

# Disaster Risk Financing in APEC Economies

**PRACTICES AND  
CHALLENGES**

EXECUTIVE SUMMARY



This document contains the Executive Summary of *Disaster Risk Financing in APEC Economies: Practices and Challenges*, which was delivered to APEC Finance Ministers for their meeting on 19-20 September 2013 in Nusa Dua, Bali, Indonesia.

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## Background and Main Results

In their Joint Ministerial Statement of 30 August 2012, APEC Finance Ministers highlighted the importance of strengthening resilience against disasters in the region through the introduction or expansion of risk sharing and risk transfer markets and products. They called for the exchange of knowledge and information on good practices regarding financial strategies among APEC member economies. In pursuing this initiative, APEC Finance Ministers aimed to complement the work already undertaken in 2012 by the G20, who endorsed last November the G20/OECD Methodological Framework for Disaster Risk Assessment and Risk Financing.

Prepared by the OECD in cooperation with the Asian Development Bank, UNISDR and the World Bank, this report provides a survey of disaster risk financing practices within APEC, including implementation challenges. It constitutes the first step towards promoting effective and widespread implementation of the G20/OECD Methodological Framework in the APEC region and beyond in the area of disaster risk financing. This report is based on a survey questionnaire circulated to APEC economies, the responses to which now constitute an inventory available to member economies.

The report shows that efforts have been made within APEC to promote financial resilience against disasters, although important implementation challenges exist. Key priorities for future work have thus been identified in this field.

Initiatives have been undertaken within APEC to strengthen disaster risk assessment and modelling. The results have been used for multiple applications: from emergency management, urban planning, and risk reduction investments, to budgetary planning and risk transfer and financing. Efforts are also being made to improve the collection and analysis data on hazards, exposures, vulnerabilities and losses. Notwithstanding progress in this area, developing an accurate risk assessment based on quantitative approaches remains a challenge for governments.

Private insurance is one of the main risk financing tools that businesses and households may use to strengthen their capacity to withstand the financial impacts of disasters. APEC economies are seeking to enhance the availability and penetration of disaster insurance. Institutional arrangements have been established in some economies to support private-sector development of products. Initiatives have also been undertaken to ensure that the financial sector is sound and resilient, capable of delivering promised payments and financing in the event of a disaster.

To manage their own exposures, many governments within APEC employ a broad range of ex ante disaster risk financing tools, such as government reserves, insurance, contingent credit arrangements and/or catastrophe-linked securities. Other APEC governments, instead, finance disaster risk on an ex post basis – e.g., through budget reallocations, debt financing, increased taxation and international aid – or by adopting an approach that blends ex ante and ex post mechanisms. Risk pooling of disaster risks at the regional level has been tested by some smaller economies, with a view to achieving mutual risk sharing and economies of scale when accessing the international reinsurance marketplace.

Among the top priorities for strengthening financial resilience in the APEC region, the improvement of the availability and quality of data on hazards, exposures, vulnerabilities and losses deserves special attention. Key priorities also include the improvement of financial sector resilience to disaster events and the enhancement of technical and institutional capacities and coordination among the various governmental authorities in charge for DRM at the central and local level. Promoting awareness of the financial impacts of disasters and the need for financial protection is yet another priority area. There is also strong interest in fostering the development of disaster risk financing markets, including insurance, reinsurance, and micro-insurance markets.

Many APEC economies have stressed the value of strengthened cooperation and knowledge and information exchange among member economies on topics related to disaster risk financing. Such cooperation and exchange of knowledge and information should focus on addressing APEC member economy priorities and support capacity building and the evaluation of disaster risk financing strategies and policies within member economies.



