DRAFT WORKING PAPER FOR SEADRIF WEBINAR

SEADRIF Knowledge Series: Financial Protection of Public Assets

Fact Sheet 6: Pooling and Mutual Options for Public Assets Insurance

SEADRIF
SOUTHEAST ASIA
DISASTER RISK INSURANCE FACILITY

Disaster Risk Financing
& Insurance Program

SUPPORTED BY
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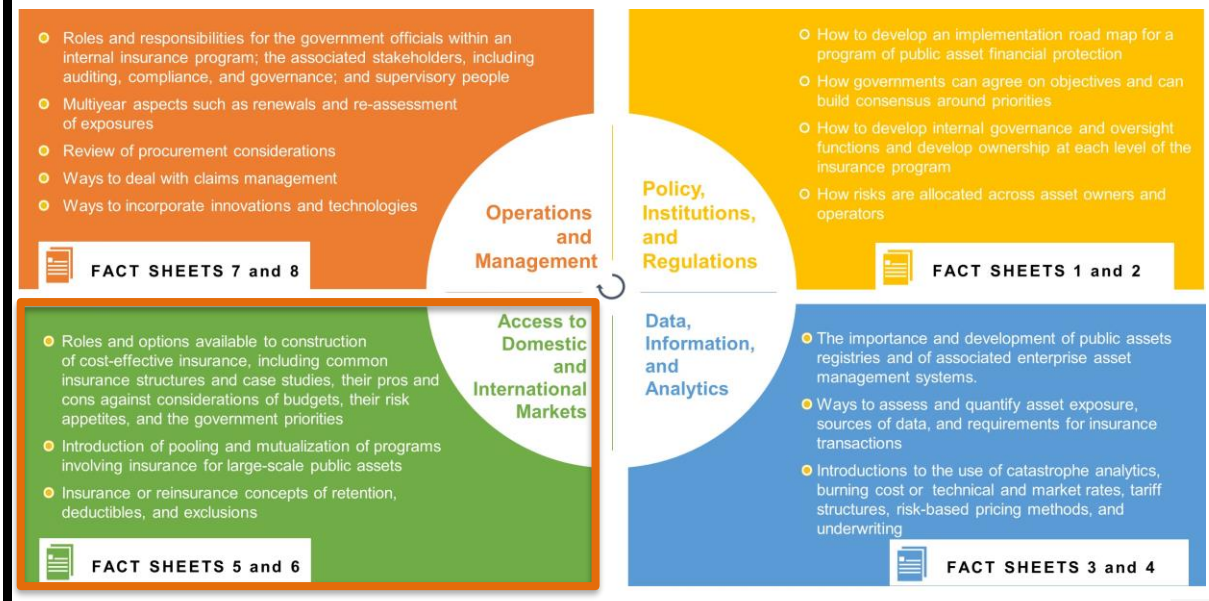
The SEADRIF Knowledge Series: Financial Protection of Public Assets

This sixth fact sheet[1] is part of a Knowledge Series that supports government officials as they develop their understanding of the steps needed to design, develop, deliver, and operate effective financial protection of public assets, particularly through risk transfer and insurance. The Knowledge Series encompasses an end-to-end development of public asset financial protection and insurance, as shown in figure 1. See previous fact sheets in this series for a more detailed introduction.

Each fact sheet will cover a major element of the process and will highlight considerations to assist government officials and other stakeholders who are tasked with developing solutions. New terminologies are defined in the glossary.

Figure 1. Overview of the Knowledge Series



[1] Drafted by Lit Ping Low, Greg Fowler, Rob Antich, and Nicola Ranger, with inputs from John Plevin and Benedikt Signer. The draft will be refined and finalized after the series of SEADRIF webinars about public asset financial protection, and it will build on feedback from the SEADRIF members and other webinar participants. The findings, interpretations, and conclusions expressed in this fact sheet do not necessarily reflect the views of the World Bank, its board of executive directors, or the governments they represent. The World Bank does not guarantee the accuracy of the data included in this work.

Introduction

This fact sheet considers how governments can use risk pooling and mutualization to support large-scale programs on public asset insurance in addition to, or as an alternative to, insurance and alternative risk-transfer markets (discussed in more detail in Fact Sheet 5).

This fact sheet will cover the following:

- A rationale for establishing risk pools and the benefits and challenges of different types of risk pools (Part 1)
- A set of case studies on financial risk pools and mutuals (Part 2)
- A set of case studies on pooling of physical resources (Part 3)

Part 1. Introduction to Risk Pooling and Mutualization

Risk pooling is essential to the concept of insurance and financial risk transfer. For governments looking to develop financial protection programs for their significant pool of public assets, utilizing the benefits of risk pooling can potentially deliver material financial and non-financial benefits. This fact sheet describes the concepts of risk pooling, and their benefits and challenges.

What Are Risk Pooling and Mutualization?

Risk pooling is the practice of sharing all risks among a group of risk exposure units. It rests on the theory that if a large number of risk-exposure units (e.g., buildings) are grouped together and if there is some diversification across the risk-exposure units, there is a high chance that, as a whole, the overall likely losses will be less volatile over time. The aggregated risk can then be spread across participating pool members. Aggregating risks will allow members to collectively accomplish the following:

- Pool risks into a diversified portfolio.
- Retain some risk through joint reserves or capital.
- Where relevant, transfer excess risk to the reinsurance and capital markets.

Not every type of event is suitable for risk pooling. For risk pooling to be effective, the risk should have some form of diversification and uncertainty in terms of when or where that risk can occur. If the event is certain, then tailored resources can be set aside to manage the impacts. Also, if the event is too frequent, setting aside sufficient reserves to manage or pay for the event can potentially be less costly than managing it through a risk pool (which would incur transaction costs to manage and disburse funds).

