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Disaster Risk Finance Academy

Affordable Disaster Risk Insurance through Public-Private Partnerships

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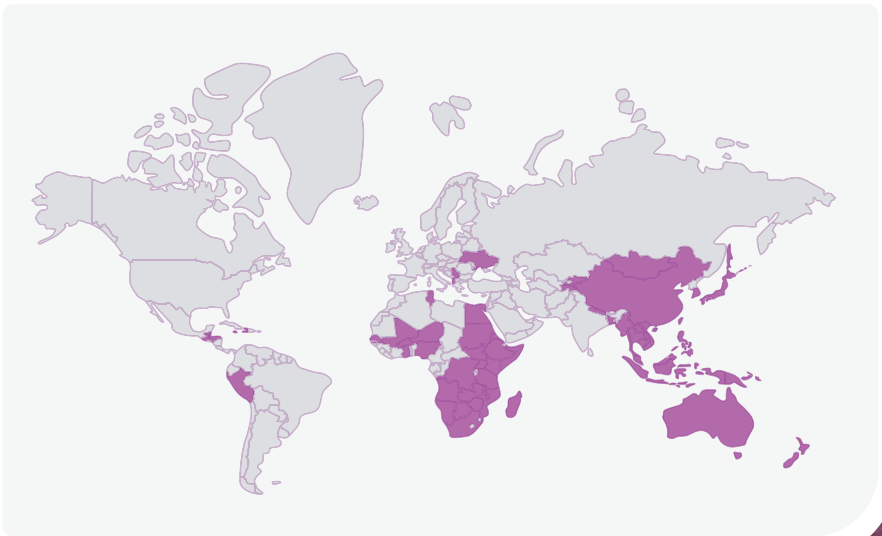
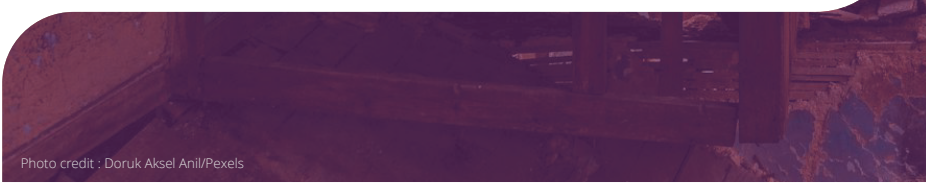
The Disaster Risk Finance and Insurance Program

The World Bank's Disaster Risk Finance and Insurance Program (DRFI) leads the dialogue on financial resilience as a component of the World Bank's support to countries, helping them to better manage disasters and climate shocks. The DRFI helps developing countries manage the cost of disaster and climate shocks. As such, it supports governments to become more effective risk managers rather than emergency borrowers, thereby protecting their fiscal balances and the welfare of households and businesses. Thus, it supports the development of comprehensive financial protection strategies and innovative policies and instruments, as well as the structuring of insurance programs.

The team currently helps strengthen disaster risk financial resilience in over 40 countries in 6 regions.





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Risk Finance Umbrella (RFU)

The RFU Program, established in 2022, enhances the financial resilience of low- and middle-income countries against disasters, climate shocks, and crises. It utilizes grants to support analytical and advisory activities that focus on improving financial management, developing market-based solutions, and strengthening sectoral risk finance mechanisms. The RFU Program supports the preparation of lending operations. Specifically, it aims to mobilize additional financing for the implementation of risk financing instruments, including through the World Bank's Global Shield Financing Facility (GSFF). [1]

The RFU Program is supported by the United Kingdom's Foreign, Commonwealth and Development Office (FCDO), the Government of Japan, the Swiss Secretariat for Economic Affairs (SECO) and the United States Agency for International Development (USAID).

Photo credit :Yunus Emre Ilica/Pexels

[1]The GSFF supports poor and vulnerable countries and people with increased access to financial protection against climate shocks, disasters, and crises through technical advisory services and integrated financial packages that address protection gaps. See: https://www.globalshieldfinancingfacility.org/what-gsff.

World Bank Academy

The World Bank Group Academy represents a transformative initiative within the institution's Knowledge Bank, delivering cutting-edge capacity development alongside its core services of analytics and financing. As a premier global knowledge hub, it tackles persistent and emerging challenges—from climate resilience to food security—by mobilizing 80 years of development expertise across the World Bank, International Finance Corporation, and Multilateral Investment Guarantee Agency. The Academy's programs are designed to equip policymakers and practitioners with actionable insights, fostering peer-to-peer learning and South-South collaboration to address urgent global priorities.

