the land to bolster the approach to land use planning and to pay fairly for those insights;
- impacted communities to ensure good mutual understanding of the risks they face and their concerns; and
- the insurance industry and other expert bodies, who have in-depth knowledge and experience at modelling and costing flood risk.

In response to effective risk reduction actions being undertaken, insurers can play a key role in reviewing their technical pricing[5] of the risks to reflect the lower level of risk and improved resilience. This sends appropriate price signals and provides financial incentives to encourage households and communities to undertake these activities. Community-level risk mitigation activities, for example, can directly and materially improve insurance affordability (e.g., there was a reduction of premium costs, as high as 75%, following the construction of flood levees in Roma, QLD, as noted in section 5.1.2).

We acknowledge the difficulty in assessing the effectiveness of individual household level risk mitigation in practice, which requires appropriate technical expertise and can be costly. However, there have been a number of developments which are promising and may potentially lead to solutions in enabling an easier way to assess the degree of improvement:

- more accurate flood risk factors for individual property based on better and more up-to-date data to inform the vulnerability of the property to flood (e.g., the QRA project (from section 4.2) which provides a comprehensive assessment of flood risk factors down to LGA level through collecting accurate data using LiDAR technology); and

5. Refer section 3.1 of the accompanying Report for an explanation of technical premiums.

- a freely available disaster (including flood) risk rating system, e.g., the Resilience Rating System (Resilient Building Council, n.d.) that is currently under development by the Resilient Building Council, which will measure the resilience of property and provide tailored adaptation actions.

Both of these could be incorporated into building codes and land use planning, making them stronger and more future-proof.

5.1.1 Risk removal

The decision to live in a certain location is driven by more than prices and risks. People are tied to the land by history, community and tradition. Nevertheless, some locations across Australia are, or will become, so flood-prone that the financial costs and human suffering justify avoiding use of the land for housing. This will only happen in practice if governments and communities have a mutual strong resolve to take action, and sufficient financial and other support is provided to enable a relocation. Given the very significant costs involved, we acknowledge this can only be workable for the most extreme risks.

Once extreme-risk areas have been identified, it is likely that there will need to be a compulsory repurchase or relocation of existing buildings or land swapping program, and zoning/re-zoning of land to prevent new development.

Similar to a flood event itself, relocation can bring physical and emotional hardship to residents. It needs to be undertaken fairly, openly and with compassion. When relocation is proactive (prior to a flood event), it can be planned carefully in advance and executed at a pace that is sensitive to residents' needs.

A national framework co-ordinated by the Federal Government, e.g., under NDRR, could provide support for planned relocation and proactively identify high-risk locations. The framework could address critical success factors, such as funding arrangements, streamlined approvals for planned relocation and review of the outcome of large-scale implementation of planned relocation to inform the refinement of the framework. The 2020 Research Paper noted the relocation of Grantham in QLD as a useful case study. A current case study is the relocation process in Northern Rivers NSW, which remains in early stages but can provide further insight for a national framework.

An international example is the introduction of earthquake 'Red Zones' in New Zealand. Following the 2010-2011 Canterbury earthquakes, the New Zealand Government announced an emergency policy response which included the establishment of 'Red Zones' indicating badly damaged land which would not support repair or rebuild. These zones contained over 8,000 residential properties which the Government made offers to repurchase.

The objectives of the initiative were to:

1. provide certainty of outcome for homeowners;
2. create confidence for people to make decisions and move on with their lives;
3. inform decisions with the best available information at the time; and
4. have a simple process.

A 2016 survey of affected homeowners determined that "the majority of respondents expressed a positive view" of the initiative, though "a minority of respondents felt they experienced a difficult and stressful process" (Nielsen, 2016, p.11). The complexity of being able to implement effective relocation is highlighted by some homeowners remaining in the Red Zone more than a decade later and notwithstanding the considerable financial assistance being offered.

A key element of enabling risk removal is clear and transparent risk disclosure. This would enable homeowners and buyers to be better informed about the resiliency of the building. An example would be open disclosure of a site-specific disaster rating which includes flood. One such example is the Resilience Rating System, which is currently under development by the Resilience Building Council to be launched in 2024 (Resilient Building Council, N.D.).

While there may be significant transitional costs associated with such disclosure, solutions to equitably manage these should be considered. The value of existing homes could be impacted if there is a more widely understood level of risk. A further complication is the significant additional uncertainty that climate change introduces. A relevant case study is the controversy created in the Waverley Council area (Eastern Suburbs of Sydney) when some homeowners received council notifications that their properties were classified as medium and high risks when new flood maps were released in 2022[6]. Learnings include that the degree of uncertainty needs to be clearly and sensitively communicated with a high level of community engagement. This does not, however, reduce the impetus for such disclosure.