In general, insurance companies act as commercial risk pools, thereby facilitating risk transfer by charging entities and individuals an insurance premium. The insurance companies will pool those premium earning risks by aggregating risks from many individuals or organizations, which apart from the exposure to risks are unrelated to each other. However, in some circumstances where there is a sufficiently large number of entities with common risk exposures and organizational alignment, those entities could form a risk pool before going to the insurance markets, or in some cases not going to the insurance markets

at all. One common approach is creating a mutual organization that serves the same purpose as an insurance company but that focuses only on the risks agreed to by the organizations that have formed the mutual. In such a case, the mutual is owned entirely by its policyholders. Any profits that a mutual earns can be (a) retained within the mutual, (b) rebated to policyholders through dividends, or (c) contributed toward future premiums.

Benefits of Risk Pooling

In the context of public assets, pooling the assets as part of a risk-financing strategy can deliver economic benefits such as the following:

- ***Financial efficiency and economies of scale:*** Pooling risks across multiple assets or multiple regions, or both, can increase the structural and geographical diversification of risk. Doing so also enables economies of scale through a shared fixed-cost base and through reduced transaction costs of the procurement of related services such as brokers or claims management services. Additionally, because pools are often underwriters of member risk, they may have more flexibility in drafting terms and conditions of coverage that are tailored to members' needs.
- ***Increased budget certainty and price stability:*** Risk pools are typically long-term arrangements to retain risk within the pool. Doing so decreases the amount of reinsurance required, which in turn assists in smoothing costs over insurance market cycles. This smoothing improves budget predictability and reduces pricing volatility. Pools can also have the scale to withstand moderate losses with minimal effect on ongoing member costs. Conversely, one potential downside is that if any one member experiences a proportionately very large loss, in some cases that experience could lead to increased premiums the following year for everyone (all else being equal).
- ***Access to insurance markets and insurance affordability:*** If a portion of risk is transferred to insurance markets, a diversified pool of assets can be more attractive to insurers and thereby can lead to lower premiums. The greater the diversification, the cheaper the reinsurance protection. Risk pooling can also provide an insulating layer between individual member deductibles and an insurance risk-transfer layer. The insulation layer is often attractive to insurers because it reduces insurer risk exposures to lower-value, higher-frequency losses, which results in lower and less-volatile premium costs. If pool members have mature risk-management practices and a better loss history than the general insurance customer has, then collectively they are in a better position to influence premium costs, as well as the coverage terms and conditions.
- ***Improved risk ownership and innovation for participating members:*** Because a portion of the risk and uncertainty is retained within the pool, members have a greater incentive to strengthen their collaboration with each other and to share information and

new ideas about risk management. Those behaviors also promote longer-term risk-management maturity and pool sustainability.

Challenges

Key challenges to risk pooling involve the following:

- ***Moral hazard and adverse selection*****:** *Moral hazard* refers to the situation in which there is imperfect information about the scale of risk-exposure and risk-management practices of potential members. There is a risk that members with substandard risk-management practices or risk-prone assets may join the pool, but such practices or risk exposures are not fully factored into the risk pool and are not reflected in those individual members' premium contributions. This condition is known as *adverse selection*, and it can result in higher-than-expected claims, which can cause financial difficulties for the pool. A successful pool involves diverse membership. In addition, pool members also need to have acceptance and confidence that the pool membership will include not only their own risk profile, but also all their counterparties' profiles — including their loss histories, loss controls, and safety and claims management processes — and that they are unlikely to be able to fully influence or control the underlying risk and claims management of other pool members.
- ***Allocation of premium or member contribution:*** Pool members will always be conscious of cost. When contributions are allocated across membership, there will be an expectation of fairness and transparency. Any smoothing of costs across the membership base will need to be carefully explained and justified to prevent or minimize members' concerns about subsidizing the contributions from other members. Contribution allocations are often made more complex after a large loss has affected some members but not others. Smoothing the cost over time, through hard and soft markets (see Fact Sheet 5), is also important to avoid volatile pricing.
- ***Continued commitment and financial contributions from stakeholders:*** Risk pools require strong and ongoing commitment from key stakeholders — from design to implementation and day-to-day operation. Lessons learned from World Bank's involvement in risk pools around the world indicate that successful risk pools have continued government and political support and ongoing member commitment to the pool. To help achieve this success, stakeholders should be involved in designing the pool and should commit to its rules and to their responsibilities as pool members. Those aspects could include taking into account the two aforementioned challenges through coordination among participating entities.
- ***Time and resources to develop effective pooling design:*** If an effective risk pool is to be developed, the time and resources to design an appropriate risk-pooling structure should not be underestimated. As with all major government initiatives, the costs of time and resources to design and develop a risk pool will need to be compared with the status

quo and the incremental benefits those changes offer. Poorly designed risk pools may not deliver the intended benefits to members.

Different Types of Risk Pooling Structure

As part of designing and developing a government's public assets financial protection, key considerations are the scope and scale for risk pooling across public assets.

To begin with, government officials need to identify the main purposes and drivers of risk pooling, such as the following:

- Is risk pooling being considered to drive cost efficiency through economies of scale?
- Is it being considered because affordable and available existing risk-transfer solutions are lacking at the individual entity level?
- What are the commonalities and differences of the entities and their risk profiles? Although diversification of risk profile is good for risk pooling, entities also need to share common principles in risk management, in addition to other common identifying features.
- What additional intangible benefits can members derive from the risk-pooling structure? Some examples are training and capacity building, mutual assistance, common and improved risk management, risk reduction, and preparedness planning.

Previous fact sheets have discussed the main stages to consider: Design, Development, Delivery, and Renewal. Figure 2 presents a summary checklist of the key considerations for risk pooling within each of those key stages, most of which are common to topics in previous fact sheets.