The Academy offers signature programs. These programs are strategically designed to address critical development challenges and country-specific priorities, offering relevant knowledge, best practices and tested solutions. Driven by 'coalitions for change' from diverse sectors, including government officials, the private sector, central banks, regulatory bodies, civil society and think tanks. Based on peer-to-peer learning and supported by communities of experts, solutions are co-created to each country's unique context and challenge. These programs for member countries will have participants selected based on their commitment to addressing specific development challenges.

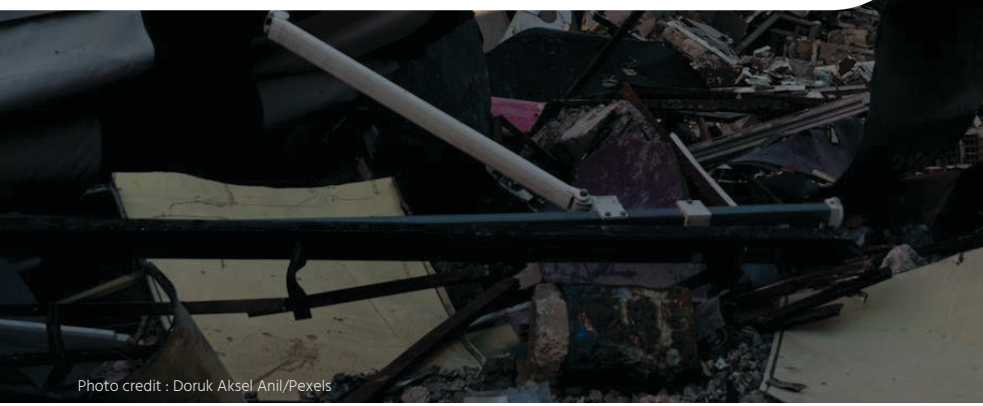


Photo credit : Doruk Aksel Anil/Pexels

What is Disaster Risk Finance and Insurance (DRFI)?

Disaster Risk Finance and Insurance (DRFI) refers to financial strategies and instruments designed to increase the financial resilience of governments, businesses, and individuals against natural disasters. The goal of DRFI is to ensure that funds are available for quick mobilization to respond to and recover from disasters, thereby protecting long-term fiscal balances and reducing the adverse economic impacts of such events.

Figure 1: The Four Core Principles of DRFI

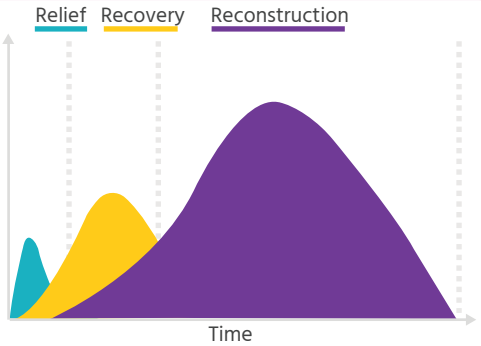
Source: World Bank

1 Timeliness of funding

When disaster strikes, speed matters. Studies have shown that early targeted action, supported by reliable and quick finance, can increase the value of response financing substantially. For instance, US$ 1 of early response can be worth US$ 3 at a later point in time. However, not all resources may be needed at once. Understanding the timing of funding during the three main periods following a disaster — Relief, Recovery and Reconstruction— is essential. It also has clear implications for the design of cost-effective financial management of disasters.

Figure 2:

Funding requirements for post-disaster relief, recovery and reconstruction

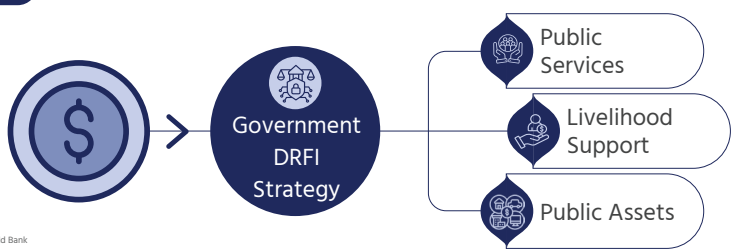


Source: World Bank

2 Disbursement of funds

How money reaches beneficiaries is as important as where it comes from. Effective post-disaster recovery requires dedicated mechanisms and expertise to effectively allocate, disburse, and monitor the funds. It also requires strong collaboration between the finance ministry and implementing agencies. In addition, disbursement systems must balance timeliness with transparency and public and donor accountability.