6. See, for example, https://www.smh.com.au/national/nsw/sydney-home-owners-fear-premium-hikes-hit-to-property-values-after-shock-flood-rating-20220826-p5bd1m.html

5.1.2 Risk mitigation

While risk removal should only apply to the most extreme cases, very often it will not be necessary or even feasible to remove the risk entirely. Where flood risk is moderate, mitigation measures may be the more cost-effective and less disruptive option.

Some options for flood mitigation include:

- strengthening and future-proofing of building codes to include the use of flood-resilient construction materials in order to improve the resilience of buildings for the uncertainty of a changing climate and the likelihood of more widespread and extreme weather events over the expected multi-decade lifetime of a building structure;
- requirements for new or renovated homes to be elevated above the flood line;
- construction of levees; and
- strengthening of land use planning and approvals, including to take into account the changing climate.

Levee construction, in particular, is highly dependent on local geography. We reiterate the importance of a national framework which can assign funding based on robust climate finance frameworks to derive the most impact possible for these investments.

The benefits of risk mitigation will take some time to accumulate, but they will build up to a sizeable and permanent saving in flood recovery costs. There are numerous such examples of major cost reductions.

- The Queensland Household Resilience Program provides direct incentives for household property improvements. By better protecting homes with these mitigating measures as a direct incentive by the Government, premiums have dropped by an average 10.3% (Queensland Government, 2023). We note the additional design feature in some of these programs that the co-payment required of households for mitigation works can be waived if the household is experiencing genuine hardship. Without this feature, relief for some of the most affordability-stressed households would be beyond reach.
- The NSW Select Committee's report on the response to major flooding across NSW in 2022 observed that the construction of flood levees in Roma, QLD, reduced premium costs by 'as much as 75 per cent' (NSW (Parliament. Legislative Council), 2022, p. 100).
- In 2005, Switzerland was affected by substantial flooding, which resulted in several deaths and significant property damage. Following this event, insurers and a number of public bodies coordinated an investment in protection measures and infrastructure. These actions are estimated to have reduced exposures by as much as approximately one-third (Swiss Insurance Association, 2021).[7]

"The benefits of risk mitigation will take some time to accumulate, but they will build up to a sizeable and permanent saving in flood recovery costs."

5.2 Cost sharing

Insurance and reinsurance pools (collectively referred to as pools in this Report) may be used to redistribute or cross-subsidise the cost of insurance cover and improve the viability and affordability of insurance coverage for high-risk households.

There are a multitude of existing pools globally, each with a unique design influenced by factors such as jurisdiction, risks covered and level of government funding. The below section outlines some of the key features of pool designs and considerations for how each might apply within the context of Australian floods. Six different local and international insurance pools (out of 13 that were surveyed) have been selected based on these features. The selected pools, which can be found in Appendix A, are:

1. Caisse Centrale de Reassurance (CCR), France;
2. Flood Re, United Kingdom;
3. Toka Tū Ake EQC (formerly Earthquake Commission), New Zealand;
4. Cyclone Reinsurance Pool, Australia;
5. Florida Hurricane Catastrophe Fund (FHCF), United States of America; and
6. Elementarschaden Pool, Switzerland.

5.2.1 Purpose

Pools are typically introduced in response to pressures on insurance affordability and availability following major disasters. These pools generally aim to share risk and therefore cost across a wider group (or 'pool') so that insurance is made more affordable for high-risk policyholders by lower-risk policyholders through a cross-subsidy mechanism. Pools do not necessarily reduce the total level of risk facing policyholders.

7. The authors corresponded directly with the Swiss Pool.

5.2.2 Risk coverage

An insurance pool may cover a single peril or multiple perils. The level of benefits provided also differs for each pool depending on the design.

To date, Australia has taken a single-peril approach to designing insurance pools, in the form of the Terrorism Reinsurance Pool and the Cyclone Pool. Globally, there is a mix of single-peril and multi-peril pools.

In Australia, a single-peril pool for flood could be considered to specifically address the problem of affordability of flood insurance. The design would need to take into account that Australia's flood risk is highly localised among a relatively small number of households with significant exposure. Such a scheme would therefore only have a small number of beneficiaries. Specifically, the accompanying Report finds that if the 171,000 high flood risk and affordability-stressed households with a total estimated flood premium of $1.5 billion per annum (after allowing for the impact of the existing Cyclone Pool) were to be fully insured, each of these households would have to pay an average flood risk premium of $8,800. This is likely to be considered unaffordable by many. The cross-subsidy required to reduce this to an affordable level will therefore be very high.

If a multi-peril pool were to be considered, it could cover other perils such as bushfire and cyclone (noting that cyclone is already covered by the Cyclone Pool in Australia). This could also be more equitable if it is considered households facing high insurance affordability stress should be protected irrespective of the type of peril they face. While this would broaden the coverage and increase the cost of the pool, the benefits, as well as the costs, would be more widely shared. In addition, a multi-peril pool could derive diversification benefit across coverage of different perils compared to the aggregate cost of multiple single-peril pools.

