



STRENGTHENING CITY DISASTER RISK FINANCING IN VIET NAM

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Abbreviations

ADB	Asian Development Bank
DRF	disaster risk financing
ISA	Insurance Supervisory Authority
MOC/UDA	Viet Nam's Ministry of Construction/Urban Development Agency
MOF	Ministry of Finance
VND	Vietnamese Dong

Executive Summary

This paper presents a summary of a technical assistance project on developing disaster risk financing (DRF) solutions for the cities of Can Tho and Hue and, by extension, for other interested cities in Viet Nam. The Asian Development Bank (ADB), supported by funding from the Japan Fund for Poverty Reduction, together with Viet Nam's Ministry of Construction/Urban Development Agency (MOC/UDA) as the implementing agency, has led the work program for this project.

The project objectives and related tasks were organized into three phases. Phase 1 focused on the selection of two pilot cities, applying quantitative and qualitative criteria to an array of short-listed cities. Phase 2 involved the development of disaster risk models for the two selected cities, Can Tho and Hue, leading to an assessment of the financing gap for postdisaster response and the development of appropriate DRF options to help address that gap. Phase 2 also included a series of city-level capacity-building workshops on DRF and an analysis of DRF regulations and legislation. The workshops focused on the fundamental elements of DRF including insurance and credit products, risk modeling, financial capacity analysis, and the legal and regulatory environment, and principles in selecting appropriate DRF options. Phase 3 involved an independent review of these DRF options and the provision of support to each city in the selection of an option for implementation. The market placement of the selected option by each city is beyond the scope of the project.

At the end of Phase 2, the project team recommended several relatively simple and transparent insurance solutions for each city tailored to the primary hazard selected by each city—namely, flood for Can Tho and typhoon for Hue. Parametric insurance products were recommended. Such products link claim payments to the occurrence of a hazard event, not to the amount of resulting damage. Benefits of parametric insurance include quick payments with complete latitude on how claim funds are spent. However, losses are possible without payment if the location or intensity of an event is outside the agreed trigger parameters. The cities were also advised on practical aspects concerning the structuring, pricing, and placement of a parametric insurance product.

Both Can Tho and Hue have expressed interest in carrying forward with the DRF pilot work, but have specifically requested added clarity on the legal and regulatory environment before doing so. They also have openly discussed the difficulty of funding premium costs and have requested some degree of support from provincial and central government in order to complete the full demonstration effect of these pilot efforts.

However, both cities have clearly grasped the benefits of investing in DRF: (i) greater ability to plan for the financial impact of disaster events and smooth the costs over time, (ii) the transfer of risk to those better able to absorb it, (iii) more timely disaster recovery, and, ultimately, (iv) the protection of socioeconomic development gains and continued economic growth. Going forward, the key question and challenge for Viet Nam is how best to leverage the experiences and lessons learned by Can Tho and Hue into the actual implementation of DRF solutions for these and other cities in Viet Nam.

Indeed, a key objective of this project was to use these pilot efforts to demonstrate the value and approach in developing and implementing DRF to other cities in Viet Nam and to cities throughout Southeast Asia. Many cities share key disaster risk management challenges with Can Tho and Hue, including rapid urbanization, climate change impacts and disaster response funding uncertainty. In the final analysis, cities will be interested in particular DRF instruments if they enhance disaster resilience at a cost that compares favorably with other disaster risk management options. For Can Tho and Hue, this value has been demonstrated. Other cities interested in pursuing DRF solutions will hopefully consider following a similar methodology and process.

1 Introduction

The financial management of disaster risk is in its infancy in Viet Nam. While the country has vigorously developed its own unique system of disaster risk management and has considered the development of disaster risk financing (DRF) tools at the national level, until recently little work had been devoted to developing city-level DRF programs. With the support of the Japan Fund for Poverty Reduction, over the past 2 years, the Asian Development Bank and Viet Nam's Ministry of Construction/Urban Development Agency (MOC/UDA) have developed specific DRF pilot products for the cities of Can Tho and Hue.¹ This paper reviews the scope and key elements of this project and considers its applicability and relevance to other cities in Viet Nam.

DRF is based on the premise that anticipating and planning for the financial consequences of natural hazards will place government—both national and local—in a stronger, more resilient, and more predictable position, supporting timely postdisaster relief, early recovery, and reconstruction efforts. Potential DRF instruments include annual contingency budget allocations, insurance, contingent credit, postdisaster budget reallocations, borrowing, and tax increases. This study focuses specifically on insurance, credit, and capital market instruments. Insurance options were ultimately judged to be the best starting point for each of the two pilot cities considered under the project, in view of the capacity of each city to allocate and access resources.

If implemented, each city's chosen DRF instrument would quickly provide additional funds after the occurrence of a qualifying hazard event, to be used for whatever purpose the relevant local government identifies at that time. Another key benefit would be the assured access to a known amount of liquidity at a predictable annual cost. This makes budgeting more accurate and a government's wider recurrent and capital spending plans less vulnerable to postdisaster disruptions.

The identification of the most appropriate DRF options for the two pilot cities involved three separate steps or phases. Phase 1 involved risk profiling 10 likely candidate cities in Viet Nam, considering such factors as existing modeled hazards in Viet Nam; an evaluation of urban disaster risk across the country, population, and social impacts; the cities' capacity to support DRF products; and their experience in developing effective disaster risk management programs. Applying these criteria with a weighted rating process, the 10 short-listed cities were reduced to five, and then to the final two: Can Tho and Hue. At the close of Phase 1, the two selected cities were asked to select a single natural hazard as a beginning

Planning for the financial consequences of natural hazards supports more timely postdisaster relief, early recovery, and reconstruction efforts

¹ ADB. 2011. *Technical Assistance for Disaster Risk Finance for Total Climate Risk*. Manila (TA 8012-REG).

point for developing a DRF instrument. Can Tho selected inland flood and Hue selected typhoon.

Phase 2 entailed the development of four key DRF building blocks: the development of disaster risk models to assess the magnitude and probability of loss; analysis of the resources available to each city to respond to those losses; analysis of the legal and regulatory environment to identify any enabling or limiting factors to implement DRF mechanisms; and a review of all DRF product options viewed through the lens of the first three components. The technical assistance provided to Can Tho and Hue was organized into three phases. Phases 1 and 2 were supported by the same project team, comprised of consultants from AIR Worldwide, Swiss Re, and the Asian Disaster Preparedness Center.

The third and final phase of the pilots involved the independent review of the Phase 2 methodology and recommendations of Phase 2 by a market expert with no commercial interest in the project outcome. The Phase 3 consultant also advised each city on possible technical improvements to the Phase 2 recommendations and explained the steps each city could take to bring their selected option to market and complete the insurance transaction. This final phase was completed in July 2015.

This paper seeks to advance the discussion on DRF solutions in Viet Nam by presenting and explaining the work completed under the project, its findings, and recommendations. The pilot work conducted in Can Tho and Hue was deliberately intended to serve as guideposts to other cities that are interested in strengthening their understanding and management of disaster-related fiscal risks, as well as to develop practical and commercially feasible DRF solutions for the two pilot cities. This paper provides an opportunity to share this experience and to provide a starting point for conversations on DRF instruments elsewhere. To support these conversations, the paper specifically addresses the applicability of DRF instruments to other cities in Viet Nam and asks if they, too, should investigate their potential benefits and capacity to implement them. The paper also presents condensed “how to” information to illuminate what the design of a DRF product might entail. Key terms are explained in the glossary in the Appendix.

2 Methodology for Developing Disaster Risk Financing Options

The most vital aspects of the project work plan occurred during Phase 2. During this phase, loss models, a financing gap analysis, a regulatory review, and an array of appropriate DRF options were developed and related capacity-building workshops undertaken in each city. It is important to review these components in sequence since the development of almost any type of DRF instrument will likely require a similar methodology. The methodology is both sequential and cumulative. It begins at a logical starting point: estimating the amount at risk and the likelihood of loss. It then proceeds to an analysis of how a city might pay for the loss, then considers how the existing legal and regulatory system might support or restrict potential DRF options, and, finally, evaluates all the feasible and relevant DRF options available. Capacity-building exercises should be run in parallel over the full duration of the work.

An investment in the time and resources required to complete each step is critical in order to develop DRF solutions that are tailored to an individual city's circumstances and priorities and to reflect the actual amount and likelihood of loss. The methodology will also guard against developing DRF mechanisms that are unsustainable from a fiscal perspective or that respond to a level of loss that is either too frequent or too remote to be cost effective. After learning about this project, other cities in Viet Nam may better understand their own financial vulnerability to natural hazards and want to follow a similar path.