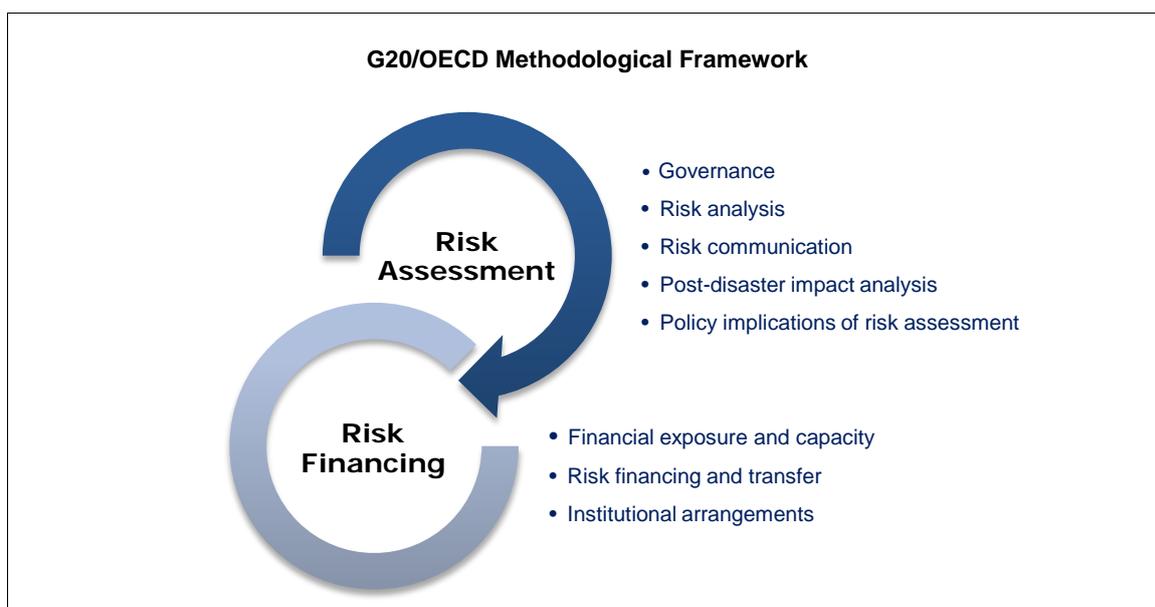
## EXECUTIVE SUMMARY

### Introduction

Recent years have witnessed an impressive concentration of disaster events in the Asia-Pacific region, causing major human, social, economic and financial impacts. In 2012, for instance, seven of the ten costliest disaster events, measured by overall losses, occurred in APEC economies. This is not surprising as many APEC economies sit on the so-called “Pacific Ring of Fire”, a region of high volcanic and seismic activity that surrounds most of the Pacific Ocean Basin, or are exposed to severe weather and flood risks.

In their Joint Ministerial Statement of 30 August 2012, APEC Finance Ministers reiterated the importance of strengthening resilience against disasters. They launched an initiative aimed at supporting the exchange of knowledge and practices on financial strategies among APEC member economies, in collaboration with international organisations and financial institutions, with a view to identifying relevant innovations and good practices within APEC.

In pursuing this initiative, APEC Finance Ministers aimed to complement the work already undertaken in 2012 by the G20, who endorsed, last November, the *G20/OECD Methodological Framework for Disaster Risk Assessment and Risk Financing*. The G20/OECD Methodological Framework provides a step-by-step guide for conducting comprehensive risk assessments and linking risk assessment to the development of effective financial strategies, highlighting the central role played by financial policymakers in DRM.



Confronted with disasters that can present fiscal challenges in developed and emerging economies alike and can impair economic development, Finance Ministers can take a lead in the design and implementation of disaster risk financing strategies. These strategies help to ensure that populations, businesses, and governments have the resources necessary to manage the adverse consequences of disasters, thereby ensuring financial and economic resilience.

This report is the main outcome of the APEC Finance Ministers’ initiative on disaster risk financing, supporting the implementation of the G20/OECD Methodological Framework.

Prepared by the OECD, in cooperation with the Asian Development Bank (ADB), the UNISDR and the World Bank, it is directed to APEC Finance Ministers and aims to present examples of policies and practices in disaster risk financing with a view to promoting the exchange of knowledge and practices on financial strategies among APEC members and illustrating progress being made by economies in strengthening financial resilience against disasters within APEC. It also aims to identify challenges that APEC economies have encountered in implementing disaster risk financing strategies.

The examples and case studies are based largely on the responses of participating APEC economies to an APEC/OECD questionnaire. They also build, however, on other OECD work and the work of other international organisations such as the ADB, the ASEAN, the UNISDR, and the World Bank. Examples from non-APEC economies are also presented when relevant to put APEC economy practices into a broader perspective and enrich the report with further inspiring experiences and good practices.