Figure 2. Summary Checklist of Key Considerations for Risk Pooling

Because risk pools are established for different reasons, with different anticipated benefits and challenges, it is useful to consider an overview of the different risk pools in the context of the public sector (see table 1).

Part 2 provides several case studies of each type of risk pool. Earlier fact sheets in this series have provided guidance on considerations in design and development of a financial protection program, and Fact Sheet 7 will focus on the activation and operation of a program.

Although the focus of this fact sheet is on financial risk-transfer mechanisms, risk pools of a physical and more tangible nature are also common in some infrastructure sectors (which can be state owned or privately owned), particularly in the form of mutual assistance networks. In those cases, organizations from within the same sector provide support to each other during disaster events. Such support is discussed further in Part 3.

Table 1. Types of Public Sector Risk Pools

	Mutual or Member-driven Pools	Pools of Last Resort	National Risk Pools	Regional Catastrophe Risk Pools
Description	• Member-driven: Different members partner will create and run an insurance pool for mutual benefit.	• Programs to maintain insurance availability for specific risks or members, either self-insurance or backed by government	• State-driven: Programs to insure multiple public assets or infrastructure under one large facility as part of fiscal and risk management	• Provides coverage to multiple countries and access to international reinsurance markets with a joint portfolio
Administrator	• Members	• Government • Members	• Central or subnational government or independent authority	• A dedicated facility and insurance company
Advantages	• Members are typically similar and like-minded on risk management practices. • Pool can benefit from economies of scale. • Proceeds and surplus of the pool are typically reinvested back into the members.	• Pool can provide insurance in areas that private market does not cover or that are too costly. • Data can be collated to inform future policy decisions. • Standardized pricing and policy terms and conditions can be developed.	• Economies of scale with centralized data collection and analysis, ease of procurement and placement. • Ability to cover all relevant public asset and infrastructure risks, including risks that are considered uninsurable or that will attract very high premiums	• Regional pooling allows for even greater risk diversification, particularly for natural catastrophes. • It also provides access to insurance in new markets.
Disadvantages	• Smaller mutuals may lack sufficient diversification. and economies of scale • The mutual needs to retain long-term membership.	• Higher risk profiles can potentially lead to large budget deficits.	• Potential lack of diversification owing to either geography or nature of risks • Shared liability limits	• It involves complex, time-consuming international set-up. • It often requires donor seed capital.
Examples	• **United States: Washington Cities Insurance Authority** • **Australia: Statewide Mutual** • New Jersey Schools Insurance Group	• **United States: Texas Windstorm Insurance Association (TWIA)** • US: National Flood Insurance Program • UK: Flood Re and Pool Re	• **Australia: Comcover** • **United Kingdom Risk Protection Arrangement for schools** • Mexico: FONDEN • Indonesia: State assets	• **Caribbean Catastrophe Risk Insurance Facility** • **Southeast Asia Disaster Risk Insurance Facility** • African Risk Capacity

Note: Case studies are in boldface.

Part 2. Case Studies of Public Sector Risk Pools

Mutual or Member-driven Pool #1: Washington Cities Insurance Authority Municipal Risk Pool[2]

Context

Washington Cities Insurance Authority (WCIA) is a self-insured municipal risk pool that was formed in 1981 and that focuses on public entity business in Washington state, which is on the West Coast of the United States. It offers liability, property, and specialty insurance programs as well as risk-management services.

Structure

The co-owners of the pool—local government entities and their related regional entities—have increased from 9 members to more than 150 members. The pool currently covers US$8 billion in assets within its property program, and other insurance lines include auto, liability, and crime.

Because WCIA is a member-owned risk pool, a strong and inclusive governance structure is core to its success. Each member appoints a delegate representative to the WCIA board of directors. Delegates elect pool officers and executive committee members on a merit basis. The membership maintains control over every pool function, including claims administration, fiscal stability, coverage parameters, and member services.

To join the WCIA program, participating members must buy in according to their size. The contribution funds the first layer of the risk (Washington Cities Self-Insured Retention), as well as funding operational costs such as underwriting, claims, actuarial, risk management, finance expertise, and educational and knowledge-sharing programs among members. Each member retains low-level losses in the form of deductibles. Washington Cities Self-Insured Retention acts as the pool-funded primary layer and pays the first compensations for non-catastrophe losses. The premium is allocated accordingly to each member on the basis of actuarial calculation, while factoring in total values, exposure to “riskiest” perils, loss experience, time in the program, and deductibles. There is a further portion of risk transfer to the private insurance market, which will support all members in the case of major earthquakes.

Evolution over Time

As WCIA evolves over time, the pricing of its scheme to members is core to its long-term sustainability. If insurance pricing becomes too high, WCIA can lose membership because members may be able to secure a better deal directly in the insurance market. WCIA has managed to keep relatively stable pricing since 2007 and therefore has managed to grow membership: minimal loss experience has allowed this stability, which has kept the surplus high. The surplus can also be used to smooth the insurance cycle and to keep the budget manageable for all members.

[2] Source: WCIA website, accessed September 2020, https://www.wciapool.org/.

Mutual or Member-driven Pool #2: Australia's New South Wales Councils—Statewide Mutual[3]

Context

At the time of Statewide Mutual's formation in 1993, few underwriters in Australia were willing to underwrite local government insurance. Individual councils with poor claims records were being heavily penalized, and many had difficulty obtaining coverage. Both claims and premium costs were rising and volatile. Statewide Mutual was established with 96 councils in New South Wales (NSW) in its membership as underwriters withdrew their support for local government in public liability and professional indemnity coverage. In 2020, there are 117 member councils across NSW, across its various schemes including property and other insurance schemes, which were introduced over time.