Capacity Building

One of the key lessons learned during the project is the importance of capacity building for a city's administrative, budget, and disaster risk management departments. For the foreseeable future, this will continue to be an essential component of any urban DRF initiative in Viet Nam, given the novelty of DRF and the evolving nature of the country's regulatory environment and insurance market. Experience in other countries that have developed DRF programs has demonstrated the critical importance of building solid knowledge of the process of developing appropriate DRF alternatives among government officials. Their ability to communicate the purpose, functioning, and benefits of DRF solutions is key to a product's introduction and continued application. Embarking on a DRF program is a public policy decision that requires fundamental understanding and coordination within government—and, thereby, an ability to maintain transparency and trust among the public.

In Can Tho and Hue, significant project resources were dedicated to building an understanding of disaster risk modeling, insurance principles, fiscal capacity, and DRF

options. Both cities made significant progress in learning about each of these subjects. Each city came into the project with an understanding of its vulnerability to natural hazards, but neither city had developed its thinking on quantifying its related contingent financial liability or managing that liability. This state of affairs is common across cities in Viet Nam. Significant training was therefore provided for a core group of city officials involved in key planning, budget, and decision-making functions. At all times during the project, efforts were made to keep these core groups together to ensure that the capacity building is cumulative, recognizing that, if either city ultimately wished to put a DRF product in place, it would require an informed consensus within government. Representatives from the central government were also included in all the capacity building workshops to ensure that close coordination between local and central government was maintained and that national government views on possible DRF initiatives and procedures were reflected.

Much of the training involved discussion of insurance principles and the concept of risk transfer. While the Vietnamese insurance market has grown dramatically in the past decade, it is still a young market and much of the growth to date has occurred in commercial property coverage and life insurance. Individual awareness of the benefits of insurance and underlying risk management principles is not very high. Even less appreciated is the idea of local government purchasing insurance to enhance the management of disaster-related fiscal risk and to supplement financial resources provided by provincial and central government sources in the aftermath of a disaster.

Risk Modeling

An analysis of possible losses that a city may suffer is the critical first step in developing an effective DRF strategy tailored to a city's precise situation and risk appetite

An analysis of possible losses that a city may suffer is the critical first step in developing an effective DRF strategy tailored to a city's precise situation and risk appetite, as already noted. Bypassing this step can lead to poor spending decisions and unfulfilled expectations. Often, a risk model will need to be developed to assess the likelihood of loss and expected levels of damage accurately. It is not necessary for city officials to master the details of risk modeling. However, it is important to know the basic fundamentals of what risk modeling is, why it is needed, how it is done, and what the results mean.

In its basic form, risk modeling can be viewed as a logical sequence of analytical steps to (i) determine the value of a city's assets that are exposed to natural hazards; (ii) identify and analyze the natural hazards that a city could experience, considering both frequency and severity; and (iii) consider how vulnerable the assets are to damage as a consequence of these natural hazards. These three steps lead to a calculation of both the likelihood and amount of loss a city may incur each year on average. In the case of Can Tho and Hue, only flood and typhoon risks were analyzed in this pilot project. However, cities can be affected by multiple hazards and the cities may later choose to broaden the scope of protection to include other hazards. This could result in a multihazard insurance product based on multihazard risk modeling.

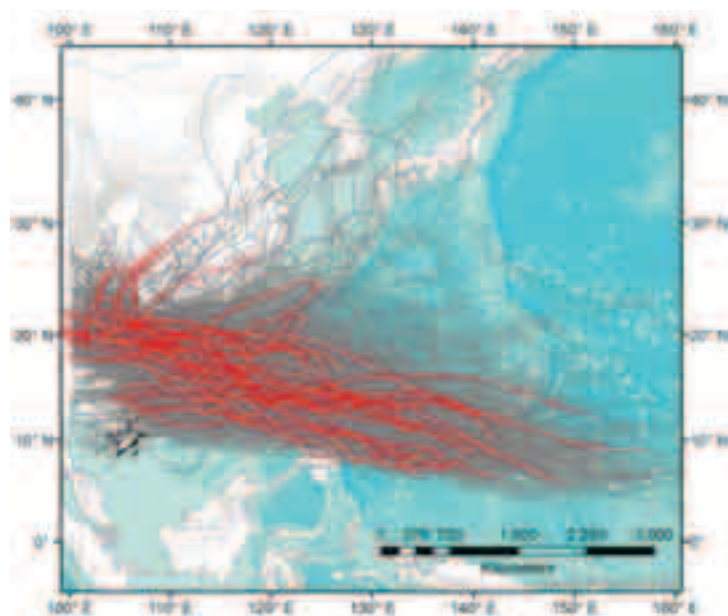
To understand a city's exposure to natural hazards, it is first necessary to identify and value the property and other assets within a city's jurisdiction that are exposed to natural hazards. To yield meaningful information, it is critical to know the cost of replacing or rebuilding each property and asset, not its current market or depreciated book value. The book value

of a 10-year old power station may be half of its replacement cost. As it is a critical piece of infrastructure, however, the city needs to be able to fully fund its replacement.

It is also necessary to establish an inventory of the construction material, occupancy, height, and structure of assets within the city to understand how well they would withstand natural hazard events of various levels of intensity. Databases detailing this information and related replacement values were established for the cities of Can Tho and Hue for the purposes of this study. Replacement values (reflecting commercial, industrial, and residential properties) were derived from numerous sources and reflect the cost of rebuilding a city's building stock based on current construction materials and conforming to current building codes. Replacement costs for Can Tho and Hue were determined to be VND139 trillion and VND50 trillion respectively.

The hazard analysis leverages historical events to develop a simulated catalogue of possible events, providing a picture of how often and where these events might occur. This list or catalogue of events can include thousands of simulated events that might occur. It is important to consider a set of simulated events in this analysis because the historical data can be incomplete, or the period of time covered too short, to comprehensively capture the location and frequency of future events. Figure 1 graphically compares both historic typhoon events affecting Viet Nam between 1951 and 2013 and simulated typhoon events.

**Figure 1: Typhoons Making Landfall in Viet Nam
(Saffir-Simpson Category 3)**



Note: Historical tracks between 1951–2013 are indicated in red. Stochastic or simulated tracks are indicated in gray (random 1,000-year sample).

Source: Asian Development Bank

The red lines denote historic events and the gray lines denote simulated events. Note that the simulated events are consistent with the patterns of the historical events, while also providing a much larger set of possible typhoon events that could happen in the future.

Once the likely frequency and location of a hazard is established, it is necessary to determine how severe or intense an event could be within the specific geographic area of interest, in this case, the city. This is done, in part, by considering the intensity of a given event and the location of the peak intensity relative to the city's location.

The exposure, vulnerability, and hazard data can then be combined to determine disaster risk—that is, the potential disaster losses that could occur to a particular community or geographical area over a specified future time period.

Applying the Model

Once the risk modeling work is complete, the results can be used to determine what element of risk can and should be transferred

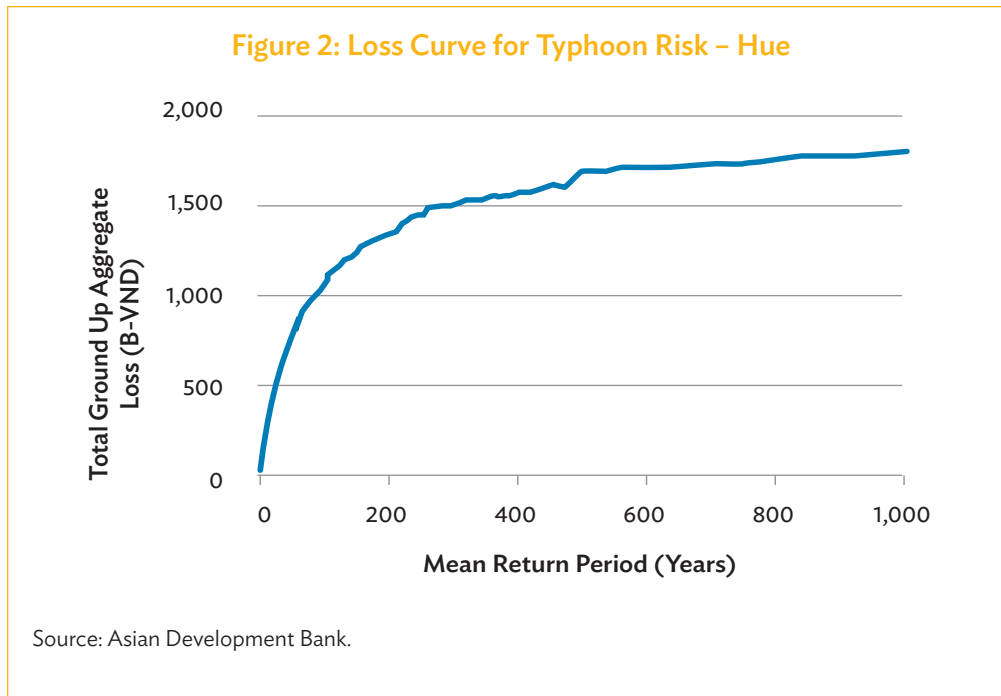
Once the risk modeling work is complete, the results can be used to determine what element of risk can and should be transferred. Ultimately, the value of a risk model is both to inform a city of its risk of loss from natural hazard events and also to guide the selection of appropriate DRF solutions that will best address a city's particular disaster risk profile and priorities.