Regardless of whether a pool is a single-peril or multi-peril pool, it would be critical to carefully define the terms of the coverage and the level of benefits. In the case of Australian flood risk, coverage of riverine flood would be a key consideration for the reasons noted in Section 3.1.

5.2.3 Structure and funding

Pools vary significantly in structure and funding sources. At a high level, pools provide insurance directly from the public pool entity or require insurers to reinsure their risks with the public pool entity. This Report does not attempt to recommend a specific scheme design for an Australian pool to address flood insurance affordability pressure. This would require a comprehensive analysis including extensive stakeholder engagement if the government opts to legislate a pool.

Any reduction in insurance costs for affordability-stressed households must be funded. Funding is commonly sourced from a combination of either elevated premiums charged to lower-risk policyholders and/or government contributions. To stabilise funding requirements, pools commonly purchase reinsurance (or retrocession for a reinsurance pool) from the private reinsurance market. In other cases, the government may provide a guarantee.

Some options for funding may involve:

- Include the entire population (or a large subset) in the pool regardless of their level of natural peril risk to share the cost more widely. One way to achieve that could be via a levy-type structure such as that used in the UK's Flood Re, whereby a flat dollar amount based on council tax band of the property (Flood Re, n.d.) could be charged to every household. This could be fully funded by using this mechanism or by combining with government funding to provide the balance of the required funds.
- For a pool which covers multiple perils, the Swiss Elemantarschaden-Pool, for example, charges a uniform and financially sustainable premium based on the home value (Swiss Insurance Association, 2021).
- Direct contribution of government funds to the pool to lower premiums for high-risk policyholders or through targeted means-tested subsidies to stressed households, as is discussed in section 5.3.
- The extent to which any pool uses pre- or post-event funding is another major decision. A discussion of this is provided in the 2020 Research Paper.

Box 1: Extension of the Cyclone Pool to cover flood

Some commentators have suggested that the Cyclone Pool should be extended to cover flood.

The cross-subsidisation mechanism of the Cyclone Pool is very specific. It is designed for the potential savings that insurers have on capital costs on retained risk and reinsurance costs on ceded risk for all cyclone premiums (because this is being provided by the Government instead of by the private market) to be used to fund reduced premiums for medium and high cyclone risk policyholders (Australia Reinsurance Pool Corporation (ARPC), 2023). That is, cyclone premium margins from the low-risk households cross-subsidise the premiums of medium- to high-risk households. Two other design features are that it is to have minimal impact on premiums paid by lower cyclone risk policyholders and that it is to be cost neutral to the Government. We also note that the Cyclone Pool design does not differentiate between policyholders who are, and are not, affordability-stressed.

Based on the accompanying Report, total annual flood premiums (after allowing for the impact of the existing Cyclone Pool):

- for all households who are exposed to flood risk is $2.4 billion;
- for affordability-stressed households with high flood premiums is $1.5 billion; and
- for low and medium flood risk households, regardless of affordability status, and the high-risk households which are non-affordability-stressed is therefore $0.9 billion.

If the Cyclone Pool funding mechanism is applied, the capital cost savings from the low-risk households would be a fraction of the $0.9 billion total premiums from the third group above, and therefore grossly insufficient to meaningfully reduce the more than $1.5 billion premiums for all households with high flood premiums.

This Report therefore concludes that a flood pool with the same structure and funding design as the Cyclone Pool would not be viable or sustainable to address the flood premium affordability challenge.

5.2.4 Fairness

Insurance pools by design create trade-offs between the highest-risk policyholders who are having their risk shared with, or cross-subsidised by, the lower-risk policyholders who are taking on an oversized portion of the cost. Defining the appropriate level of cross-subsidisation for a pool is a question of 'fairness'. The evaluation of fairness is likely to vary depending on the risk covered and on cultural considerations.

In the context of the Cyclone Pool, it is implemented to be cost neutral to the Australian Government with a cross-subsidy between low cyclone risk households, on the one hand, and medium to high cyclone risk households on the other. It has also been developed with an intention that there will be minimal impact on policy premiums for lower cyclone risk properties[8].

In the case of some international examples, a much more broad-based community-rating approach is used to cover a range of natural perils, including flood (or multi-peril cover referred to in section 5.2.2):

- In Switzerland, the Elemantarschaden-Pool allows for flat premiums (proportional to property value) for natural perils to be charged to all households regardless of their risk level. The stated intent of this pool is explicitly linked to the concept of 'solidarity', which justifies this whole-of-society approach to risk management (OECD, 2017).
- The French Caisse Centrale de Reassurance (CCR) likewise requires all individuals to pay a fixed amount (proportional to property value) (CCR, n.d.), reflecting the concept of solidarity enshrined in the constitution: "The Nation declares all French citizens to be equal and united in solidarity when faced with loss resulting from natural disasters."

The concentration of flood risk in Australia has implications for the fairness of any scheme.