Structure

Statewide Mutual, a largely self-insurance mutual, is further backed by reinsurance placed through local and international underwriters. Members own the schemes and benefit from building equity that results from surplus contributions. Its board is elected by members and comprises senior-level management from member councils from regions across NSW. JLT, an Australian insurance broker and service provider, is the contracted scheme manager.

Within the property mutual scheme, each member has an agreed self-insured retention (SIR) amount that is fully funded and capped. Once this SIR amount is exhausted, an excess-layer coverage takes effect, up to an overall limit of AU$ 1.2 billion across all members, for any losses arising out of one event. Claims in excess of the SIR are paid by underwriters, reducing risk to members. Surplus contributions generated in a fund year are fully rebated to members after all claims have been finalized.

Other Benefits to Members

Key benefits claimed by Statewide Mutual are its consistent price stability and value for money to its members over time, which it accomplishes by smoothing the market's peaks and troughs. As a member-led program, the mutual provides some additional benefits typically not available in a traditional insurance offering (for example, making advanced payments to members that have been worst hit by the 2019 bushfires or by the 2016 northern NSW floods so it enables the rebuilding of affected communities).

Evolution over Time

The mutual runs a risk-management program to help members implement tailored risk-management solutions to improve community safety, to promote best practices in risk management, and to reduce claim incidence. The program has evolved over time as it responds to members' maturity and develops advanced programs for more mature members. At present it also runs annual risk-management conferences as well as award initiatives to incentivize risk-management excellence.

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[3] Sources: Statewide Mutual website, accessed September 2020, https://www.statewidemutual.com.au/; Statewide Mutual Annual Report 2019.

Pools of Last Resort: Texas Windstorm Insurance Association[4]

Context

The Texas Windstorm Insurance Association (TWIA) was established in 1971 by the Texas legislature to provide wind and hail coverage to applicants unable to obtain insurance in the private market. As a result of commercial insurance markets limiting coverage along the Texas coast after several hurricanes, the legislature created TWIA with the intention to provide an adequate market for windstorm and hail insurance in certain designated portions of the seacoast territory of Texas where windstorm and hail insurance is not reasonably available. With this set-up, TWIA is a residual insurer of last resort and therefore does not compete directly in the private market. TWIA is one of 36 residual market property insurers in the United States. Those residual markets are created by state law to provide consumers with an alternative source of insurance when coverage is unavailable through traditional insurance carriers in the private sector.

Structure

TWIA operates as an insurance company to residential and commercial property. It provides coverage only for wind and hail losses. The applicants need to meet several criteria. For example, they must have been denied coverage by at least one insurer in the private market, and the properties must be located in the designated catastrophe area and be certified as having been built to applicable building codes. Premiums are calculated on the basis of standard rating factors, including amount of insurance, type of construction, deductible amount, and optional additional coverages.

TWIA is required by law to transfer its net gain from operations each year into the Catastrophe Reserve Trust Fund (CRTF), an account maintained by the Texas comptroller that is dedicated to the payment of future TWIA catastrophe losses. TWIA losses and operating expenses are funded from the CRTF, TWIA premiums and other revenue, public securities, and reinsurance. TWIA has in place reinsurance or alternative risk-financing coverage "in an amount sufficient to achieve total funding for not less than the probable maximum loss for a 100-year hurricane season." For the 2020 hurricane season, TWIA has secured access to US$4.2 billion in total aggregate funding reserves, including deposits of US$177 million in the CRTF and US$2.1 billion in reinsurance.

Evolution over Time

A residual insurer such as TWIA takes on a high degree of loss exposure. TWIA's policy count grew by 2.5 times from 2005 to 2012, but its loss exposure increased threefold. Managing loss exposure over time is therefore critical for residual insurers. Through the 2015 Texas legislature, TWIA has since been implementing a series of depopulation programs in participating private insurers can make voluntary offers to assume, or transfer, TWIA policies. This enables the voluntary transfer of viable policies to private markets and reduces the overall loss exposure of TWIA.

[4] Source: TWIA website, www.twia.org. Accessed September 2020.

National Risk Pool—Central Government #1: Australia Comcover[5]

Context

Comcover was established on July 1,1998, following an independent government review in 1997 that recommended that the Australian Government consolidate the management and insurance of Australian Government assets. Comcover replaced the previous "noninsurance" arrangements under which agencies were not incentivized to manage their risks effectively (liabilities and risk events were managed and funded on an ad hoc basis through increased budget allocations) and under which the government could not effectively aggregate or assess risks or liabilities across all government activities.

Comcover's key objectives are to promote best-practice risk management for its fund members and to provide a comprehensive insurance fund to protect against the impact of insurable losses. The Australian Government reaffirmed those objectives in 2007, 2011, and 2014.

Structure

The Comcover fund applies to budget-funded government agencies (170 departments of state and noncorporate entities) but not to government corporate entities or government businesses, which obtain commercial cover. In 2018–2019, Comcover insured assets worth AU$90 billion, collected AU$136 million in premiums, and paid AU$75 million in claims.

Comcover generally follows the classes of insurance cover offered by the market, which include liability (public and professional, directors, and officers), property, fraud, business interruption, motor vehicle, personal accident, and travel. Comcover fund members are required to comply with insurance-like obligations of full disclosure and to provide up-to-date information about asset registers, claims, and major changes in risk profile.

Other Benefits to Members

Comcover offers services to fund members, including insurance and indemnity advice, claims management (including the provision and payment of legal services in relation to claims), data analysis, and risk-management training and assessment. The centralization of those expenses through a combination of public servants and outsourced specialist service providers enables considerable efficiencies and economies of scale, with the costs entirely funded from premium contributions and therefore provided to fund members at no additional cost. Services also include a comprehensive risk-management program with training, online learning, and an executive professional development program.