Central to an understanding of risk transfer—that is, the shifting of responsibility for financing disaster loss to another party—is the development of an awareness of the level of loss a city is capable of absorbing without causing undue harm to its finances and without disrupting its development and investment plans. In other words, what level of disaster losses can a city handle routinely and what level of loss would surpass its ability to respond quickly and effectively?

This question leads directly to a consideration of how severe potential disaster events could be and how often they might occur—that is, a consultation of the loss-frequency calculations resulting from the modeling work. The loss-frequency calculations can be graphically represented, as in Figure 2, which shows the loss curve for typhoon risk for Hue. The horizontal axis represents the frequency of loss due to typhoons and the vertical axis the amount of loss or severity. The curve indicates the frequency with which typhoon events will exceed particular levels of loss.

At the low end of the curve, very frequent and less damaging natural hazard events are reflected, such as regularly recurring floods or low intensity storms. The resulting relief, early recovery, and reconstruction needs are usually within the financial capacity of a city because the impacts are minor.

At the upper end of the curve, very severe but infrequent disaster events are reflected. At these most severe levels, neither a city's own resources nor insurance will be sufficient to cover the recovery and reconstruction efforts. External support from the central government and foreign donors will be needed.



The segment of the curve between the least damaging and the most damaging events is where insurance and other risk transfer instruments can be most effective. The specific point at which insurance is most effective depends on a range of factors, including the relative cost or opportunity cost of various instruments to cover particular layers of risk and the speed with which financing is required for various postdisaster response purposes.

Risk modeling provides a city with several perspectives of its risk of loss. The loss-frequency curve will inform a city of the probability of a specific loss amount being reached or exceeded within a 1-year period. This probability can be expressed as the likelihood of a loss being incurred in percentage terms (e.g., if an annual exceedance probability of VND200 million is 1%, then there is a 1% chance that a loss of VND200 million or greater will occur in the next year). It can also be expressed in terms of the period of years between likely occurrences of an event (e.g., an exceedance probability of 1% means that such an event would be expected to occur on average every 100 years, sometimes expressed as a 1-in-100 year event). This is referred to as the return period and is used as an expression of the frequency of disasters incurring a particular level of loss.

In addition to the total amount of possible losses a city might incur (the aggregate loss), the risk model will also tell the city what it can expect to see in terms of average annual losses. This is calculated as the projected loss each year for the events in the hazard catalogue divided by the number of years considered in the catalogue. For example, over the course of 10 years, if total projected losses amount to VND100 million (within this time period) then the average annual loss would be $100/10 = \text{VND}10$ million. Also as noted above, another way of thinking about the average annual loss (or average expected loss) is as the amount a city would need to set aside each year to pay for losses over a long period. As will be seen later, the average annual loss is a fundamental component of the cost of insurance.

Another important piece of information provided through the loss analysis is the total emergency loss amount. This figure reflects the expenses that the city may incur in providing postdisaster relief and undertaking early recovery efforts. These are not reconstruction costs but, rather, relate solely to meeting the immediate emergency needs of the city and its citizens. Evidence from elsewhere suggests that flood and typhoon emergency losses can be expected to amount to approximately 23% of aggregate physical or direct ground up losses.

In summary, risk modeling provides government with a picture of the losses that a city is likely to experience, how often, and on what scale. Cities are often surprised to see the potential cost of severe disaster events—particularly where historical figures on past losses are incomplete and where major hazard events have not happened for some time—lulling city officials into a belief that recent experience is the norm.

While risk modeling can address indirect losses, it is important to bear in mind that, for this project, the scope of disaster risk modeling focused only on direct physical losses and not the indirect flow consequences of these losses—for instance, in the form of effects on supply chains, factory outputs, marketing, or schooling. In some cases, these indirect costs exceed the direct physical losses. Indirect costs are exacerbated in situations where early recovery and reconstruction efforts are delayed due to funding difficulties—a situation which risk transfer instruments help avoid.

Financing Gap Analysis

Once a city knows its disaster risk, it can analyze the financial resources it has at its disposal to meet potential spending requirements

The next major analytical component in structuring a DRF program is to quantify the financing gap. This refers to the difference between the relief, early recovery, and reconstruction spending requirements generated as a consequence of disasters and the funding available to meet those needs. Quantification of this gap is important because it provides the city with an approximate idea of likely additional financing capacity needed to fund the disaster relief, early recovery, and reconstruction expenses. This analysis builds on the disaster risk assessment, including any disaster risk modeling that has been undertaken. Once a city knows the probability of a disaster of a specific severity occurring within a specific period of time (the return period), it can then analyze the financial resources it has at its disposal to meet the resulting spending requirements. Any shortfall in the funding needed is referred to as the financing gap.

A city's ability to cover or absorb the losses arising from likely disasters is a function of its revenue; annual contingency budget allocation; accumulated contingency reserves; extent of scope for the reallocation of recurrent and capital budgetary resources with minimal development impact; extent of scope for postdisaster borrowing and tax increases; and the scale of available sources of external funding, such as assistance from provincial or central government sources and international donors.

Ordinarily, a disaster risk transfer product will not aim to completely eliminate the financing gap. If the risk of major disasters is substantial and existing DRF instruments are limited in scale (e.g., primarily in the form of annual contingency budgets), then it is unrealistic to close the gap through insurance alone. Associated premium costs would be very high and

insurance would not be the most cost-efficient instrument to cover the full financing gap (see Section 6). It should also be borne in mind that government is not solely responsible for managing disaster risk. Homeowners and businesses also bear some responsibility for anticipating disaster events.

In the case of Viet Nam, the 2013 Law on Natural Disaster Prevention and Control states that disaster management funds should be provided from the state budget, the natural disaster prevention and control funds, and voluntary contributions. Within the state budget, contingency reserve funds, the financial reserve fund, and the national reserve are the most relevant lines of funding to meeting shortfalls in local disaster funding.

Contingency budget lines represent perhaps the most readily available and flexible of all the funding mechanisms. This is because resources are allocated annually for this purpose and, with limitations, can be directed toward specific disaster response needs as determined by city officials. By law, the central, provincial, and local governments in Viet Nam must all set aside between 2% and 5% of their annual budgets to support various contingency needs. While part is earmarked for prevention, control, and mitigation of disasters, the majority of these contingency funds are spent for contingent emergency situations requiring short-term liquidity, including for non-disaster and disaster-related purposes.

Critically, however, the contingency funds may not be spent on reconstruction. Local governments, therefore, currently finance their reconstruction efforts primarily by reallocating funds from capital spending budgets or by seeking official government transfers. Moreover, unspent contingency funds may not be accrued or rolled over into the next budget cycle. These limitations reduce the utility of the contingency funds for local governments seeking resources to respond to disaster events.