- If the pool were to only share risk between those households which have meaningful exposure to flood risk and accordingly have some component of premium for flood, this is unlikely to significantly improve affordability given the group included in the pool lacks scale (refer to the discussion in Box 1).
- The beneficiaries of any flood insurance pool are likely to be a relatively small number of households (even more so than the existing Cyclone Pool since the impacts of cyclone are more geographically widespread and across all households, affordability-stressed and non-affordability-stressed). If everyone in Australia is required to contribute to a pool, regardless of whether they are exposed to flood risk or not, or community-rated, this would mean a large majority are exposed to costs in order to support a small minority.

8. https://arpc.gov.au/reinsurance-pools/cyclone/ provides further details.

Australia does not have a legislated or constitutional framework to assess fairness. However, Australian homeowners may be willing to accept some level of cross-subsidy and community rating, particularly if it is temporary in nature. Compulsory Third Party motor insurance has some elements of this, and private health insurance, while optional, also has community rating. Assessment of fairness outcomes in any potential design should balance the benefit to the high-risk policyholders and the potential acceptable/ reasonable impost on lower-risk policyholders.

5.2.5 Interaction with risk reduction

Given risk reduction is the preferred solution for responding to insurance affordability issues, it is critical that insurance pools do not unnecessarily detract from risk reduction efforts. In order to motivate individuals and communities to mitigate risks to their own properties, it is important that a risk signal remains after pooling. Indeed, well-designed pools often have specific features to support risk reduction.

In general, the cost sharing created by insurance pools can reduce incentives for risk reduction because individuals are not directly paying for their own risk. Pools therefore often have specific features which aim to support risk mitigation measures. Some pools achieve this by ensuring there are still mechanisms which support and reward those who reduce their level of risk. For example:

- Australia's Cyclone Pool offers incentives for risk reduction and premium discounts to insurers for properties that undertake mitigation measures. It has also generated productive discussions and cost-benefit analyses that indicate the importance of directing efforts and incentives to mitigating actions as a priority to ensure any pooling arrangements remain sustainable and equitable (ARPC, 2023).
- The Caribbean Catastrophe Risk Insurance Facility (CCRIF) provides disaster risk training courses for local government officials.
- France's CCR uses its data to support business cases for flood resilience initiatives (e.g., constructing flood levees).
- UK's Flood Re is complemented by a strong set of incentives that reward mitigating measures. The scheme has a cut-off date after a fixed period, providing a deadline to implement mitigation and risk reduction responses. Claim payments under the scheme provide funding to reduce flood risk (Flood Re, N.D.).
- The FHCF is required to spend a certain portion of its investment income on mitigation measures.

Given the comparatively higher efficacy of community-based mitigation for floods, it is important for a flood insurance pool to be designed with a key objective of supporting such flood mitigation measures.

5.2.6 Timeframe

When designing a pool, it is essential to consider a long-term vision of success as best practice. A key part of this consideration is the lifespan or timeframe of the pool. There are two basic alternatives:

- fixed date of pool termination; or
- indefinite operation of the pool.

Having a fixed end date (or at least target end date) can create an impetus for risk reduction measures to be prioritised, as the underlying risks need to reduce sufficiently to render insurance available and affordable once the pool ceases operations.

We recognise that climate change will continue to alter the risk landscape, and this may leave some communities financially unable to mitigate the risks that develop in the future. This could potentially extend any target end date for a pool. The principle of a target end date could be preserved with regular holistic reviews of the pool, for example, re-identifying the key regions which need support. In practice, this approach may be consistent with most international examples, where pools are established with an indefinite lifespan, with regular review of the pool's funding and performance critical for ongoing viability.

One key exception is the UK's Flood Re, which is designed to cease operations in 2039 with a formal review required to be carried out at least every five years with any recommendations made to the Secretary of State. This pool aims to transform flood risks sufficiently by this fixed date to return the coverage of flood risks to the private insurance market. It should be noted that this is a challenging task, and a 2021 review of Flood Re recorded 'Amber' and 'Red' grades against its goals (Flood Re, 2021, pp. 21-22).

If an indefinite pool were to be introduced, it is the Institute's recommendation that risk reduction efforts remain the focus of the pool. Risk reduction is the only means to reduce cost holistically and reduce the indirect financial and social costs from floods.

For either type of pool, it is imperative that there are requirements for regular formal reviews with a monitoring mechanism against which a clear set of performance metrics could be measured in order to ensure the pool remains fit-for-purpose. We note this is a feature of both existing Australian pools (the Terrorism Reinsurance Pool and the Cyclone Pool).

5.3 Government direct cost reduction

Governments can directly reduce the cost of insurance by providing subsidies or cutting taxes, e.g., from government budgets or through legislating levies on taxpayers, to affordability-stressed households. The relief afforded by this option is immediate.

In addition, government funding costs are not limited to pre-event. These could also be provided post-event through other subsidies and grants. In both instances, they do not address underlying flood risk.