Figure 3: Disbursement of Funds



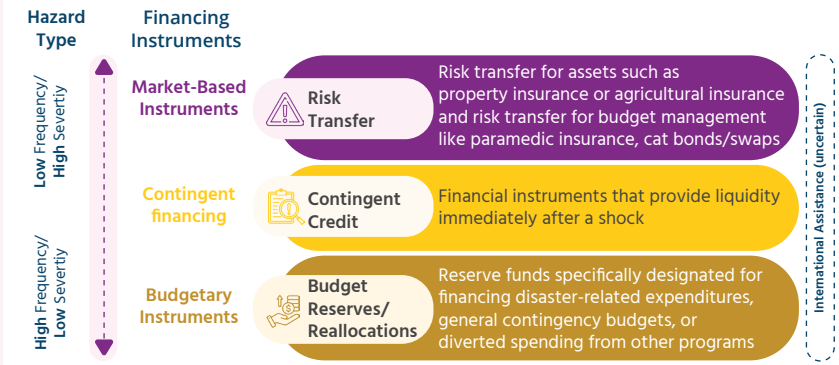
Source: World Bank

Note: DRFI= Disaster Risk Finance & Insurance.

3 Disaster Risk Layering

No single financial instrument can address all risks. Governments should use a risk layering approach, combining various financial instruments to address different disaster types, frequencies, and severities. This strategy prioritizes less expensive options, such as contingency funds for frequent, low-intensity events. It reserves costlier instruments, such as insurance, for rare, extreme disasters.

Figure 4: Disaster Risk Layering



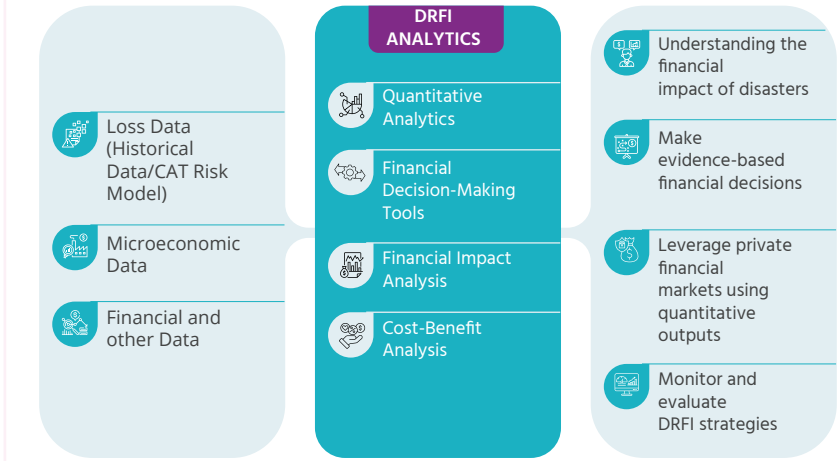
Source: World Bank

4 Data and analytics

Financial analysis of risk data and quantitative evidence empowers governments to make better informed disaster risk finance (DRFI) decisions. This requires actuarial analysis; (i) user-friendly tools to evaluate financial instruments and strategies; (ii) quantitative analysis to leverage market solutions; and (iii) simple interfaces to bridge the gap between policy makers and underlying technical models.

Photo credit : Doruk Aksel Anil/ Pexels

Figure 5: DRFI Analytics



Source: World Bank

Note: CAT= catastrophe; DRFI= Disaster Risk Finance and Insurance.

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Protecting livelihoods and development

DRFI is not just about financing disaster response. Importantly, it is also a proactive approach to safeguarding economic development and livelihoods. In fact, it plays a critical role in protecting livelihoods and development by providing financial mechanisms and instruments that help individuals, businesses, and governments manage the adverse economic impacts of disasters.

Financial Protection Instruments: Snapshots and Key Takeaways

Sovereign Intruments

Risk Retention

I Contingent Credit or Contingent Line of Credit

Snapshot: Contingent credit is a specialized financial arrangement designed to give governments immediate access to funds in the event of a natural disaster. It includes the prearrangement of a line of credit at competitive borrowing rates before a disaster strikes. The credit line is activated when a specific natural disaster occurs at a pre-defined level of severity or impact. For instance, the World Bank offers instruments, such as the Catastrophe Deferred Drawdown Option (Cat DDO), which provides countries with immediate liquidity following the government declaration of a natural disaster.