Box 1: Lessons Learned – The Philippines’ Approach to Disaster Contingency Funds

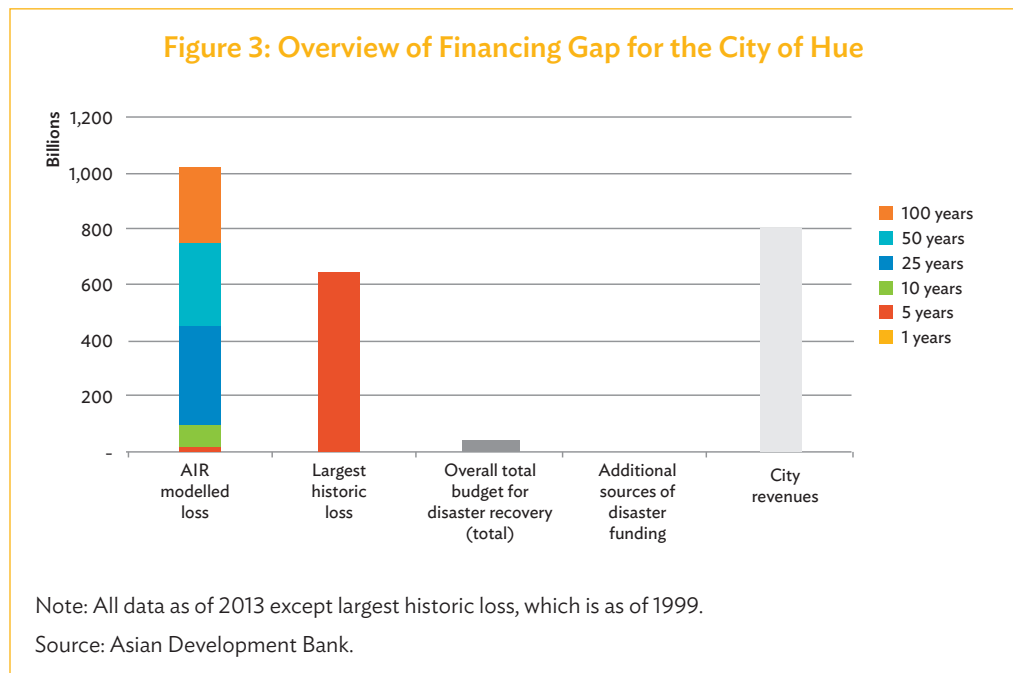
This project was undertaken in parallel with one covering DRF pilots in the Philippines and Indonesia.^a As in Viet Nam, local governments in the Philippines apply contingency budgets to generate some financial capacity for disaster risk management and have permitted greater flexibility in the use of these funds in recent years. The Philippine Disaster Risk Reduction and Management Act of 2010^b mandates local government units to set aside no less than 5% of their estimated revenue from regular sources to build local disaster risk reduction and management funds. The Act also allows local governments to accrue unused contingency funds for up to five years, thus allowing them to build up a ready and more substantial amount of liquid funds for disaster risk management purposes. Further, the new law explicitly allows up to 70% of contingency funds to be spent on disaster risk reduction and preparedness, including insurance premiums.

^a ADB. 2011. *Technical Assistance for Developing a Disaster Risk Financing Capability*. Manila.

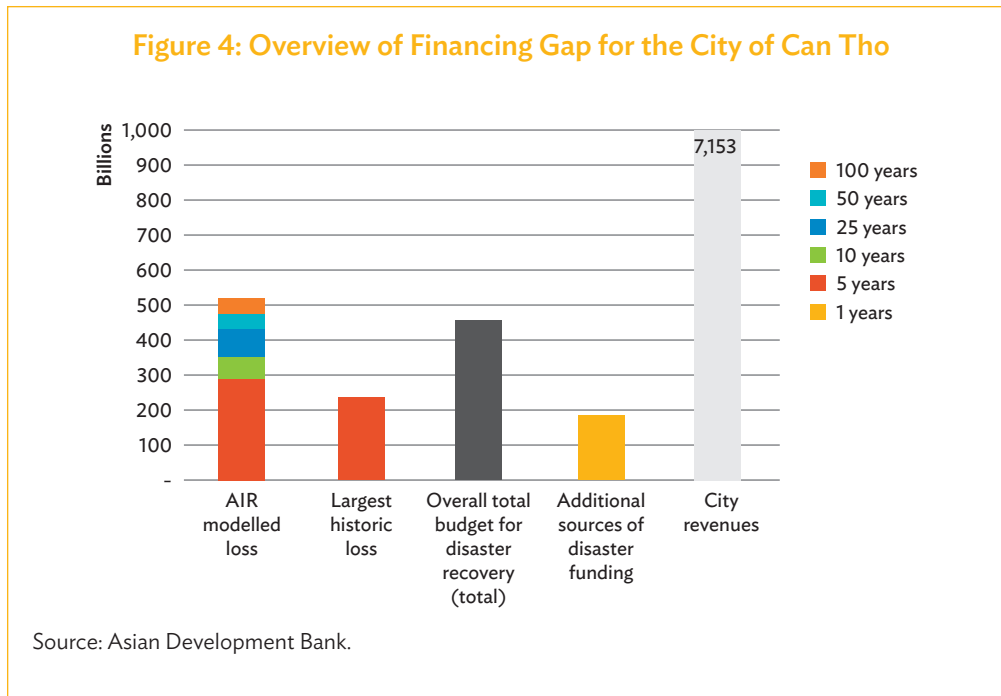
^b Government of the Philippines. 2010. *Philippine Disaster Risk Reduction and Management Act*. Republic Act No. 10121. Manila.

Source: Asian Development Bank.

The financing gap analysis for Can Tho and Hue resulted in differing results but, ultimately, both cities likely operate with a significant funding gap. For example, as shown in Figure 3, Hue's total modeled loss of approximately VND1 trillion (the far left column) is much larger than the largest historic loss (flood in 1999) of VND645 billion. However, Hue's annual budget for disaster recovery was only VND 38 billion in 2013, a small percentage of both the modeled loss and the largest historic loss. Hue reported no additional sources of funding that could be relied on with certainty to meet postdisaster relief, early recovery, and reconstruction needs. In the case of the 1999 flood, provincial and central governments provided additional assistance (totaling VND38 billion), but this amounted to only 30% of the support requested and 20% of the actual damage incurred. Figure 3 indicates that not only does Hue have few liquid resources to meet even relatively frequent typhoon events (e.g., 1-in-10-year events), but that a somewhat less frequent typhoon event occurring on average of once every 25 years could amount to losses equivalent to over 50% of the city's annual revenue. This indicates a very substantial gap between likely losses and readily available funds.



The financing analysis for Can Tho looks somewhat different (Figure 4) but the difference may be largely attributable to certain assumptions made in the absence of firm data. For example, Can Tho reported the existence of a reconstruction fund that received 5% of the annual city budget. If these funds were available for disaster reconstruction, and if the city were to contribute the maximum 5% of budget for contingency purposes, then 10% of budgeted funds would theoretically be available for postdisaster response. However, no firm data was reported by the city for either account, leading to the possibility that the city may have substantially less liquid resources than shown in Figure 4.



For example, disaster losses of VND238 billion were reported for the 2011 flood (the largest reported historical loss event), but only VND5.4 billion was available from city resources to meet disaster expenses and VND54 billion was received from other sources. These resources, together totaling VND59.4 billion, were substantially less than the minimum (2%) of contingency funding theoretically available to the city.

During the project workshops, Can Tho city officials acknowledged that the financing gap was “quite troubling”² and that it had profound consequences for the security and livelihood of the people. They therefore suggested that the national government should support disaster risk transfer initiatives to reduce the gap.

Other cities in Viet Nam considering DRF instruments can study this financing gap methodology and begin to develop a picture of their own financial preparedness for disaster response. Ultimately, it will be important to know the likely frequency and severity of losses over the long term. However, data on the largest known historical losses, city contingency budget allocations, and city revenue are sufficient to begin determining a city’s level of financial resilience. As was the case in Hue, collation of data on the amount of assistance received from other government sources relative to the amount requested and the amount of damage suffered will also be important in undertaking this preliminary analysis.

² Comment from Can Tho delegation at project workshop held on 4 March 2015 in Ha Noi, Viet Nam.

The legal and regulatory framework is critical in exploring the potential array of DRF options available in a country and their extent of uptake

Legal and Regulatory Considerations

The legal and regulatory framework is also critical in exploring both the potential array of DRF options available in a country and their extent of uptake. The project did not address all the known legal provisions of relevance to DRF innovation in Viet Nam. However, it identified aspects of the current legal and regulatory landscape that support cities considering DRF options and aspects that present gaps or ambiguities.

Notwithstanding the adoption of the 2013 Law on Natural Disaster Prevention and Control³ and the existence of the 2007 National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020,⁴ the legal framework supporting DRF initiatives, including insurance, in Viet Nam is still evolving and the role of DRF has yet to be fully defined in the national framework. Both the 2013 law and the national strategy acknowledge insurance as a useful tool for disaster preparedness, but little specific guidance on its use or funding is provided.