<b>STRUCTURE OF THE REPORT</b>	
❖	<b>Assessment of disaster impacts</b>
❖	<b>Assessment of private disaster risk financing markets and financial sector resilience</b>
❖	<b>Government use of disaster risk financing tools</b>
❖	<b>Promotion of disaster risk financing markets and institutional arrangements</b>
❖	<b>Government compensation and financial assistance arrangements</b>
❖	<b>Fair and efficient deployment of funds</b>
❖	<b>Improvement of public awareness</b>
❖	<b>Conclusions and key priorities</b>

This report complements an inventory that compiles the responses to the APEC/OECD questionnaire. This reservoir of APEC knowledge and practices on disaster risk financing strategies may provide the basis for future work in this area, meant to address key priorities and challenges in disaster risk financing.

## **1. Assessment of future disaster-related financial and economic impacts and tracking of disaster losses**

Disasters present a broad range of impacts, with potentially long-lasting, multi-generational effects. In addition to causing direct damages to lives, buildings, equipment and infrastructure, they may produce major indirect consequences such as business interruption, loss of employment and output, decreased tax revenues, impaired institutional capacities and a rise in poverty levels.

Measuring the costs of disasters, whether conducted as part of a forward-looking assessment or as part of an exercise to estimate damage and losses following a disaster, requires an estimation of financial and economic impacts, both direct and indirect. The risk-bearing capacities of exposed populations, economic sectors and governments must also be assessed, with a view to identifying possible *financial vulnerabilities* or *financing gaps*.

Main findings of the report:

- In some APEC economies, the assessment of financial and economic impacts is built on a comprehensive economy-wide risk assessment process, following an approach that evaluates the impacts of specified worst-case scenarios.
- Probabilistic risk assessment has been employed in other APEC economies as part of a strategy to develop risk financing options for government.
- Pre-disaster impact analysis and risk modelling are also being used to address specific DRM purposes, such as emergency management, zoning and urban planning.
- A number of APEC economies are making efforts to identify financial vulnerabilities within the population and economy in order to better understand risk financing needs.
- As a foundation for disaster risk assessment, initiatives have been undertaken to collect data on hazards, exposures, vulnerabilities and losses and elaborate risk maps, in some cases in collaboration with research institutions and the insurance sector.
- For estimating disaster damages and post-disaster needs, methodologies have been developed in some APEC economies to ensure coherence and consistency in estimations.
- Systems, tools, and databases have been established in many APEC economies to track disaster impacts and losses systematically. This data provides input for future risk assessment but is also critical for disaster response and recovery, including disaster aid.
- Despite important progress being made, developing an accurate risk assessment based on quantitative approaches remains a challenge.

The main **implementation challenges** in disaster risk assessment reported by APEC members include the lack of technical expertise, the difficulty in gathering data and information to be able to quantify the economy's full exposure, the time-consuming nature of assessing economic impacts due to the need for a certain level of precision, the constraints in capacities across levels in order to sustain the multidisciplinary tasks involved in catastrophe risk modelling and the lack of systematic funding for these efforts, and the institutional fragmentation of actions, hence requiring an effective coordination among the various stakeholders to ensure appropriate actions. Identified challenges relating to the tracking of disaster impacts and losses include the lack of experts who can estimate the impact of damage to assets and extent of disaster-damaged areas, the low level of human resources capacity at sub-regional government institutions, the lack of a clear standard for estimating damage caused by the disaster, uncertainty regarding some of the costs involved, and the lack of proper information flows within the government.

## 2. Private disaster risk financing tools and financial sector resilience

As emphasised by the G20/OECD Methodological Framework, a comprehensive and integrated approach is required for financial strategies, following an assessment of the availability, adequacy and efficiency of different types of financial tools available to the population and within the economy, as well as of their relative costs and benefits, in comparison with possible further risk reduction to complement or substitute for these tools.

Main findings:

- In a very limited number of APEC economies, the availability and affordability of disaster insurance is not considered problematic, due to a relatively low level of risk.
- In some other APEC economies, although insurance markets are developed, the sizable scale of disaster risks has led governments to provide support for disaster insurance through subsidies or guarantees for insurers, intended to ensure availability and affordability in coverage.
- More generally within APEC and particularly in economies where insurance markets are limited, efforts are being made to enhance the penetration of disaster insurance, for instance through micro-insurance and other innovative types of financial instruments.
- APEC economies are also seeking to ensure that financial institutions are resilient to adverse events such as disasters, which has involved ensuring adequate capital adequacy for extreme risks, liquidity, and robust business continuity plans and arrangements.