Comcover's management of almost all legal liability cases against the Australian Government, together with other risk data, also provides the government with a big-picture view of liability

[5] Sources: Comcover website, accessed in September 2020, https://www.finance.gov.au/government/comcover; Rob Antich (co-author, general manager of Comcover, 2014–2017).

issues. It also enables more targeted and focused risk-management responses to both current and emerging issues.

Evolution over Time

Between its 1998 establishment and 2007, Comcover transferred some of its risks to the private market through reinsurance. In 2008, the government decided to entirely self-insure because of its ready access to funds (through the Budget) and so it could avoid private sector transaction costs.

Comcover's current policy is that it should be fully self-funded (i.e., no external risk transfer) with budget funding to be sought if assets fall below zero and with funds returned to the budget when assets exceed AU$150 million.

Since 2008, self-insurance has led to relatively small and stable annual premium increases (5–10 percent per annum) because premiums are not subject to market fluctuations and to reinsurance transaction costs of tens of millions of dollars.

From 2014, Comcover fund members were required (under the Australian Government's risk-management policy) to implement a range of enterprise risk-management practices. Since 2014, Comcover has conducted regular surveys of fund members, benchmarking their risk-management maturity against the risk-management policy (e.g., the extent of an agency's risk-management framework and policy, its risk appetite, the risk data gathered, the risk culture, and an ongoing system review). A 2017–2018 survey report indicated that there had been a consistent increase in risk-management maturity over the four years since the risk-management policy had been implemented.

National Risk Pool—Central Government #2: Mexico FONDEN[6]

Context

Because of its diverse geography, Mexico is exposed to a wide variety of geological and hydro-meteorological hazards, including earthquakes, volcanoes, tsunamis, hurricanes, wildfires, floods, landslides, and droughts.

As a response to the 1985 major earthquake in Mexico, the federal government of Mexico established the National Commission for Reconstruction in October 1985 to support the affected population and to establish the necessary mechanisms, systems, and organizations that would better assist populations affected by future disasters. The Sistema Nacional de Protección Civil (SINAPROC) was created as an organized group of structures, functional relations, methods, and procedures involving all levels of government and engaging the private sector and nongovernmental and civil society organizations. Since its establishment, SINAPROC has institutionalized disaster risk management in Mexico including in planning, establishing interventions, making decisions, and designing and implementing policies to understand and reduce risks and the societal impact of disasters. In addition, it has strengthened the resilience of government and society against natural disasters.

In 1996, the government established the Fund for Natural Disasters (FONDEN). It was initially set out as a budget line to provide adequate financial resources for federal and state reconstruction efforts without compromising committed government spending.

Structure

Strictly speaking, the FONDEN Program for Reconstruction is not an insurance mechanism because Mexican states do not pay an insurance premium. However, it uses the principles of risk pooling and good practices within the insurance industry to provide reconstruction finance. Those principles and practices include (a) a transparent damage reporting system,(b) a set of clear rules for how funds are disbursed, (c) a clear plan for how money is spent, and (d) a credible monitoring system for expenditures.

Currently, FONDEN comprises both preventive (ex ante) and ex post instruments (figure 3).

- **FOPREDEN:** A fund that focuses on preventive actions, including (a) identification and assessment of hazards, exposure, and vulnerabilities; (b) ex ante disaster risk-reduction and mitigation; and (c) local community capacity building for disaster prevention.
- **Program for Reconstruction:** FONDEN's primary budget account that provides resources for the rehabilitation and reconstruction of uninsured or underinsured public assets. It channels resources to the FONDEN Trust and the Revolving Fund, which in turn create specific financial accounts for each reconstruction program.

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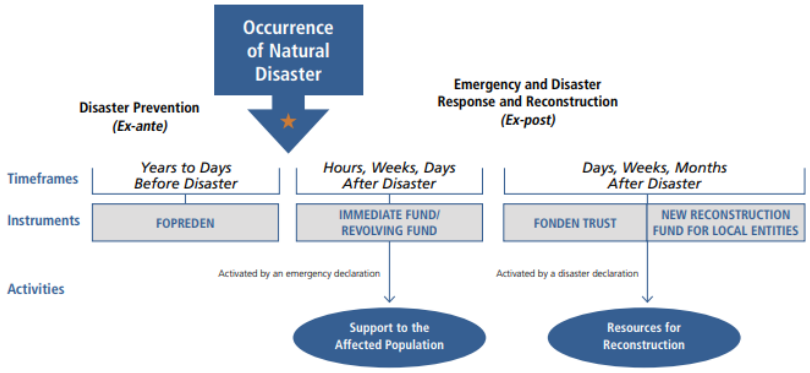
[6] Sources: *Sovereign Climate and Disaster Risk Pooling* (Washington, DC: World Bank, 2017); *FONDEN, Mexico's Natural Disaster Fund—A Review* (Washington, DC: World Bank, 2012).

- **Revolving Fund:** A small, flexible financial instrument to support emergency activities immediately, prior to or upon occurrence of a disaster, and that is financed by the FONDEN Trust. Such assistance may include food and medical supplies, articles for temporary shelter, search and rescue equipment, and other relief items.
- **FONDEN Trust:** A trust that holds federal resources for specific reconstruction programs and for emergency relief in the Revolving Fund. The FONDEN Trust—through its fiduciary agent BANOBRAS, the national development bank—also acts as a financial vehicle to purchase risk-transfer instruments such as insurance and catastrophe bonds and to receive any loss payments.

Figure 3. Role of FONDEN's Instruments in Mexico's National System of Civil Protection



Note: FOPREDEN = Fund for the Prevention of Natural Disasters.

Other Benefits to Members

FONDEN provides an example of how a collaborative approach to financing can instill financial and operational discipline across multiple entities. FONDEN resources can be used to finance the reconstruction of eligible federal infrastructure, which is to be carried out by the relevant federal agencies. FONDEN funds can also be used to pay for up to half of the reconstruction costs of local infrastructure in the 32 Mexican states, with the state-level entities financing the remaining activities. If states do not purchase insurance for their reconstructed assets, they are penalized under FONDEN by a reduction in the percentage of reconstruction costs deemed eligible for funding.