Can Tho and Hue city officials voiced many questions about the legal foundation for disaster insurance over the duration of the project and looked to the central government, principally the Ministry of Finance (MOF), for answers. The legal points raised by the cities principally concerned (i) the status and role of insurance products relative to national strategies, priorities, and regulation; (ii) the ability of local government to make contractual commitments and resource allocations for insurance products; and (iii) regulations affecting the actual placement (purchase) of an insurance contract in both domestic and international markets. These are legitimate issues given the novelty of disaster insurance in Viet Nam and the early stages of development of the country's insurance markets. Some of these questions apply equally well to other types of DRF instruments, such as contingent credit, and will require answers before progress can occur.

While insurance is acknowledged as a potential disaster risk management tool in both the 2013 law and the national strategy, it has been difficult for cities to get solid guidance on what authority they might have to engage in insurance transactions and the degree to which the central government has sanctioned such activity. During the project workshops, the point was made several times that a major barrier to the use of disaster insurance was a lack of clear statement from the central government that it was permitted. Often, the questions of authority raised by the city officials referred not only to the general authority to devote local resources to insurance premium but also, more specifically, to the authority to enter into contractual arrangements with an insurer and the rules that might apply.

Questions were also raised about the commercial transaction itself, in particular whether, and via, what process a city would engage with a market intermediary (e.g., a broker), an insurer or an international reinsurer. For example, Can Tho and Hue city officials expressed doubt that they could be a direct party to an insurance contract, but that, possibly, an agency within the city administration could act on their behalf.

³ Government of Viet Nam. 2013. *Law on Natural Disaster Prevention and Control. No. 33/2013/QH13*. Ha Noi.

⁴ Government of Viet Nam. 2007. *National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020*. Ha Noi.

Box 2: Lessons Learned – Use of Contingency Funds for Insurance Premiums

The use of local contingency funds to pay insurance premiums was of major interest during the project workshops. Currently, while there is no specific rule prohibiting the use of contingency funds for this purpose, likewise there is no explicit authority to do so. The Department of State Budget commented that historically contingency funds have been thought of only as a resource to address needs arising subsequent to an unexpected event, not for prior expenses such as insurance premiums. Given the lack of alternative sources of discretionary funding to pay insurance premiums, the cities expressed interest in reconsidering this approach. Alternatively, use of a portion of the contingency fund to pay insurance premiums could reasonably be viewed as an advance payment against anticipated disaster losses that have yet to occur. Use of contingent funds for this purpose could also be viewed as a means of leveraging existing funds to meet future disaster response needs. Whatever the interpretation, it appears that Can Tho and Hue wish to see current practice reconsidered in light of the lack of alternative sources of funding for insurance premiums.

Source: Asian Development Bank.

The Insurance Supervisory Authority (ISA) of the MOF acknowledges that these and many other questions remain unaddressed at this time. However, ISA has been tasked to promulgate and implement disaster insurance regulations contained under the 2013 Law on Natural Disaster Prevention and Control, including direction on the sources of financing that cities can draw on to finance premiums. This should provide the necessary guidance and authority that the cities are seeking in due course. MOF and ISA have also been very supportive of this project and have actively participated in all project workshops.

In the meantime, the cities are aware that the current regulatory system does not contemplate the purchase of disaster insurance being purchased by local government but are prepared to move forward with such initiatives as long as the national government explicitly supports pilot efforts with clear authority and some degree of flexibility to introduce new approaches and types of insurance.

3 Why Other Vietnamese Cities Might Consider DRF Instruments

The cities of Can Tho and Hue were not chosen as pilot project cities just because they are vulnerable to natural hazards. The selection criteria were also designed to identify cities that were broadly representative of other urban centers in Viet Nam in terms of natural hazard risk and that had the capacity and willingness to share their experience and lessons learned with other cities both in Viet Nam and beyond. Additionally, moderately-sized cities were chosen in part to make the project results relevant to a significant number of cities in Viet Nam.

It is increasingly recognized that disaster risk management at the city level carries many of the same challenges that national governments confront

City-level DRF initiatives have only recently begun in many countries, with most of the governments' interest in DRF mechanisms, to date, has focused at the national level. Yet, it is increasingly recognized that disaster risk management at the city level— including responsibilities relating to the financial management of disaster risk—carries many of the same challenges that national governments confront. Furthermore, in some ways, cities face even more difficult circumstances given their concentration of exposure to risk and more limited funding sources. For example, cities experiencing disasters are more likely to be affected across their full geographical area and, thus, less able to shift resources from unaffected areas. Their citizens also look to city government as immediately responsible for managing emergency and recovery efforts, serving as the frontline for disaster response. At the same time, city governments have fewer readily available sources of funding to pay for disaster costs and less ability to raise taxes, borrow, or seek donor support.

Viet Nam's cities face particularly high disaster risk from natural hazards, such as typhoon, flooding, landslide, tornado, and drought—and some additional disaster risk from less frequently occurring hazards such as earthquake and tsunami. With more than 3,200 kilometers (km) of coastline, coastal cities have experienced frequent severe river plain flooding, as well as typhoon-related flooding, and wind damage. Between 1961 and 2010, Viet Nam experienced 381 typhoon events, averaging 7.62 events per annum and ranging from 2 to 14 events in a single calendar year.⁵ The agriculture sector is especially vulnerable to natural hazards such as storm surges (and related seawater intrusion) flooding, drought, and hail.

Certain urban characteristics, such as Viet Nam's high rate of urbanization, highlight the need for cities to develop new tools to manage the financial consequences of disaster events. The level of urbanization has increased rapidly from 20% in 1990 to 33% in 2014,

⁵ IMHEN and UNDP. 2015. *Viet Nam Special Report on Managing the Risks of Extreme Weather Events and Disasters to Advance Climate Change Adaptation*. Summary for Policymakers. Institute for Meteorology, Hydrology and Climate Change and United Nations Development Programme, Ha Noi.

and is forecast to reach 54% by 2050.⁶ This surge in population carries with it rising urban exposure in terms of a commensurate growth in infrastructure and the built environment, increasing urban economic concentration, and expanding peripheral poor populations in parts of the cities' most vulnerable to natural hazards. Many of the country's urban centers are located in highly hazard-prone areas, such as coastal areas and along rivers. Rising urban populations also generate greater logistical difficulties and costs related to evacuation and emergency response, which can substantially raise the level of disaster funding required.

Viet Nam has adopted an increasingly proactive stance in managing disaster risk in recent years. In addition to its response and reconstruction efforts, the national government has continued to undertake significant investment in disaster risk reduction and preparedness. These activities are reflected in both the 2013 Law on Natural Disaster Prevention and Control and the 2007 National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020, both of which recognize the ability of national and local government to reduce losses through preparation, planning, and structural measures. The national strategy specifically identifies "proactive prevention" as a guiding principle,⁷ implying that it is the government's responsibility to anticipate, reduce the impact of, and prepare for potential disaster events and the associated needs of the people affected. This principle underlies the essential role of DRF. With information about the likelihood and cost of future disaster events, and a range of DRF instruments in hand, government has both the obligation and the tools to reduce the impact of those events on people and economic development in part through financial preparedness.

Of course, the resources that are ultimately available to a city following a disaster and the time it may take for those resources to disburse need to be known in order to strengthen financial planning. As noted in the discussion of the financing gap, there is often some variance between the funds that central and provincial authorities could provide and the funds actually received. Timing of the receipt of funds is also variable, compounding the difficulties faced by cities in determining which recovery and reconstruction activities can proceed and which need to be deferred. Adding a disaster insurance instrument to a city's preparedness plan does not eliminate this uncertainty but it does reduce it, providing an added element of assurance that a city will have quick access to funds to help meet immediate needs.

Viet Nam is also one of the countries most affected by climate change in significant part because a great number of the country's medium- to large-sized cities are on or within 50 km of the coast. This places a large proportion of the country's population, infrastructure, and economic activity in the path of the likely consequences of climate change: rising sea levels, seawater inundation, salinization, and greater frequency and severity of storms. Increasingly, the well-being of the country is dependent on the measures taken to protect the cities and lowland areas.