**Implementation challenges** linked to private risk transfer markets that have been cited include, on the *demand side*: a weak willingness of people to take out private insurance, due possibly to the expectation of government aid in the event of a disaster or due to inadequate income; an undeveloped insurance culture; a mistrust of the insurance industry due to experiences of mismanagement and unpredictable claims payments; and high premium taxes. On the *supply side*, challenges include: inadequate pricing of disaster risks due to downward undue competitive pressures or insufficiency of data for proper risk assessment; a lack of promotion; lack of human capacity at the regional level; and a lack of adequate disaster risk management tools in many smaller-sized insurers. Challenges related to efforts to strengthen financial sector resilience include the need to ensure effective and timely coordination and communication among supervisory authorities, the level of uncertainty surrounding the occurrence and impacts of natural disasters, and human resource constraints at sub-regional government institutions.

### 3. Government use of disaster risk financing tools

In order to mitigate disaster impacts, governments may complement investments in physical risk reduction with *ex ante* disaster risk financing tools. These *ex ante* financial tools may address short-term (emergency response), mid-term (recovery) or long-term (reconstruction) disaster impacts, and can be used in combination to cover different risk layers, based on the relative frequency and severity of the expected events. The choice of risk financing and transfer instruments should be based on cost-benefit analysis.

Main findings:

- Many economies within APEC employ disaster risk financing *ex ante* tools, including:
  - *Government reserves* such as dedicated contingency reserves for disasters
  - *Insurance* for the protection of public assets and infrastructure
  - *Contingent credit facilities* with an international financial institution
  - *Catastrophe bonds* or other types of alternative risk transfer products
- Many APEC economies establish reserve funds or budgetary mechanisms to ensure the post-disaster aid can be quickly secured and released in the event of a disaster; there is a trend toward enabling a portion of disaster reserve funds to be invested in risk reduction.
- Other APEC economies rely instead on *ex post* financing, for instance through budget reallocations and debt financing, or a mixture of *ex ante* disaster risk financing tools and *ex post* financing.
- Insurance is in some APEC economies purchased to cover public assets against disaster risks; a number of economies have highlighted the need to conduct cost-benefit analysis of available options, of which insurance is one option.
- There is interest in the pooling of disaster risks at the regional level to allow smaller economies to benefit from mutual risk sharing and from economies of scale when accessing international reinsurance markets.

**Implementation challenges** highlighted by APEC economies include the lack of financial resources to be committed *ex ante* to disaster risk financing tools, both at central and local levels of government, the lack of information sharing among government divisions and communities, the lack of proper documentation to demonstrate the credibility of risk assessments, and the unavailability of a proper legal and regulatory framework for the design and implementation of market-based sovereign risk transfer mechanisms.

#### **4. Private market solutions for disaster risk financing and establishing institutional arrangements**

As highlighted by the G20/OECD Methodological Framework, promoting financial protection within the economy can serve to better protect populations against disasters, reduce government exposures, and provide signals regarding needed risk reduction measures.

Following the assessment of financial vulnerabilities and possible financing gaps, targeted policies and measures can be established to support the development and sustainability of private sector solutions for disaster risk financing and to promote widespread access to such markets. These measures include:

- Strengthening the legislative and regulatory framework for the financial sector, especially the insurance sector, to encourage the development of specific instruments or the coverage of specific risks, for instance by enacting special regulatory regimes for parametric products, micro-insurance schemes or catastrophe-linked securities; introducing tax incentives for insurance; and enabling the use of insurance as a risk management tool for public entities.
- Establishing a financial scheme by industry, government or both.