Key Takeaways:

1 **Flexible utilization of funds.**

Contingency credit provides quick budget support that can be used for a wide range of disaster-related needs, including emergency relief, repair of damaged infrastructure, rebuilding, rehabilitation, financial support for the affected population, and so on.

2 **Protects fiscal balance.**

By providing immediate liquidity, contingency credit helps prevent the increase in spending and budget reallocations from development. At the same time, it provides the government with resources for relief, recovery, and the continuity of essential public services during a disaster.

3 **Complement to insurance.**

The contingency credit measures can act as financial safety nets that complement traditional insurance-based solutions, thus offering a more comprehensive approach to disaster risk finance and insurance and management.

II Budget Reallocations

Snapshot: To meet post-disaster costs for recovery and reconstruction, government agencies may request budget reallocations through the regular budget process (supplementary budget) or use some of the existing budget lines, savings, and/or modify the issued allocations.

Key Takeaways:

1 Impact on planned development priorities and high opportunity cost.

Budget reallocation for disaster recovery often involves using existing budget lines, savings, and/or modifying issued allocations. This may be the first and sometimes the only funding available. However, it can significantly impact planned development priorities, potentially impeding overall development. Budget reallocations can also have a high opportunity cost, depending on the scale of reallocations, the original intended purpose of the funding, and the extent to which the original allocation was sufficient to satisfy its purpose.

2 Importance of control mechanisms.

When using the regular budget for disaster response, it is crucial to have robust budget management, reporting, and control mechanisms in place. These mechanisms ensure the efficient use of funds even during a crisis period. Transparency and accountability are essential to ensure that disaster response and recovery funds are allocated fairly and support those most in need. Budget reallocations also require dedicated oversight. For instance, countries often fail to track post-disaster budget modifications, which can result in an underestimation of how much governments spend on disasters.

3 Criticality of transparency.

The urgency of a disaster response often leads to poorly documented budget reallocations, making it difficult to distinguish between reallocations resulting from the disaster and those made for other reasons. To ensure effective controls and accountability, it is important to document all budget reallocations clearly and transparently.

III Disaster Reserve Funds

Snapshot: Disaster reserve funds are pre-arranged financial resources set aside by the governments to cover immediate response and recovery costs after a disaster. They allow governments to retain risk as part of their budget, as well as to maintain resources in advance to facilitate rapid response in case of a shock. This includes clear prearranged processes, thereby reducing the need for emergency borrowing or budget reallocation.

Key Takeaways:

1 The value of a fund depends on how it is designed and implemented.

The establishment of such a fund demands fiscal discipline in allocating sufficient funding, while also preventing misuse of funds and ensuring transparency. The way a disaster fund is designed can impact: (i) the timeliness of funding; (ii) sustainability and adequacy in responding to disasters. (iii) opportunity costs (that is, of money not being invested elsewhere); (iv) transparency; (v) the predictability of available resources; and (vi) dependency on ex-post funding (borrowing, budget reallocations and donor aid).

2 Effective funds often focus solely on the disaster response, not risk reduction and preparedness.

Preparedness and reduction are often better suited to the regular budget process, whereby each project is evaluated individually, and risk reduction is prioritized by each agency. Usually, disaster reserve funds are used to support response and emergency recovery measures. Therefore, money in the fund should be available quickly, meaning that the use of the fund for response makes the most of this benefit.

3 Strong governance, institutional structure, and disbursement channels.

The proper use of disaster reserves requires efficient decision-making processes to ensure that funds flow to the highest priority post-disaster needs. It also requires transparency in fund allocation and use, as well as efficient post-disaster procurement. Finally, it requires that funds reach the intended beneficiaries efficiently, while also mitigating the risks of mismanagement.

Risk Transfer

IV Parametric Insurance for Disaster Response

Snapshot: Disaster insurance can provide governments with the resources needed to respond to severe and infrequent disasters. Often coverage is parametric, with payouts determined based on the occurrence of (a) specific disaster event(s), meeting predefined severity thresholds. Instead of evaluating actual losses, payouts are triggered when a pre-defined objective parameter (such as wind speed, rainfall levels, or earthquake magnitude) exceeds a pre-set threshold.