One of the objectives of the project has been to highlight the role of DRF as a resource to combat and manage climate change. Can Tho and Hue are significantly at risk from climate

⁶ United Nations. 2014. *World Urbanization Prospects: The 2014 Revision - Highlights*. ST/ESA/SER.A/352. United Nations Department of Economic and Social Affairs, Population Division, New York.

⁷ Government of Viet Nam. 2007. *National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020*. Ha Noi.

change and have invested heavily in planning for, and adapting to, its likely effects. Yet, until now little planning has been done to anticipate the financial impacts of the changing frequency and intensity of climate extreme events, including relating to disaster response. By mainstreaming DRF know-how and options developed under the project into climate change plans and investments, both cities now have the opportunity to adopt a more integrated approach to climate change—one that offers residual risk management, as well as disaster risk reduction and adaptation solutions.

Other Vietnamese cities also have an excellent opportunity to learn from the work just completed under the project. While each city's DRF needs will vary, analysis completed under the project suggests that there may be several disaster risk and financial considerations commonly shared among Viet Nam's cities. To the extent that other cities recognize similarities between aspects of Can Tho's and Hue's disaster risk profiles and financing capacity for postdisaster response and their own, they may benefit from learning more about potential DRF options. Beginning a dialogue on DRF also offers an opportunity to integrate financial planning into ongoing efforts by the cities to better manage disaster and climate change risk.

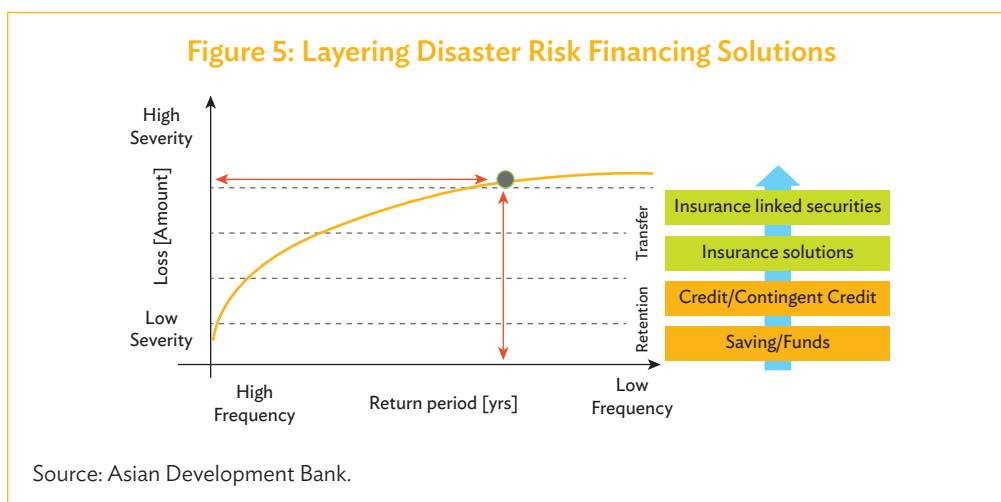
4 Potential Disaster Risk Financing Solutions

There are a range of potential DRF solutions that a city can consider. In addition to insurance, disaster risk transfer options include credit and capital market products, as well as other instruments highlighted above. Insurance and capital market products involve the transfer of risk (shifting of risk to another party in return for a payment). Contingent credit, disaster reserves, and contingency budget lines distribute disaster response costs over time but retain them in the hands of government.

The analytical work undertaken on Can Tho and Hue, for the purposes of this project, indicated that both cities would benefit from beginning with a relatively simple and transparent insurance transaction. The word “simple” in this case refers to an insurance transaction that can be well understood by city officials and its benefits easily communicated. “Transparent” refers to a clear picture of the amount of protection provided and how and when a claim can be made after a disaster event. The project team and the cities agreed that this was a sensible way to begin enhancing DRF arrangements.

As shown in Figure 5, however, both credit and capital market products can also play an important role in a comprehensive DRF strategy. Once again, the figure shows the probable loss curve, reflecting frequent but less severe losses on the left-hand segment of the curve and infrequent and more severe losses on the right-hand segment. The four basic categories of DRF options are indicated to the right of the graph, including mechanisms that retain risk and those that transfer it. The figure clearly reflects the principle of retaining frequent, smaller-scale risks and transferring larger, less frequent ones.

Can Tho and Hue would both benefit from beginning with a relatively simple and transparent insurance transaction



Capital market solutions (or insurance linked securities) are investment instruments that effectively convert an insurance transaction into a marketable security that the international investment community can purchase. Most commonly, these take the form of catastrophe bonds (or cat bonds). Catastrophe bonds are high-yielding securities that provide for suspension of the payment of interest and/or bond principal after the occurrence of a qualifying disaster event, thus becoming the functional equivalent under such circumstances of an insurance claim payment. These instruments were not actively considered for Can Tho and Hue under the current project because of their complexity, cost, and typical size. Nevertheless, the investor market should be kept in mind as a future source of risk transfer capacity for Viet Nam.

Credit Solutions

Credit solutions are included in the retained risk grouping. Credit solutions are relatively common elements of sovereign DRF programs because they are usually easy to set up and are relatively inexpensive to maintain in the period before the funding is drawn down. Typically, they take the form of lines of credit made available through commercial lenders or through multilateral development banks. The disbursement of funds is made contingent upon the occurrence of a disaster meeting preestablished criteria—for instance, relating to the severity of the hazard event or the declaration of a state of emergency. This is why these mechanisms are frequently referred to as contingent credit. Upon the occurrence of a qualifying disaster event, the government is able to draw funds from the credit facility within a matter of days. The advantages of credit solutions include the low cost of maintaining the credit line during periods of inactivity (usually 0.25% to 0.75% per year of the agreed loan amount); a likely lower interest rate than lines of credit negotiated after a disaster; and the assurance that funding will be available immediately following the occurrence of qualifying events. The disadvantage of credit solutions is that disbursed funds need to be repaid latterly.

Contingent credit programs have an important role to play in a multifaceted, cost-efficient DRF strategy. In Viet Nam, limitations on local governments' ability to borrow make such options difficult at the current time. However, other retained risk options, such as emergency reserves and annual contingency budget lines that can accrue over time, are practical and have an important role to play.

Parametric Insurance

Under traditional insurance products, claims payouts are based on the amount of damage actually suffered. For example, if VND10 million is required to repair a car damaged in an accident, then that is the amount paid. This type of insurance is referred to as indemnity insurance. The objective of indemnity insurance is to put the insured person back in the same position that he was in before the accident or other insured events occurred.

There is another form of insurance that, instead of basing payouts on the amount of confirmed damage, pays out when a predefined event occurs. For example, if the eye of a typhoon with a specified wind speed or above passes across a defined geographical area

consistent with the terms of the agreed insurance contract, then an amount of money will be paid regardless of the actual level of damage. This type of insurance is known as parametric insurance because the payouts are based on trigger parameters (such as wind speed or flood depth). These parameters are agreed at the time the insurance is purchased and are stipulated in the insurance contract.

Parametric insurance has been used by a number of governments because certain aspects of this type of insurance are very appealing. A key advantage is the speed with which payments are made. With indemnity insurance, the actual damage must be assessed by the insurer before a claim can be settled. This process can take a long time. In contrast, with parametric insurance, the occurrence, location, and severity of the hazard event simply need to be validated by a qualified third party before a payout is made. Since quick access to funds can be critical in meeting immediate relief and early recovery expenses, rapid claims payment is extremely important.

Another important advantage is that a government can use the parametric insurance payout for any purpose. An indemnity insurance payout is normally tied to the repair of the insured asset, such as a vehicle, power utility, or bridge. With parametric insurance, no such limitation exists and city officials can use the funds as they so choose.

More basic forms of parametric insurance (so-called first generation products) are also very transparent and relatively easy to explain and communicate. As payouts are based on the occurrence of qualifying hazard events, there is little ambiguity as to when and how much compensation will be paid.

Basis Risk

It is essential that the trigger event for a parametric insurance product is carefully selected to provide a high level of correlation between the scale of losses experienced and the selected trigger parameters, thus limiting the likelihood that a damaging disaster event occurs that fails to meet the parametric criteria or thus to trigger a payout. As described above, claims under a parametric insurance are determined regardless of the amount of actual damage. In other words, the amount of damage experienced is not taken into consideration in the claims payment process.