Main findings:

- Legal, policy and regulatory measures have been developed in a wide range of APEC economies to promote the availability and affordability of disaster risk financing tools, including insurance and micro-insurance, particularly for vulnerable populations or sectors of the economy.
- In APEC economies where private disaster risk financing markets such as insurance are not yet developed, government resources are severely constrained, or the paying capacity of the most vulnerable layers of the population is very low, the promotion of risk financing and transfer tools has led to the introduction of innovative products, instruments and solutions.
- With the agricultural sector occupying an important place within many APEC economies, and being one of the sectors most affected by disasters, special efforts have been made to promote relevant disaster risk financing tools, such as micro-insurance and index-based risk transfer products.
- Innovative insurance solutions have also been developed within some APEC economies to meet the needs of smaller lending institutions seeking to reduce credit risks linked to disaster events.
- In APEC economies with more developed insurance markets, different forms of disaster insurance schemes have been established to address perceived market failures and encourage widespread disaster coverage, with the government potentially acting as direct insurer, reinsurer, or ultimate guarantor depending on market capacities and other factors.

Concerning **implementation challenges**, the establishment of index-based risk transfer schemes requires significant investments in technology, as well as extensive and high-quality data sets to model the hazard and quantify loss probabilities. Risk market infrastructures, including legal and regulatory framework and delivery channels, are also critical to scale them up. One of the major hurdles to be overcome in implementing a sustainable market for index micro insurance products is the lack of financial literacy; knowledge transfer and communication to the cooperatives and microfinance institutions – and, more generally, to all potential users – is, therefore, required. Another challenge is to move beyond financial support provided by international donors for these products and make the schemes commercially viable, yet affordable. Regarding disaster insurance schemes, the lack of an insurance culture was identified as an obstacle to establishing a compulsory scheme of disaster insurance.

## 5. Government compensation and financial assistance arrangements

Government compensation or financial assistance arrangements are intended to address financial vulnerabilities where private coverage by disaster risk financing tools may be lacking or unobtainable at an affordable price.

Main findings:

- In some APEC economies, disaster aid schemes have been created to cover basic living expenses and losses due to disasters; these programmes are designed to ensure timely appropriations or release of funds, thereby ensuring rapid disbursement of disaster funds for emergency assistance, social protection, recovery and reconstruction.
- Within APEC, such schemes are financed on either an *ex ante* basis, taking the form of a governmental reserve fund (which could, as shown by one economy, leverage risk financing markets to augment capacity), or an *ex post* basis, with appropriations made when needed.

The main **implementation challenges** identified by economies include establishing disbursement procedures for a timely yet accountable process for providing aid and criteria to fairly allocate limited available financial resources among different categories of disaster victims.

## 6. Fair and efficient deployment of funds

Securing a fair, timely and efficient disbursement of funds for disaster relief, recovery and reconstruction is a key component of effective disaster risk financing strategies. Not only must financial resources for disaster response and reconstruction efforts be available following a disaster event, they must also be deployed in a well-timed and targeted manner.

Main findings:

- **Some APEC economies have improved efficiency, transparency, and accountability in disaster compensation, both public and private, by:**
  - **Establishing *ex ante* clear and streamlined administrative procedures and guidelines for the disbursement of public and/or international donors' funds after an event**
  - **Appointing an independent body tasked with reviewing public disaster spending**
  - **Monitoring the performance of insurers in their claims management, with a view to ensuring fairness in the treatment of claims and speed in compensation.**

Concerning **implementation challenges**, the main obstacles identified by APEC economies are the lack of resources, the lack of specialised personnel, and the practical difficulties in establishing procedures that allow for speedy compensation while guaranteeing transparency and accountability.

## 7. Public awareness of the financial impacts of disasters and the need for financial preparedness

Disaster risk awareness is a key element of DRM strategies. Promoting awareness of the financial impacts of disasters and the need to plan for – and mitigate – these impacts through financial strategies, including investment in financial tools and physical risk reduction measures, can boost financial resilience.

Main findings:

- **In some APEC economies, awareness and financial preparedness have been enhanced by communicating information on disaster impacts and providing information about the availability and main characteristics of disaster risk financing tools.**
- **Many APEC economies have launched campaigns seeking to raise public awareness about the importance of preparing for disasters; some economies have launched campaigns specifically focussed on the financial impacts of disasters and the need for financial preparedness.**

As regards **implementation challenges**, a number of APEC economies recognised that improving financial literacy and the financial culture is a complex process, requiring substantial investment of time, resources and organisational capacities.