Key Takeaways:

Fast and predictable payouts. 1

Since payouts are dependent on an objective, pre-set parameter or threshold, quick access to funds following a disaster is assured for timely response and early recovery activities.

May not fully cover losses. 2

Since payouts are based on set parameters rather than actual damage assessments, there is no need for lengthy claims processing. However, if the set trigger parameter is not met, policyholders may not receive a payout — even if loss or damage occurs. This is known as basis risk.

Requires accurate data. 3

To reduce basis risk, it is essential to tailor parametric insurance to the risk profile and needs of the prospective policyholder(s). This can be done through the proper choice of the underlying index and payout schemes, and possibly the inclusion of multiple trigger conditions, which would require access to accurate modeling and reliable data. Better data and analytics will also increase access to international reinsurance and reduce the cost of the premiums, thanks to lower uncertainty.

Photo credit : Victor Moragriega/ Pexels

V Catastrophe (Cat) Bonds

Snapshot: Similar to insurance, a catastrophe bond (cat bond) is a financial instrument that can provide a government or other institution with finance to respond to infrequent and severe shocks. They allow governments, insurers, and reinsurers to transfer a portion of the disaster risk to bond investors. These bonds are issued to mobilize private sector capital to fund disaster response and recovery in the event of predefined catastrophic events, such as floods, earthquakes, and/or other extreme weather conditions. If no disaster occurs, investors receive periodic interest payments and can retrieve their principal at maturity. If the specified disaster occurs, the bondholders lose some or all of their principal, which is used to cover the losses.

Key Takeaways:

1 Rapid and predefined payouts.

When issued by or on behalf of governments, cat bonds often use parametric triggers (for example, rainfall amount, earthquake magnitude, wind speeds, and so on) or modelled disaster loss methods to determine payouts. For example, a parametric cat bond might be triggered if an earthquake with a magnitude greater than 7 occurs within a 50-kilometer radius of Tokyo. In this instance, cat bonds can provide quick payouts — often within weeks of an event — when designed with a parametric or modeled loss trigger structure. However, parametric triggers also carry the highest exposure to basis risk (that is, of the payout not corresponding to the loss) because actual damages are not measured in the field.

2 Cat bonds are not a debt instrument.

A cat bond is simply a mechanism to transfer risk, just like insurance. A cat bond is not a debt instrument for the sponsor (issuer); as such, there is no sponsor obligation to repay any amount received, since the sponsor only enters into an insurance agreement (or other risk transfer agreement) and is not the actual issuer of the bond. The sponsor does not receive any funds unless an insured event triggers the risk transfer.

3 Cat bonds should be assessed against other risk transfer options, such as insurance.

Given the fixed costs involved in launching cat bonds, they typically only provide value for money for exceptionally large transactions. Thus, they are designed to remit payment only after exceedingly rare and severe events. Many factors will determine the relative cost and value of catastrophe bonds, insurance, and other risk financing instruments. Therefore, decisions should be based on market and risk analysis.

Photo credit : Shynar Nergissova / World Bank

VI Financial Protection of Public Assets

Snapshot: Financial protection of public assets is a coordinated, pre-arranged strategy, often a component of a country's overall DRFI strategy. As such, it is used for funding the financial consequences of adverse disaster impacts on public assets. Financial protection of public assets aims to ensure the continuity and resilience of public services and infrastructure by implementing comprehensive risk management and financing strategies. It often includes insurance mechanisms, although insurance might not be appropriate for countries for all types of risks.

Key Takeaways:

1 Alignment with government policies and goals.

The key to success of a financial protection of public assets program is strategic alignment with boarder government policies and goals, such as prioritizing short-term relief versus long-term asset protection — or, alternatively, trade-offs between different policy goals, such as focusing on transport, energy, or social infrastructure. Therefore, it is critical to clearly define the program objectives, specifically, determining the scope, mandate, powers, and governance of the program to align with government regulatory frameworks.