The disaster risk assessment will estimate the amount of damage likely to be sustained for an event of a given severity, but there is always a risk that the damage is less or greater than expected. With a simple parametric insurance policy, if the trigger event is realized but the damage is less than expected, the city still receives the agreed payout. However, if the trigger event is not realized—for instance, because the location of the hazard (e.g., the typhoon path) is outside the defined geographical area of coverage—but significant damage is experienced, then no payout is made. These two potential eventualities are referred to as basis risk. Basis risk can also occur if another type of hazard occurs that is not the subject of the insurance policy. In either of these latter two cases, an insurance policy may be felt to have failed expectations if the terms of the policy were not clearly understood. It is in all parties' interest to minimize the basis risk, but it is impossible to eliminate it completely because the modeled disaster loss will never be 100% accurate.

For both Can Tho and Hue, the simple so-called first generation parametric solutions were recommended based on the findings of the analysis undertaken for the project. For flood risk in Can Tho, the direct measurement of flood depth at a single preagreed location was recommended as the basis for the parametric trigger.

For typhoon risk in Hue, two boxes of approximately 80 and 160km square were drawn around the city and a trigger was proposed based on the intensity of typhoons passing through each box. It was specifically recommended that the trigger should take the form of a class 3 typhoon (equivalent to approximately a category 14 on the Beaufort scale) passing through the 160km box. According to the model, this event will occur every 35 years on average—that is, with an annual probability of 2.9%—producing an average annual loss of VND7.18 billion. A class 3 typhoon just missing the box, or a typhoon passing through the box but not reaching the level of Class 3, would not trigger a claim under this structure regardless of the level of damage caused. This type of trigger is sometimes referred to as a cat-in-the-box trigger.

Box 3: Lessons Learned – Dealing with Basis Risk in Can Tho and Hue

Both Can Tho and Hue city officials were sensitive to basis risk and understood the reasons for trying to minimize it. In particular, they understood the need to build a consensus among city stakeholders on the strong case for implementing a DRF solution and appreciated the damage that a basis risk event could cause to that consensus. Recognizing this sensitivity, during Phase 3, the principal consultant proposed some modification to the simple parametric structures that had been recommended at the end of Phase 2. For each city, two suggested features were added to the proposed structure. The first feature involved a small payout equivalent to a minor fraction of the policy limit (the total amount that could be claimed under the policy) against actual damage suffered for the named hazard in cases where the event had not met the trigger threshold. This would allow the city to receive some payout even if the trigger threshold was missed. The second suggestion was to carve out a small amount of the limit to dedicate to other (non-modeled) natural hazards that could cause damage in the cities. It should be noted that both modifications would require clarity regarding the terms and risks being assumed and the premium cost of transferring that risk. Using one or both of them would also reduce the amount that could be collected for an event triggering a claim under the parametric component of the instrument but would provide the cities with some return on their premium payments in the event that losses were incurred for non-triggering events.

Source: Asian Development Bank.

5 How to Choose an Appropriate DRF Option

A city considering a DRF product will need to go through the preliminary analytical steps discussed in Section 2 above. After completing these steps, the city should be well positioned to strengthen its DRF arrangements. In this regard, it is important to restate that, because all DRF products are tailored to a city's specific risk profile and resource capacity, there is no standard one-size-fits-all product that can be readily selected. What is an optimal choice for one city may be of little value to another. For example, a city that is mainly exposed to flood risk and has invested heavily in structural risk reduction (e.g., dikes) may feel it only needs added protection for floods and at higher points on the loss curve—that is, for events happening perhaps only every 50 years or even less frequently. By contrast, a city that has invested less in disaster risk reduction, and is routinely exposed to multiple hazards, may feel it needs broader protection and at lower points on the loss curve—for instance, securing insurance cover for events happening as frequently as every 10 years on average.

At the close of Phase 2, the project team recommended DRF options to Can Tho and Hue that reflected their relatively good financial capacity to manage immediate emergency expenses, but also their relatively weak capacity to fund medium to long-term expenses, especially reconstruction costs. Both cities' current practice is to fund reconstruction principally through the reallocation of capital spending for several years after a disaster. The longer-term economic development effects of this practice can be significant. The project team was also sensitive to the need for protection to be placed sufficiently low on the loss curve to imply relatively frequent payouts, providing each city with a visible return on their investment in insurance. While the two cities had different principal hazards to manage (and both were concerned about secondary risks), the project analysis indicated that they were both well suited to first generation parametric insurance products.

It is important for a city to consider the long-term nature of a DRF instrument, especially those involving insurance. A city should be prepared to commit to the product for many years. If the loss analysis for a city shows that it is most vulnerable to natural hazards that occur on average every 20 years (a 5% annual probability), and an insurance product is designed to cover natural hazards in that range, then an evaluation of the product's performance just a few years after its introduction would probably not provide meaningful guidance. Similarly, the purchase of such a product for just a few years would probably be an inefficient use of public funds. Therefore, cities considering an insurance instrument should intend to make annual budget allocations for premium expenses for many years.

There are three factors of particular importance to take into account in selecting a DRF option: simplicity and transparency, cost effectiveness, and basis risk. Achieving simplicity

There is no standard one-size-fits all DRF product that can be readily selected

and transparency will facilitate consensus building, understanding, and communication. Cost effectiveness analysis will help the city assess the impact of a DRF product on its recovery efforts relative to other competing uses of the funds spend to make the premium payments, and to compare the application of different DRF options for particular layers of risk. An understanding of the concept of basis risk will encourage a thorough analysis of the disaster risk faced by a city in order to minimize the chance that significant damage is incurred without an insurance payout.

Taken together, these three factors highlight the need for knowledge, capacity building, and training as a basis for sound decision making. If the methodology outlined in Section 2 is followed, the city will have a fact-based approach to the selection of DRF options that will yield appropriate and affordable solutions. The collective experience of Can Tho and Hue has demonstrated that, while detailed expertise in DRF is not necessary, sound guidance in the early stages of DRF product development is very important.

6 What Does it Cost and What is the Expected Return?

Once a city has a clear idea of its capacity to manage more routine disaster events and potential instruments to enhance its financial management of disaster risk, it must then consider the cost and expected returns of those instruments. These latter two factors are clearly major considerations for any city considering DRF instruments as a component of their overall disaster risk management strategy. There are many competing demands for budget resources, and the introduction of new recurring budget items requires consensus and commitment.

Many factors go into determining the cost of insurance. The most important component is the amount of losses that can be expected over the insured period. The cost of disaster insurance (the premium) is based, in particular, on the amount a city would need to set aside each year to pay for its average annual or expected disaster losses from the insured event (Section 2). For example, if a city knows that a disaster of a specific severity will occur on average of once every 20 years, then it could annually set aside 1/20th of the estimated damage and, at the end of 20 years, have enough funds reserved to pay for the loss. Of course, in this case, the city would only have enough funds on hand if the disaster occurred in year 20 and not before. In contrast, by paying approximately 1/20th of the average annual loss in the form of an insurance premium each year, the city is assured that whether the disaster occurs in year 1 or year 20, or sometime in between, it will have the necessary funds to cover the loss.

While other cost elements are also built into an insurance premium, the average annual loss is the principal component. During early discussions about possible cover, it is often asked how much the insurance will cost. However, this question normally needs to be deferred until a much later stage because it will depend on the structure of a DRF solution—that is, for what segment of the loss curve a city wishes to purchase protection. The average annual loss pertaining to the proposed solution cannot be ascertained until the structure is determined.⁸ Once the average annual loss is known, the premium expense can be estimated.

In addition to the average annual loss, other components of the final premium include the cost of capital to the insurer, administrative costs, and profit. Understanding of the cost of capital is particularly important. In the example above, the insurer could be called upon to pay a 20-year loss in the first year of cover and will therefore need to have sufficient capital immediately available to meet that loss. There are different ways the insurer can ensure

While other cost elements are also built into an insurance premium, the average annual loss is the principal component

⁸ It is possible to reverse this process and begin with agreed premium budget and design insurance options that reflect best use of the budgeted funds. However, adopting this approach does not lessen the importance of the risk assessment and financing gap analysis.

that funds are available, but there is a cost associated with each option. This cost must be reflected in the premium.

Taken together, the average annual loss, cost of capital, and other components will always imply that the premium is higher than the expected loss. This is known as a premium multiple. Generally, the premium multiple is lower when a well-accepted risk assessment methodology has been used and there is high confidence in the modeling results and thus in the estimated average annual loss.