5.3.1 Subsidies, concessions and rebates

Subsidies of insurance costs (including concessions and rebates) were considered in section 3.5.1 of the 2020 Research Paper. We reiterate that, although such subsidies can provide effective and targeted relief to affordability-stressed households, they may dampen the incentives for households to mitigate their own flood risks. When allocating funding, governments must consider the opportunity cost if the funds are used to subsidise insurance premiums. It is well established that the same funding invested in well-chosen mitigation projects will yield a far greater benefit, both to government and households, in the long term.

Rather than directly subsidising insurance premiums or post-event funding, governments may subsidise mitigation measures or provide funds contingent on recipients taking risk reduction action, such as moving to less flood-prone ground within a given timeframe (as noted earlier).

5.3.2 Taxation

Various government reviews, including Australia's future tax system ('Henry Tax Review') in 2010 and NSW Review of Federal Financial Relations in 2020, have found insurance taxes (stamp duties and ESL) are inefficient and should be abolished and replaced with revenue raised from alternative robust and efficient tax bases (State of New South Wales (NSW Treasury), (2009), p. xviii; State of New South Wales (NSW Treasury), (2020), p. 67).

Only NSW continues to have an ESL. In the case of Victoria as an example, ESL was replaced in 2013 by the introduction of a Fire Services Property Levy, a property-based levy, collected through council rates on behalf of the Victorian Government. The ACT has progressed further with tax reform and abolished stamp duty as well in 2016.

As noted in section 3.2, these insurance taxes (i.e., stamp duty and ESL in the case of NSW) account for an additional amount of 10% to 37% of premium payable (except for ACT), exacerbating affordability pressure and creating disincentives to take up insurance. Furthermore, the NSW ESL applicable to home insurance is complex in the calculations — the final amount (charged as a percentage of the gross premium) can fluctuate significantly from one year to the next for a given household.

The Institute notes tax reform takes considerable time. In the interim, consideration could be given instead to collect insurance taxes based on sum insured, taking into account the property value (instead of the riskiness of that coverage), such as a flat rate per $1,000 sum insured or a fixed percentage of sum insured. This could arguably be more equitable. However, this is unlikely to make a difference to the most affordability-stressed households who are unlikely to be insured in the first place.

6. Potential policy solutions

6. Potential policy solutions

The flood insurance affordability problem is complex. There is no perfect solution to solve it, but a myriad of potential solutions. The ultimate objective of any suite of solutions should be to mitigate flood risks to a sufficient extent such that flood insurance can be more affordable and available for all flood-exposed households and communities in a sustainable and viable insurance market.

We acknowledge that affordability-stressed households are already under acute affordability pressure and that overall affordability pressure will increase due to climate change, especially if inadequate actions are undertaken. Following the recent disastrous flood events, it is apparent that these have also come at a high cost to governments through disaster recovery and relief efforts, to individuals, families, businesses and communities who bear the brunt of the aftermath, and to the insurance industry with high levels of insured losses.

Stakeholders need to prioritise their plans and act with urgency. It is critical that immediate and impactful actions are carried out to develop an effective and coordinated flood risk management strategy and implement it efficiently nation-wide, setting all stakeholders up for future success.

As the Institute has previously noted (Actuaries Institute, 2020), in determining the mix of methods to address the affordability problem, location-specific analyses are required to understand for a particular natural peril:

- the root cause of affordability pressure;
- the effectiveness of each method in improving affordability; and
- the extent of avoiding unintended consequences.

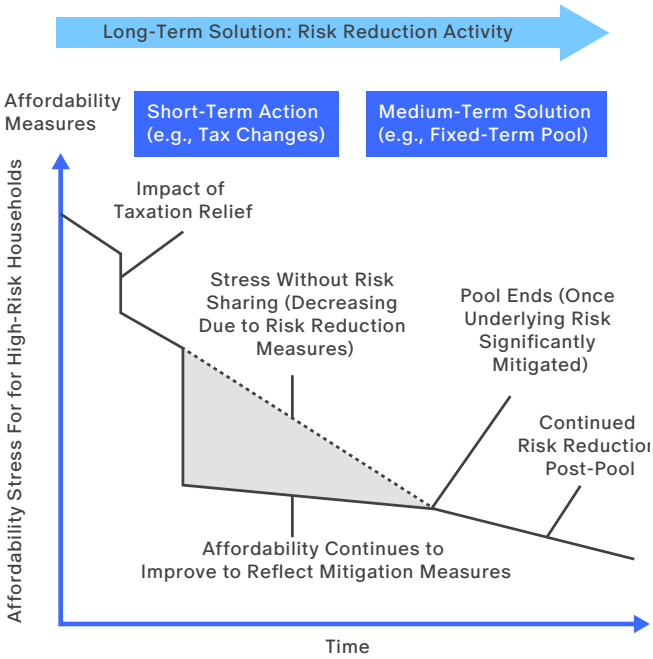
To enable more effective prioritisation, we propose the following framework to consider different solutions. We believe this would be useful to produce meaningful and impactful change in flood insurance affordability. These are broadly categorised by the length of time we would ordinarily expect for each category of actions and their focus to result in lower insurance premiums. In general, the more complex the policy and its implementation, the longer it will take to realise the benefits, and the costlier it will be.