2 Complexity and costs.

Financial protection of public asset programs require careful planning and coordination among a large group of public and private stakeholders. Furthermore, the initial cost of establishing such programs can be high. Likewise, the time needed to put such programs in place can be long, due to the creation of systems, databases, asset registry, and so on. At the design stage, the data required can include historical losses or damages. It is also important to develop loss estimation models (for example, "catastrophe" models) for analyzing one or more of the most material hazards. At the delivery stage, the data required may include asset location and its characteristics. A low-quality submission can lead to increased uncertainty, which usually results in either a refusal of coverage or very high insurance premiums. Therefore, it is critical to have a well-defined structure, implementation, and monitoring process to ensure effectiveness.

3 Embedding financial protection of public assets in day-to-day government activities.

Due to the complexity associated with the program, investing in capacity building and training for public officials and stakeholders is essential. This ensures that all parties involved have the necessary skills and knowledge to effectively manage and implement the public asset protection program. It is also essential to embed the programs in the government's regular activities, such as public asset management, where the decisions about insuring an asset or allocating budget for a premium are made as part of asset lifecycle considerations.

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Domestic Financial Markets For Resilience

VII Agricultural Insurance

Snapshot: Agriculture insurance protects farmers, agribusinesses, and governments from financial losses due to natural disasters, extreme weather events, pests, and diseases. There are two basic types of agricultural insurance products or policies: (i) indemnity-based agricultural insurance to protect against physical loss or damage to the insured crop or animal based on field assessment of the actual loss; and (ii) parametric or index-based agricultural insurance to provide pre-specified pay-outs based on an index that is expected to be related to actual losses (for example, level of rainfall, or satellite observation of vegetation). These can be assessed remotely, quickly, and cheaply.

Key Takeaways:

1

Public-Private Partnership.

Successful agricultural insurance programs for smallholder farmers in low- and middle-income countries are typically based on government support in the form of a Public-Private Partnership (PPP). The government can play various roles, including: (i) creating an enabling legal and regulatory framework; (ii) fostering awareness, education, and training; (iii) collecting and distributing good quality data; and (iv), in some cases, risk sharing with the private sector.

2

Market segmentation and the need to deliver tailored products.

Agricultural insurance products must be targeted to specific contexts, needs, and objectives. For instance, products and services for semi-commercial farmers who access credit for investment will not be appropriate for subsistence farmers, who are provided with social insurance to protect welfare and food security. Agricultural insurance is not a panacea for all small farmer development problems. Rather, it is a tool to transfer unmanageable risk(s) from farmers to insurers.

3

Premium financing.

Where governments provide premium financing, they should exercise fiscal prudence to ensure sustainability and scalability. Premium subsidies should be based on clearly defined strategies to achieve stated objectives. For example, timebound partial premium financing may be needed to scale up fledgling agricultural insurance markets and demonstrate value for commercial and semi-commercial farmers; alternatively, higher levels of premium financing could be justified to achieve social protection objectives for the most vulnerable subsistence farmers.

VII Catastrophe Insurance for Households and Businesses

Snapshot: Catastrophe insurance is a type of insurance that can protect individuals and businesses from the financial losses associated with catastrophic events, such as natural disasters (for example, earthquakes, hurricanes, and floods) and other large-scale disasters. It often includes specific clauses defining the event and the coverage period. It can also be an addition to a normal insurance policy covering direct damage or a separate coverage policy.

Key Takeaways:

1 The development of catastrophe insurance faces supply and demand challenges across the world.

In most emerging economies, the use of catastrophe insurance is very limited. Households often do not buy insurance, frequently due to a lack of affordability, familiarity, or culture of insurance. Instead, they rely on the government to step in with post-disaster aid. The supply of insurance may also be inhibited in many countries because of a lack of technical expertise and suitable products, or due to limited risk capital to insure against such systemic shocks (for example, natural disasters). Additionally, there is often a lack of dedicated supervisory and regulatory frameworks to ensure the sustainable and high-quality provision of insurance. Risk data and understanding are often a limiting factor, which can lead to both a lack of demand and capacity in the industry to price and manage risk.

2 Government role in catastrophe insurance.

Governments play a key role in enabling sustainable catastrophe insurance protection. This can include: (i) regulating and supervising the market; (ii) issuing regulations to make insurance mandatory, which can lead to higher levels of penetration; (iii) sharing risk-enabling catastrophe insurance (for example, guarantees or risk pooling); or (iv) providing risk data and other information.

3 Some key considerations to putting in place an insurance program include.

a Building Requirements.

This include identifying the objectives and outcomes that are to be achieved, including public policy and product requirements, as well as an understanding of the risk and how risk modelling works — including each of the steps required to build a catastrophe model.

b Design and Development.