Box 4: Lessons Learned – Premium-Funding Alternatives

Over the project's duration, Can Tho and Hue officials repeatedly asked how they could pay for disaster insurance. In this regard, it was particularly beneficial to have the project's implementing agency's (Ministry of Construction/Urban Development Agency) active participation in the project workshops, together with representatives from the Ministry of Finance, Insurance Supervisory Authority, and the Department of State Budget. Both cities were very open about their desire to explore insurance solutions but expressed concern that they had very limited options for securing funds to pay for them, particularly given the existing constraints on the use of local contingency funds for premium payments. Both cities noted that since the central government has supported and encouraged the project, it would seem appropriate for the central government to provide some premium funding support for some initial disaster insurance pilot initiatives. While the cities believed that some premium funding could be locally sourced, if the project was intended to truly demonstrate the value of insurance solutions, then it should follow that the central and provincial governments would want to see the insurance concepts developed under the project fully implemented and to support the initial costs to some degree.

Source: Asian Development Bank.

7 How Does it Get Implemented?

Implementation of a disaster insurance product in Viet Nam will require two key actions: (i) clarification of the legal authority of city governments to purchase disaster insurance and (ii) the actual market placement. As already noted, the concerns most frequently voiced by Can Tho and Hue during the project workshops regarded compliance with existing laws and regulations and, to the extent that the laws and regulations are ambiguous, their clarification.

Before a commercial transaction between a city (or an entity acting on behalf of the city) and an insurer can be completed, the legal and regulatory environment for such transactions must be clear, as discussed in Section 2. This clarification is needed on both the buying and the selling side.

In the case of Viet Nam, on the buying side, the authority of the city or its agent to purchase insurance and the types of insurance permitted need to be clarified through a Prime Ministerial Decree, a ministry circular providing detailed regulations, or another government statement that provides city officials with secure authority to undertake the transaction. On the selling side, greater clarity is needed to understand the authority and capacity of Vietnamese insurers to participate in such transactions, their ability to retain disaster risk, and their ability to share the risk with others.

Once the legal authority is adequately clarified, the commercial process of placing the insurance in the market can occur. If permitted, one traditional approach would be to use an advisor or broker to assist with the market placement. Normally, the role of the broker is to provide advice to the insured—the city in this case—on pricing and the best placement strategy. The broker would then interface between the city and interested insurers to locate the best price and policy terms.

Assuming a Vietnamese insurer is allowed to sell such coverage, including parametric insurance, that insurer would then need to decide what portion of the insured risk it would like to keep for its own account and how much to pass onto reinsurers, both domestic and international. Reinsurance refers to insurance that insurers purchase to spread risk and enhance their ability to pay claims. The ultimate obligation to pay a claim would rest with the primary insurer and, if reinsurance was utilized, the city would not need to look beyond that insurer for any payout. Figure 6 indicates the sequence of steps to complete an insurance placement involving reinsurance.

Figure 6: The Placement Chain – City to Final Carrier

Source: Asian Development Bank.

As a point of reference, property insurance transactions are already commonly undertaken in this way across the world for a range of risks faced by municipalities. What is different in this case is that in Viet Nam there is no established practice of cities purchasing insurance that can be followed. Viet Nam has begun to regulate its evolving insurance market in ways that offer a good foundation for disaster insurance solutions, but more clarity and certainty is needed for cities to benefit fully from DRF innovations.

8 Final Considerations and Conclusions

Viet Nam has made significant progress in developing proactive disaster risk management policies and mainstreaming those policies into national, social, and economic development priorities. In addition to responding to postdisaster needs, disaster risk management policy also stresses the importance of investing in measures that anticipate disasters and reduce their impact. Recent changes in law also reflect a greater sensitivity and commitment for national government to share disaster risk management responsibility and resources with local government.

The demonstration aspect of this project has been intended to share the methodology, process, and value of DRF instruments with other cities in Viet Nam—and, in turn, with other cities in Southeast Asia.⁹ The experience of the cities of Can Tho and Hue over the duration of the project is potentially the most powerful demonstration tool that can be shared. What the cities have learned, along with an articulation and quantification of the challenges they face, are essential learning tools for other cities. It is their voices that can resonate most clearly with other cities confronting significant disaster-related financial risk.

The work completed under the project for Can Tho and Hue is a direct outgrowth of Viet Nam's robust and integrated approach to disaster risk management. At the same time, it has highlighted further work that remains to be done. Both cities now recognize the serious risks posed to people's livelihoods and economic development by the financial consequences of disasters. They are also now familiar with DRF options, especially insurance, and are supportive of integrating DRF elements into their disaster risk management strategies. However, in order to convert this learning into actual practice, they need additional support and guidance from the national government. The challenge now is to take a pilot demonstration project and bring it to full implementation. The key question remaining is how best to achieve this.

One of the reasons why both cities have expressed a desire to continue to work on the implementation of DRF solutions beyond the end of the current project is because they now have a much better understanding of the substantial liability they face in the event of a major disaster. The uptake of disaster insurance is now required to extend this learning exercise so that the results can be studied, reported, and carried into the discussion with other cities in Viet Nam and beyond.

⁹ The steps, methodology, training and findings produced by this project are readily available to other cities interested in learning more. Written reports have been produced by the project team covering each of the project's three phases and are available in translated form through the MOC/UDA.

Appendix: Glossary of Terms Used

Average annual loss: Annual average expected losses over a very long period, typically thousands of years.

Asset: An asset can be a single property, a portfolio of properties, a city, a region, or an entire country and can represent physical assets or population.

Disaster: A natural hazard event occurrence that results in measurable direct and indirect social and economic impacts.

Disaster risk financing: General term used for an instrument to mitigate the financial implications of a disaster. This includes, but is not limited to, traditional indemnity insurance, parametric insurance, contingent credit solutions, and classic credit and debt instruments. DRF solutions can be used for ex-ante as well as ex-post type financing.

Emergency loss: The expenses the government may sustain as a result of providing necessary humanitarian relief and undertaking early recovery efforts (e.g., such efforts include debris removal, setting up shelters for those made homeless, or supplying medicine and food).

Exceedance probability curve: A loss curves indicating for any given return period the resulting loss amount that will be reached or exceeded on average.

Exposure: A generic term used to define any physical assets (such as buildings, facilities, contents, population, etc.), as well as values associated with business interruption.

Fiscal exposure: The financial value (tangible and intangible) at risk of being destroyed by a natural hazard event and that would need to be replaced by the local government (i.e., city).

Industry exposure: The total replacement value and number of properties that is eligible for insurance. Certain building types are extremely vulnerable to natural hazards and, consequently, are unlikely to be insured. Such properties are identified in each modeled region and are excluded from the industry exposure database of insurable properties.

Insurance placement: The market acceptance of a contract of insurance on terms agreed between two parties (the insurer and the insured).

Insured interest: Term typically used for indemnity insurance and referring to the actual insured object or interest. This can be a physical asset such as a building, but also loss of profit in the case of, for example, business interruption as a consequence of an event.

Limit: The limit, also called the insurance cover, defines the maximum amount paid under a given insurance structure.

Multiple: The final price of a DRF solution relative to the expected loss. With a multiple of, for instance, 3 and an expected loss of 1% the final rate would be 3% (3 x 1%). The multiple represents the aggregate of all costs in addition to the expected loss, such as administrative expenses, the cost of capital, and a profit margin.

Natural hazard: Naturally-occurring physical events that may cause loss of life, injury, or physical damage, such as earthquakes, floods, and typhoons.

Probable maximum loss: The largest loss believed possible for a particular type of hazard event within a defined return period.

Reinsurance: Insurance that insurance companies purchase in order to smooth results over time, limit their exposure to individual risks, increase solvency, and spread risk more broadly among a greater number of market participants.

Typhoon: A warm-core, low-pressure atmospheric system that develops over tropical or subtropical waters and has a definite organized deep convection and closed surface wind circulation about a well-defined center.

Strengthening City Disaster Risk Financing in Viet Nam

Disaster risk financing instruments provide funding for disaster relief, early recovery, and reconstruction. Adequate financing arrangements are essential in ensuring timely recovery in the wake of disasters and in minimizing their impact on socioeconomic development. This paper presents a summary of a technical assistance project on the development of disaster risk financing solutions for the cities of Can Tho and Hue and, by extension, for other cities in Viet Nam. Many of Viet Nam's cities face significant risk from natural hazards such as typhoons, flooding, landslide, and drought. The project included the development of disaster risk models, financing gap analysis, and review of legislative and regulatory considerations. Disaster risk financing solutions were identified, focusing on insurance, credit, and capital market instruments.

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