The three broad categories of actions and focus are:

1. short-term: reduction of cost;
2. medium term: redistribution of cost through risk sharing; and
3. long term: reduction of risk.

Figure 1 illustrates how these three categories could collectively reduce affordability stress for households at high-risk over time. The vertical axis represents the level of flood insurance affordability stress for high-risk households, while the horizontal axis represents time.

Figure 1: Schematic of potential relief for affordability-stressed households



Note: this diagram is a simple schematic for illustrative purposes only and is not intended to be a detailed representation of affordability stress impacts from different policies.

In this conceptual example:

- Continual investment in risk reduction activities sees the level of affordability stress reduce over time as the risk profile of high-risk households reduces. These risk reduction activities could be a composite of community/ landscape scale actions and individual household actions.
- Immediate cost relief is provided through taxation changes to reduce affordability stress and encourage take up of insurance. Targeted support for households facing extreme insurance stress, which also has immediate impact, could be provided by insurance subsidies or some other policy mechanism.
- Risk and cost sharing benefits, e.g., an insurance pool, is introduced to provide further relief of affordability stress in the medium-term. A fixed-term pool is used in this example, which redistributes some of the insurance costs away from the highest risk households to reduce affordability stress and support a long-term risk reduction process.
- The risk reduction continues to occur in parallel to these interim measures, with the pool/subsidy/other mechanism ceasing to be required once the risk reduction activities have been sufficiently successful and embedded as part of normal ongoing practice. At this time, flood insurance is affordable and available.

To conclude, there are currently numerous ongoing projects and investments to improve flood risk management. Collectively, if implemented and coordinated effectively under Australia's commitment to the Sendai Framework, these should continually improve flood insurance affordability pressure, especially for the most affordability-stressed households, putting aside the overall increased risk of natural perils expected to occur with climate change. However, much more could and needs to be done for home flood insurance to be affordable and remain available in a sustainable and viable insurance market, especially when consideration is given to the changing climate.

The Institute therefore supports the following policy initiatives which could be considered alongside the short-, medium- and long-term framework in determining an optimal mix of solutions.

1. Given the extreme insurance affordability pressure experienced by some households identified in the accompanying Report, governments should consider with urgency the introduction of cost reduction and cost sharing measures which could provide short- to medium-term relief for the affordability-stressed households.
    a. For immediate relief: governments of all states and territories (except ACT) to consider measures such as:
        i. replacement of insurance taxes, which have a compounding effect on premiums, such as stamp duty, as well as NSW ESL, with alternative revenue sources that are more equitable and efficient. For example, Victoria replaced this in 2013 by introducing a Fire Services Property Levy a property-based levy, collected through council rates on behalf of the Victorian government (State Revenue Office, Victoria, N.D.); and
        ii. other measures such as targeted subsidies which are means-tested.
    b. For interim relief: should an insurance/reinsurance pool be contemplated, consider incorporating best practice features with risk reduction being one of the key objectives of the pool, given this is the only long-term solution to reducing affordability pressure, acknowledging the potential for a pooling mechanism to mute the risk signal in individual risk pricing.
2. For risk reduction initiatives:
    a. Strengthening and future-proofing of building codes and land use planning rules to improve the resilience of communities, taking into account a changing climate and considering the multi-decade expected lifespan of building structures. We note the current development of the Resilience Rating System which measures the resilience of property and provides tailored adaptation actions by the Resilient Building Council for buildings, and which could be considered for potential incorporation into building codes.
    b. Consultation with impacted communities and drawing on the deep knowledge of First Nations people on land and water management practices to increase the chance of success of proposed projects.
3. For data and analysis:
    a. Governments, agencies and the private sector collaborate and utilise proven technology to collect better, up-to-date data which could be used to improve flood mapping and flood modelling. This data should be freely and readily accessible to homeowners and the general public and provide easy-to-understand information about flood risk exposure at each property.
    b. Consistent and objective use of climate finance frameworks for assessing the merits of different projects, prioritisation of projects and allocation of funds for an optimal set of solutions. This will maximise the benefits, lowering both flood risk and flood costs.
    c. Once the project commences, the climate finance framework used can be integrated in the development of strong reporting, monitoring and governance processes of the project to maintain accountability and effectiveness.
4. For insurers, to provide timely risk-reflective pricing with appropriate financial incentives and risk information to encourage policyholders and communities to mitigate their flood risk. We acknowledge that, in practice, the effectiveness of community-level flood mitigation activities is easier to assess while it is more difficult technically, as well as costly, to establish the effectiveness of individual household risk mitigation actions which have been undertaken. However, the introduction of a disaster (including flood) risk rating system (considered in 2a above) for properties incorporated into building codes could be considered to provide an objective, simpler and transparent way to assess the inherent natural peril risk level of a property.