## 8. Conclusions and key priorities for strengthening financial resilience in APEC economies

The concentration of catastrophic risks in the Asia-Pacific region, the high economic losses inflicted by natural hazards and man-made threats in the recent past, together with the expected impacts of future potential events, make financial resilience against disasters a key policy objective for APEC economies. This report constitutes the first step towards promoting effective and widespread implementation of the G20/OECD Methodological Framework in the APEC region and beyond in the area of disaster risk financing.

While the G20/OECD Framework underscores the central role played by financial policymakers in DRM and provides a general framework for action, this report provides practical illustrations of the concrete ways in which the step-by-step action items can be implemented in different economies, including those with scarce financial resources and limited insurance markets and infrastructures. It shows that relevant actions can be taken even in economies where the paying capacity of the most vulnerable layers of the population is severely constrained.

The specificities of local disaster risk exposures, the historical development of private insurance, reinsurance and financial markets and the insurance culture, the legal and administrative frameworks, the level of economic development and financial capacities within the economy among other factors contribute to shape domestic and regional risk financing strategies across the APEC region. Given the diverse economy profiles that collectively comprise APEC, policies designed to manage the financial impacts of disaster risks are not fully replicable from one economy to another. Keeping this in mind, illustrative practices – such as those presented and discussed in the report – facilitate learning across economies and can help to identify viable risk financing options that can be adapted to each economy's circumstances and thus implemented.

Among the *top priorities for strengthening financial resilience in the APEC region*, the improvement of the availability and quality of data on hazards, exposures, vulnerabilities and losses was highlighted by several member economies. At the international level, the existing discrepancies have led to calls for in-depth reviews of data collection and dissemination practices. Finance Ministers and other public and private institutions concerned would benefit from the promotion of regional and international co-operation and synergies in the collection and sharing of data on disaster risks, as well as in the modelling of the nature of these risks. The development of an international risk assessment platform which amalgamates the risk assessments of economies within proximity to one another, for instance, was identified as a tool that could prove useful for developing a common regional perspective of risk.

Key priorities also include the strengthening of financial sector resilience, including business continuity planning, and the enhancement of technical and institutional capacities and coordination among the various governmental authorities in charge of DRM at the central and local levels. Promoting awareness of the financial impacts of disasters and the need for insurance protection is yet another priority area. APEC economies are also seeking to foster the development of disaster risk financing markets and enhance insurance market penetration.

Many APEC economies have stressed the value of strengthened cooperation and knowledge and information exchange among member economies on topics related to disaster risk financing. Strengthened cooperation can support capacity building and enhance understanding of different disaster risk financing strategies and tools and their potential benefits and limitations, including necessary preconditions, and thus support the development and evaluation of disaster risk financing strategies and policies within member economies.

<b>KEY PRIORITIES</b>	
<b>Disaster data</b>	Improving the availability, consistency and quality of data on hazards, exposures, vulnerabilities and losses for a full range of applications: from domestic and regional risk assessment, to zoning, planning and emergency preparedness, to risk modeling and financing
<b>Technical and institutional capacities</b>	Strengthening technical and institutional capacities in disaster management, risk assessment, and risk financing Building proper capacities within Ministries of Finance
<b>Domestic and regional coordination</b>	Enhancing coordination among the various domestic stakeholders in disaster management Supporting international risk assessment, which can enhance regional perspectives on risks and risk reduction and recognition of interlinkages and interdependencies among economies
<b>Financial capacities and disaster risk financing markets</b>	Enhancing the financial capacity to deal with disasters by promoting the development of disaster risk financing tools and markets
<b>Financial sector resilience</b>	Ensuring financial sector resilience, including through business continuity planning
<b>Deployment of funds</b>	Securing a fair, timely and efficient disbursement of funds for disaster relief, recovery and reconstruction, while ensuring transparency and accountability
<b>Risk awareness and financial preparedness</b>	Promoting awareness of the financial impacts of disasters and the need for insurance protection
<b>APEC Finance Minister and officials network</b>	Promoting cooperation and the exchange of knowledge and information on good practices and challenges regarding disaster risk financing strategies among APEC Member economies





# Disaster Risk Financing in APEC Economies

PRACTICES AND CHALLENGES

## EXECUTIVE SUMMARY

[www.apec.org](http://www.apec.org)

[www.oecd.org/finance](http://www.oecd.org/finance)