Evolution over Time

FONDEN has evolved significantly since its creation. The government of Mexico has revised FONDEN's operating rules and procedures to improve its overall efficiency and has created a budget account for disaster prevention. In 2010, for example, major reforms to FONDEN simplified its procedures and streamlined reconstruction activities by concentrating responsibility for FONDEN-funded reconstruction within the federal agencies rather than spreading costs across both federal and state agencies.

National Risk Pool—Central Government #3: UK Risk Protection Arrangement for Schools[7]

Context

The Risk Protection Arrangement (RPA) was launched in 2014 as an alternative to commercial insurance for schools.[8] It was initiated to help reduce the cost to the public purse of protecting schools against property damage and business interruption, public liability, employers' liability, and domestic travel. The financial risk of schools' claims is pooled and absorbed into the government's central budget in return for an annual per pupil fee.

Structure

Schools' participation in the RPA is voluntary, and commercial insurers continue to offer competing products and services. The RPA was set up to address the market failure of elevated premiums but does not seek to replace or crowd out the private sector. Currently, participation is around 60 percent of eligible schools.

In the spirit of solidarity and simplicity, all schools pay the same per pupil amount, which is set actuarially for the whole portfolio. This simple pricing structure carries the risk of adverse selection: low-risk schools could potentially get lower quotes from insurers, leaving the RPA with the highest-risk schools. The initial RPA premium was set based on survey results on schools' past damage and claims experience and industry benchmarks on similar risks. As the RPA developed its own direct claims experience, actuaries have increasingly used this direct data to provide more confident estimates of future claims and to set premiums.

Other Benefits to Members

Participating schools are required to maintain a minimum standard of risk management, such as complying with construction regulations. Schools are supported with access to expert risk-management advice as part of the RPA—a service that participants value highly. It carries out ad hoc surveys of the highest-risk schools to identify potential risk-reduction investments. The RPA has also invested surplus from the scheme into physical resilience measures, such as local flood defenses which protect schools in high-risk areas.

Evolution over Time

Following favorable claims experience, the RPA has reduced its premium to £18 per pupil in 2019–2020 from an initial rate of £25 (compared with an average commercial insurance rate of £50), providing good value for schools and putting pressure on commercial market rates. Despite initial concerns, there is no evidence of adverse selection within the RPA, perhaps because of the large difference between RPA and commercial rates. The risk of adverse selection could increase in the future if commercial providers reduce their rates.

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[7] Source: UK Department for Education, The risk protection arrangement (RPA) for schools website, https://www.gov.uk/guidance/the-risk-protection-arrangement-rpa-for-schools. Accessed September 2020.

[8] Initially, those covered were academies, academy trusts, and free schools.

Regional Risk Pool #1: Caribbean Catastrophe Risk Insurance Facility[9]

Context

In 2007, the Caribbean Catastrophe Risk Insurance Facility (CCRIF) was formed, making it the first multi country risk pool in the world. It offered parametric earthquake and tropical cyclone insurance policies to the 20 Caribbean Community member and associate member states. It also offered the first parametric policies backed by both traditional and capital markets. The parametric insurance mechanism is focused on financial liquidity, providing rapid payouts to help members finance their initial disaster response and maintain basic government functions after a catastrophic event. Since 2007, the facility has made 43 payouts to 14 member governments on their tropical cyclone, earthquake, and excess rainfall policies, totaling almost US$156 million.

Structure

Participating countries pool their risks into a single, more diversified portfolio. The pooling makes the overall risk more stable and therefore more attractive to the reinsurance market. As a risk aggregator, CCRIF can therefore provide insurance coverage to participating countries at a lower cost than individual governments could obtain on their own. CCRIF's pricing is based on the quantum of risk transferred (measured by expected losses and variability of those losses). Some limitations are put in place to target that portion of the risk profile where such insurance is cost-effective. Generally, this approach means providing coverage for events of about 1-in-10-year up to the 1-in-200-year range. Losses below or above those figures are retained by the country.

In its early stages, CCRIF relied extensively on technical and financial support—through technical leadership of the World Bank and a grant from the government of Japan—and was capitalized through contributions to a Multi-Donor Trust Fund by several donors and by membership fees from participating governments. Donor funding (a) allowed early financing of CCRIF expenditures, (b) enabled CCRIF to offer cheaper catastrophe coverage options to its members and (c) helped CCRIF build capital reserves for the longer term.

Evolution over Time

In 2014, the facility was restructured into a segregated portfolio company (SPC) and was renamed CCRIF SPC, enabling the establishment of separate underwriting pools with differentiated capital. CCRIF SPC is registered in the Cayman Islands and operates as a virtual organization. It is supported by a network of service providers on risk management, risk modeling, captive management, reinsurance, reinsurance brokerage, asset management, technical assistance, corporate communications, and information technology.

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[9] Sources: *Sovereign Climate and Disaster Risk Pooling* (Washington, DC: World Bank, 2017); CCRIF SPC website, www.ccrif.org. Accessed September 2020.

Regional Risk Pool #2: Southeast Asia Disaster Risk Insurance Facility[10]

Context

The Southeast Asia Disaster Risk Insurance Facility (SEADRIF) has been set up as a regional platform for all Association of Southeast Asian Nations (ASEAN) countries. As the first regional risk-financing facility in Asia, SEADRIF was established by participating ASEAN+3 countries and is owned by those countries. It receives financial support from donor partners, technical support from the World Bank, and administrative support from the ASEAN secretariat in partnership with regional and other institutions.