Appendix A
Select pool examples

Appendix A
Select pool examples

Six international (re)insurance pools are selected on the basis of the six key features identified in section 5.2 of this Paper, namely:

- purpose;
- risk coverage;
- structure and funding;
- fairness;
- interaction with risk reduction; and
- timeframe.

These are considered in the context of flood in Australia in order to address the affordability issue of flood insurance if a pool arrangement were to be considered as part of a suite of potential solutions.

The selected pools are:

1. Caisse Centrale de Reassurance (CCR), France;
2. Flood Re, United Kingdom;
3. Toka Tū Ake EQC (formerly Earthquake Commission), New Zealand;
4. Cyclone Reinsurance Pool, Australia;
5. Florida Hurricane Catastrophe Fund (FHCF), United States of America; and
6. Elementarschaden Pool, Switzerland.

Caisse Centrale de Reassurance (CCR)

Scheme:

Caisse Centrale de Reassurance (CCR)

Country:

France

Perils Covered:

Multiple ("exceptional intensity of a natural element")

Funding:

Reinsurance premiums charged to direct insurers, Government guarantee.

Scheme Monitoring Period:

Not applicable

Defining Features:

Clear legislative support for scheme. French constitution calls for "all French citizens to be equal and united in solidarity when faced with loss resulting from natural disasters".

Natural catastrophe insurance is compulsory on all property insurance. Premiums charged to individuals are a flat percentage of property value regardless of risk profile.

Interaction with Risk Mitigation:

Individual mitigation activities may be disincentivised because of flat premium structure. CCR is heavily involved in supporting other risk mitigation measures (e.g., providing data and analysis to support evaluation of prevention measures).

Relationship to Australian Flood Context:

While the context of compulsory natural peril insurance and constitutionalised commitments to unity in the face of natural disasters are not reflective of Australian arrangements, the CCR still provides a good example of how flood can be incorporated within a long-term multi-peril scheme.

Flood Re

Scheme:

Flood Re

Country:

United Kingdom

Perils Covered:

Single (flood only)

Funding:

Funded by insurers through levies (from all participating insurers) and premiums (based on tax band of local council for each insured policy).

Scheme Monitoring Period:

Quinquennial (five-yearly)

Defining Features:

Temporary scheme, established in 2016 and intended to be concluded in 2039. Designed as a short-term affordability solution but with the intention of only being an interim measure.

Interaction with Risk Mitigation:

Premiums are expected to be fully risk reflective once the scheme ceases in 2039 – as such, homeowners are encouraged to become aware of flood risks at their property and take actions to reduce it if possible.

There is a transition program in place for once the scheme ceases, which aims to help communities manage and mitigate flood risk.

Relationship to Australian Flood Context:

Provides a useful reference point for an interim flood-only pool solution, which is one of the potential options this Report suggests for consideration.

Toka Tū Ake EQC

Scheme:

Toka Tū Ake EQC
(formerly Earthquake Commission, EQC)

Country:

New Zealand

Perils Covered:

Multi-peril: Residential properties covered for earthquake, landslip, volcanic eruption, hydrothermal activity and tsunami, along with fire which occurs as a consequence. EQC also covers damage to land from these perils along with storms and flood.

Funding:

Flat rate levies (16c per $100 of EQCover amount up to a max of $480 ex GST) from all householders who purchase a home-owner insurance policy. Government provides a guarantee if costs exceed funding pool.

Scheme Monitoring Period:

Independent inquiry in 2020; no future set monitoring data.

Defining Features:

Cover for property damage is for the first $300,000 of claims. Above this is covered by private insurers. There is no cap for land damage claims.

Major 'unprecedented' event associated with the Christchurch Earthquake in 2011, which triggered Government guarantee and is still seeing claims continued to be paid out (e.g., because renovation activities reveal previously undetected damage).

Interaction with Risk Mitigation:

No financial incentive as levies do not reflect risk. One of the purposes of the pool is improving understanding of natural hazard risk and how to reduce it by funding research and education.

Relationship to Australian Flood Context:

Provides an example of cross-subsidisation based on a fixed rate levy across all policyholders, which may be relevant for considering an expansion of the Cyclone Pool to include multiple perils, including flood. Also highlights the importance for pools being designed to manage extreme events.

Cyclone Reinsurance Pool

Scheme:

Cyclone Reinsurance Pool (Cyclone Pool)

Country:

Australia

Perils Covered:

Single-peril: Cyclone (and cyclone-related flood)

Funding:

Charging reinsurance premiums to insurers that are consistent with the expected claims and operating expenses for the pool. Expected claims are based on property-level data, such as geography, building characteristics and mitigation.

Scheme Monitoring Period:

As soon as practicable after 1 July 2025 and then once every five years

Defining Features:

It is compulsory for insurers to eventually join the scheme before established deadlines: for large insurers by 31 Dec 2023; and for small insurers by 31 Dec 2024.