This includes the consideration of the different financing structure options, the role of Public-Private Partnerships, and the types of products available, such as the differences between indemnity and parametric insurance.

c Solution Implementation.

This covers the insurance contract and the ongoing review and monitoring — before exploring the many components that are required to be in place for an efficient and effective claims management system.

Using this Notebook

We hope this notebook is useful to you during the Europe and Central Asia (ECA) and Middle East and North Africa (MENA) Executive Education Program. We believe that it will support your learning process. Throughout the program, we will encourage delegates to capture and convey their thoughts and action points. The aim is to facilitate personal reflection, safeguard knowledge that is of specific interest to you, and help inform your conversations during the event. We also hope that you will take home valuable ideas and lessons.

We encourage you to reflect each day by taking a few notes. These are some of the questions you could reflect on and answer:

What are the three key takeaways hom the session or day?

What questions do you still have?

What action does this inspire you to take?
Who do you want to follow up on?

Who did you meet? What did you learn from them?

The workbook is a valuable resource to take home and to your job. It will help to ensure the commitments you made continue long after you have completed the program.

You will find a glossary of terms in the following pages of the notebook for your reference. During the program, if a term is presented that you are unfamiliar with and not included in this glossary, please make note of this, or ask one of us!

We hope you enjoy and learn from our ECA and MENA Executive Education Program.

The WBG team

Glossary of Key DRFI Terms

Term	Definition
Average Annual Loss (AAL)	The average of expected (or potential) loss in a given year. It is calculated as the sum of all expected/simulated losses over a period of time, divided by the number of years. Also known as the Annual Expected Loss (AEL).
Basis Risk	The risk that the payment received from a financial instrument or arrangement does not accurately reflect the actual losses suffered by the insured party due to a disaster. This mismatch occurs when the payout is triggered by predefined parameters that may not fully capture the specific losses experienced by the insured.
Catastrophe Bond (CAT Bond)	An insurance-linked security providing for payment of interest and/or principal to be suspended or canceled in the event of a specified catastrophe, such as an earthquake of a certain magnitude (or above) that occurs within a predefined geographical area.
Contingent Credit	A financial tool that provides governments with immediate access to funds following disaster events to enable a more rapid and efficient response.
Indemnity Insurance	An insurance policy that pays claims based on an assessment of actual insured losses incurred by the policyholder in line with the terms of the insurance contract.
Index Insurance	An insurance policy that pays claims based on an index, such as those based on rainfall or windspeed. These are chosen to be a good proxy for the economic losses incurred by the policyholder.
Parametric Insurance	A type of insurance that is triggered by the occurrence of a specific measured hazard event, such as a certain magnitude of earthquake or category of cyclone. This parametric approach is common for catastrophe risk insurance to cover against major hazards. It can be an alternative to indemnity insurance.
Probable Maximum Loss (PML)	The largest loss that is believed to be possible for a certain type of event in a defined return period, such as a 1 in 100 years event or a 1 in 250 years event.
Return Period	The "return period" is a statistical measure used in risk assessment, that refers to the average interval of time between events of a certain intensity or size. Return periods are used to assess the likelihood of extreme events.
Risk Pool	The aggregation of individual, imperfectly correlated risks with the aim of smoothing combined loss experience. This is the fundamental principle and rationale for insurance.
Risk Retention	The process whereby a party retains the financial responsibility for loss in the event of a shock.
Risk Transfer	The process of shifting the burden of financial loss or responsibility for risk financing to another party, which can be achieved through insurance, reinsurance, legislation, and/or other means.

Our Resources

To see a more extensive DRFI glossary, please follow this QR code

To download a Primer on Fundamentals of disaster risk finance and insurance, please follow this QR code

To access our extensive resources on disaster risk finance and insurance, including knowledge material, publications, news, blogs, podcasts, and interviews, visit our Financial Protection Forum website

Join our community and be more involved!

Disaster Risk Finance and Insurance Community of Practice

The Disaster Risk Finance Community is a global community of 7,500+ practitioners coming together to curate knowledge and share best practices.

Join the community today!

Membership sign-up form

DRFI LinkedIn Group

Join our LinkedIn Community to network with Disaster Risk Finance professionals. Follow the latest news, events, updates, and discussions.

Join our LinkedIn Group today!

Join the LinkedIn Group

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