The intended benefits of SEADRIF are these:

- Provide rapid and predictable relief funding, thus reducing reliance on disruptive budget reallocations and dependence on uncertain humanitarian aid.
- Create a transparent, rules-based facility to provide post-disaster financial support to participating countries, thereby allowing governments to plan ahead.
- Mobilize international support, including donor financing and technical assistance.
- Enable improved access to international reinsurance and capital markets through regional risk pooling and a collective approach to markets.
- Offer access to public goods such as a flood risk assessment model backed by state-of-the-art technology.
- Build regional leadership as a facility established and owned by ASEAN+3 countries.

Structure

The SEADRIF Insurance Company is established in Singapore to provide insurance products to members. SEADRIF's first financial product will pool flood risk from the Lao People's Democratic Republic (Lao PDR) and Myanmar. The pool offers finite and parametric catastrophe risk insurance solutions to provide financial liquidity during severe floods, disbursed through clear and transparent prior-agreed rules. The pool will retain some risk on the basis of its joint reserves made of country premium contributions and donor contributions, and transfer excess risk to international reinsurance markets. Participating countries pay a contribution based on their risk profile and their desired level of coverage.

Evolution over Time

Although the cat risk pool for Lao PDR and Myanmar is the company's first product, more products may be offered in the future. In response to demand from SEADRIF members, the overall SEADRIF program is also providing capacity-building support to ASEAN+3 members on financial risk protection of public assets. Such support include (a) delivering a webinar and a knowledge series (which this fact sheet is part of) and (b) developing options for further technical support and regional risk-pooling for public assets.

[10] Sources: SEADRIF website, https://www.seadrif.org. Accessed September 2020; Authors.

Part 3: Case Studies of Mutual Aid and Assistance Groups

US Electric Utilities: Regional Mutual Assistance Groups and Emergency Management Assistance Compact

Context and Structure

In the United States, electricity is generated and delivered by nearly 3,000 utilities that consist of investor-owned utilities (IOUs), publicly owned utilities, and cooperatives.

Many IOUs belong to one of seven regional mutual assistance groups (RMAGs) across the United States Those RMAGs have mutual assistance agreements in place to offer support to each other during emergency events. The agreements outline specifics for obtaining or lending resources during an emergency event, including equipment and trained personnel. The actual amounts of assistance and compensation are determined during an actual emergency. The requesting utility will first indicate the type and size of equipment needed and the number and job functions of employees desired; the responding company will respond with the supply of resources.[11] The utility requesting assistance is then financially responsible for all costs and any liability associated with that assistance.

Additionally, the Emergency Management Assistance Compact (EMAC) is a national disaster-relief compact that facilitates the sharing of resources, personnel, and equipment across state lines. The EMAC includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the US Virgin Islands and is managed by state emergency response agencies. Under EMAC, the negotiation process operates on a bidding system. First, the affected utilities identify the amount of assistance they need. Next, their request is broadcast to all supporting utilities, which identify their availability and quote the price for their assistance. Finally, affected utilities consider available offers, analyze costs, and select the best option.

Evolution over Time

Although both RMAGs and the EMAC are available to utilities during a disaster event, they have different trade-offs. RMAGs, which are exclusive to IOUs, offer flexibility because utilities can negotiate and revise the terms of mutual assistance with other utilities over time. They also offer expert crew assistance and specialized equipment that are suitable for the region, because utilities within a RMAG tend to face similar emergencies given their geographical proximity to one another (e.g., snowstorms in the Northeast; hurricanes in the Southeast).

However, RMAGs have more limited assistance capabilities during region-wide emergencies because utilities retain their own resources to deal with their own emergencies. During Hurricane Sandy, several small RMAGs in the Northeast limited their ability to properly spread risk and effectively share resources among group members. In September 2013, Mid-Atlantic Mutual Assistance, the New York Mutual Assistance Group, and the Northeast Mutual Assistance Group merged into the North Atlantic Mutual Assistance Group, thereby reducing

[11] Edison Electric Institute, Mutual Assistance, website accessed September 2020, https://www.eei.org/issuesandpolicy/electricreliability/mutualassistance/Pages/default.aspx

the total number of RMAGs from nine to seven.[12] The merger increased the pooling of the new RMAG and its ability to provide self-sustaining support.[13]

As private sector agreements, the utilities are subject to interstate bureaucracy when moving resources across state lines. Hurricane Sandy also led to the creation of new guidelines to deal with a National Response Event (NRE).[14] The activation of an NRE enables multi-RMAG coordination and allows for the pooling of all emergency restoration resources from RMAG members across the country—such as maintenance crews and heavy equipment and machinery—that can then be distributed in a safe, efficient, and equitable manner to all affected utilities.

The costly 2017 hurricane season also led to the development of resource management tools to streamline response-coordination efforts. One such tool, the Resource Allocation Management Program for Utility Personnel (RAMP-UP), subsequently became the standard resource allocation platform for all seven RMAGs.[15]

The EMAC provides a standardized process for mutual assistance across all 50 states. It covers all issues related to mutual assistance, including workers' compensation, tort liability, license reciprocity, and reimbursement. This standardized process helps eliminate the need for individual utilities to negotiate terms of mutual assistance and reduces the prospect of disputes related to the costs and responsibilities associated with mutual assistance. However, it limits the scope for utilities to change specific terms of the assistance agreement or to adapt its provisions to a specific circumstance. As a nationwide compact, the EMAC reduces red tape and facilitates the moving of resources across the country, thus ensuring that equipment and crews can cross state lines with little bureaucracy.

[12] Edison Electric Institute. "Understanding the Electric Power Industry's Response and Restoration Process" (2016): 5, https://www.eei.org/issuesandpolicy/electricreliability/mutualassistance/Documents/MA_101FINAL.pdf

[13] Ibid.