The scheme is intended to be cost neutral for the Government due to the reinsurance pricing mechanism. Cross subsidisation is designed to transfer premium margins from low-risk property to cross-subsidise medium- and high-risk property.

Interaction with Risk Mitigation:

While the reinsurance pricing formula includes features such as building characteristics and mitigation that may provide some level of price incentives to carry out risk mitigating measures, the Cyclone Pool's funds are primarily used to indemnify insured losses. This is unlike Flood Re or the Swiss pool, which have as their primary objective directing funding to incentivise risk mitigating measures on a pre-disaster basis.

Relationship to Australian Flood Context:

The Cyclone Pool uses various geographic rating factors (including some risks at suburb level and others at address level) to price reinsurance. It is targeted at risk, without a means-test/affordability overlay. Furthermore, given the specific structure and funding design of the Cyclone Pool, it would not be viable or sustainable to address the flood premium affordability challenge (refer Box 1).

Florida Hurricane Catastrophe Fund

Scheme:

Florida Hurricane Catastrophe Fund (FHCF)

Country:

USA

Perils Covered:

Single peril: Hurricane

Funding:

Designed to be self-supporting and funded largely by premium revenues paid by insurers (and associated investment income).

Scheme Monitoring Period:

Continuous, with annual reporting to the Governor and Legislator, as well as annual audits.

Defining Features:

$17 billion capacity.

The FHCF had to limit capacity in 2005 after Florida was hit with eight storms over two years.

The fund borrowed $2.6 billion to pay off obligations, and there was a special levy of 1.3 % of each insurance policy implemented between 2005 and 2015 to recoup these losses and restore the financial position of the fund.

Interaction with Risk Mitigation:

The pricing of reinsurance allows for consideration of mitigation features of underlying properties, which maintains incentives for risk reduction.

A portion of the investment income of the pool (minimum $10 million per annum) is allocated to measures to reduce future hurricane risks.

Relationship to Australian Flood Context:

The FHCF provides a useful precedent for pools exceeding their funding capacity in the face of extreme events, especially when risks are spread across a single peril and a relatively concentrated geographic region. It highlights the importance of considering the potential for pool funding limits being breached and planning appropriate responses if this occurs.

Elementarschaden-Pool (ES pool)

Scheme:

Elementarschaden-Pool (ES pool)

Country:

Switzerland

Perils Covered:

Multi-peril: floods, storms, hail, avalanche, rockfall, landslides, etc.

Funding:

Funded by participating private insurers (voluntary opt-in scheme). To improve capital efficiency, the ES pool purchases retrocession protection from the private market.

Scheme Monitoring Period:

NA

Defining Features:

Natural perils cover is a legally mandated part of fire insurance. Flat premiums (per $ sum insured) are charged for a given property regardless of location.

Designed with close adherence to societal value of solidarity across insureds and insurers.

Switzerland has also created the 'fondsuisse' for natural hazard damages that cannot be insured, funded by a combination of taxes and insurance premiums.

Interaction with Risk Mitigation:

Individual mitigation activities may be disincentivised because of flat premium structure.

However, there is a strong commitment to investment in mitigation efforts, including direct co-investment by insurers and government for the development of large-scale risk protection infrastructure.

Relationship to Australian Flood Context:

The ES pool provides a successful example of a multi-peril pool which has become a core part of a national approach to physical hazards, while maintaining a key focus on mitigation activity. This may provide a useful reference point for policymakers considering a multi-peril pool in Australia which includes flood coverage.

Glossary

- A sum insured policy will set a maximum level of cover, and any payout is limited with reference to that amount. There could be limits for individual items or events. The insurer may reserve the right to decide if it will rebuild, replace or pay.
- A total or complete replacement policy (for building insurance) will pay all reasonable costs to repair or rebuild (taking into account policy exclusions). These policies reduce the risk of underinsurance, but generally cost more.
- A safety net policy will pay up to a specified percentage above the sum insured amount if the sum insured chosen is insufficient to cover the total cost of rebuilding or repairing their home after a covered loss.
- Parametric insurance pays out a predetermined amount based on the occurrence of a specific event or trigger. The payout is not based on the actual loss incurred by the insured but on a predetermined parameter correlated with the event. For parametric flood insurance, an example trigger for payout may be if the rainfall exceeds a predetermined threshold at an officially recognised weather station.
- The United Nations Office of Disaster Risk Reduction (UNDRR) Sendai Framework for Disaster Risk Reduction 2015-2030 is the key international framework to drive disaster risk reduction in order to prevent new, and reduce existing, disaster risks, seeking a substantial reduction in disaster risk by 2030 (Commonwealth of Australia, 2022). The National Disaster Risk Reduction (NDRR) Framework is Australia's implementation arm of the Sendai Framework. The Second National Action Plan will be the second iteration of the plan to progress action on the NDRR Framework. It is expected to be completed in mid-2023 (NEMA, N.D.).

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