[14] Department of Energy Electricity Advisory Committee, "2017: Historic Storms, Historic Responses" (2018): 9, https://www.energy.gov/sites/prod/files/2018/02/f49/1_Mutual%20Assistance%20Agreements%20-%20David%20Bonenberger%2C%20EEI.pdf.

[15] Edison Electric Institute, "From Superstorm Sandy to Today: Lessons Learned and Applied" (2017): 2.,https://www.eei.org/issuesandpolicy/electricreliability/mutualassistance/Documents/From_Sandy_to_Today_Lessons_Learned.pdf.

CARILEC Disaster Assistance Program

Context and Structure

The Caribbean Electric Utility Services Corporation (CARILEC) is a regional association of electric energy solutions providers and other stakeholders in the Caribbean countries. The CARILEC Disaster Assistance Program (CDAP) was set up by CARILEC to enable mutual post disaster power restoration assistance between member utilities. CDAP was developed in response to the high restoration costs and financial constraints of its members, especially when members are faced with the potential of extensive damage to their transmission and distribution systems. With 27 active subscribers, CDAP focuses mainly on the provision of personnel in response to disaster-recovery needs, with the CARILEC secretariat responsible for coordinating the dispatch of restoration crews to disaster-affected utilities.

Disaster restoration assistance through CDAP is financed by the CARILEC Disaster Fund, a mutual fund that receives annual contributions from member utilities and ensures timely reimbursement to the assisting utilities. Subscription to the mutual fund is voluntary; however, only subscribed members are eligible to receive restoration support. The *CARILEC Disaster Response and Restoration Manual* details the roles and responsibilities of the utilities receiving and providing assistance, as well as the coordination function of the CARILEC secretariat. The manual is reviewed and updated annually to reflect lessons learned from implementation.

Evolution over Time

CDAP operates in a dynamic fashion, in which lessons learned in one year are applied in the succeeding years. The current program design has two parts: (a) an annual contribution made by member utilities to the CARILEC Disaster Fund and (b) coordination of regional efforts to respond to disaster-assistance requests from disaster-affected utilities.

The CARILEC Disaster Fund has a simple financing mechanism that relies on annual member subscriptions and additional investment income. This mechanism ensures timely replenishment of the mutual fund to meet the spending requirements related to mutual restoration assistance. By instituting an affordable annual contribution requirement and maintaining sufficient funds in the mutual fund, the fund has inspired member confidence in the program and encouraged participation. By setting a maximum payout per utility per disaster at US$50,000, the program limits the size of reimbursement and promotes a fairer use of the mutual fund.

Furthermore, the program has incorporated incentives for disaster preparedness and risk mitigation that help minimize moral hazard and reduce the overall program costs. Participating utilities are required to update their disaster plans, have an emergency response standby crew, maintain close communication with local government entities and the CARILEC secretariat, and conduct an annual simulation of disaster response. Those efforts help to enhance the utilities' capacity for disaster response and recovery, thereby decreasing the need for peer assistance for small-scale, less-severe events. This approach in turns reduces the overall costs incurred by mutual recovery assistance activities.

Glossary of Selected Terms

Adverse selection	*Adverse selection* describes the fact that individuals or organizations that know they are particularly bad risks are more inclined to take out insurance that are those that know they are good risks.
Moral hazard	*Moral hazard* describes an instance in which a policyholder may, because it has insurance, act in a way that makes the insured event more likely.
Mutual	In insurance, a *mutual* is a company owned entirely by its policyholders. Any profits earned by a mutual can be retained within the company, rebated to policyholders as dividends, or contributed to lower future premiums.
Risk pooling	*Risk pooling* is a form of risk management in which a group of entities will come together to form a pool, which can provide protection against catastrophic risks.

Work sheet 6: Pooling and mutual options for public assets insurance

Test your knowledge and record your insights through this easy, DIY worksheet!

Activity 1: Identify if the statements are benefits or challenges to risk pooling

Based on your understanding of the content in this fact sheet, select if the following statements are a benefit or a challenge to risk pooling.

STATEMENT	BENEFIT / CHALLENGE
Risk pools allow more flexibility in drafting terms and conditions of coverage tailored to members' needs.	
Risk pools can potentially allow members more prone to risk or risk events to join the risk pool.	
Risk pools require strong and continued government and political support and ongoing member commitment.	
Members are incentivized to strengthen collaboration, share information and learning on risk management.	
Risk pools can provide an insulating layer between individual member retention and risk transfer to insurance markets.	
Risk pools are typically long-term arrangements to retain risk within the pool.	

Activity 2: Match the different types of risk pools to their descriptions.

Match the different risk pools discussed in this fact sheet to their descriptions/explanations.

Type of Risk Pool		Description/Explanation
Mutual or Member-Driven Pool		It provides coverage to multiple countries to access international reinsurance markets with a joint portfolio and allows for greater risk diversification.
Pools of Last Resort		It is state-driven and covers multiple public assets or infrastructure under one large facility.
National Risk Pools		It is a risk pool where different members partner together and where proceeds and surplus of the pool are typically reinvested back into the members.
Regional Catastrophe Risk Pools		It provides insurance in areas that private market does not cover or are too costly and helps to maintain insurance availability for specific risks or members.

Activity 3: Identify key considerations in different stages for risk pooling
Identify the stages in which each of the following key considerations need to be examined.

Key Considerations	Design	Development	Delivery	Renewal
What is the scope and scale of pool members and assets?				
What type of data is required from pool members?				
What types of risks are suitable for risk pooling?				
How can risk pool achieve better price stability over time?				
What are the primary objectives or drivers to risk pooling?				
What is an effective pricing structure?				

Activity 4: Reflections

[1] My Top 3 Takeaways from this fact sheet are:

1.

2.

[2] Three concepts or ideas I would like more information on are:

1.

2.