

Support Action for Strengthening PAlesthine capabilities for seismic Risk Mitigation SASPARM 2.0

Deliverable DE3 “Guidelines for earthquake insurance coverage”



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1. Guidelines

1.1 Introduction

Governments have various tools to manage the financial impacts of earthquakes, including investments in risk reduction and public awareness and use of risk transfer tools to absorb significant post-disaster costs. A key challenge for governments is determining the most effective and efficient use of public resources for managing disaster risks along with the multiple decisions on prevention, risk reduction, and financial protection that rely on that assessment.

As emphasized by the G20/OECD Methodological Framework for Disaster Risk Assessment and Risk Financing (2012), 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.

Private insurance is one of the main risk financing tools for businesses and households to strengthen their financial resilience against disasters, complementing investments in risk reduction. Risk transfer instruments such as insurance allow for the shifting of a portion of disaster risks to others, in exchange for a price, and for the spreading of such risks.

The financial sector and, in particular, the insurance sector can be called upon to play important roles in this field, depending on the stage of development of these markets, the robustness of their infrastructures, the level of capitalization, solvency and soundness of insurance undertakings, as well as the financial depth of the economy.

At present **not only traditional insurance and reinsurance contracts** can be considered as part of risk financing solutions for earthquake risk, but also **parametric insurance and innovative financial products developed in the capital markets**, which may be accessed by large corporations, insurers, and governments.

The availability and cost of these instruments is influenced by **uncertainties characterizing the risk assessment process**: supplying reliable and consistent data on hazards, exposures and vulnerabilities, or at least facilitating their collection, recording, storage and dissemination can greatly enhance the capacity of markets.

The size of potential losses from an earthquake event, **the ability to establish a diverse pool of insured risks** as well as the level of uncertainty in estimating potential losses, particularly

in the context of a changing climate, constitute relevant impediments to the insurability of earthquake risk in many countries.

Several states continue to rely on a **purely *ex post* approach** to the funding of earthquake losses. This approach entails **several limitations**: in many cases it proves to be cost ineffective and untargeted; delivery of compensation is often too slow and, if the hazard risk exposures are significant, the fiscal burden may be unsustainable for the public authorities in the long run. Moreover, *ex post* allocation of public funds to meet critical needs may divert resources from other projects, and critical decisions have to be made under political pressure, not to mention the likelihood of inequalities in treatment and possible social discontent.

The key challenge is to take a **long-term view and promote the adoption of appropriate protective measures** before earthquakes occur, in partnership with the private sector and all relevant stakeholders. In this perspective, risk financing and risk transfer tools, such as insurance, reinsurance and catastrophe-linked securities, can play a fundamental role in reducing the negative economic impacts of earthquakes.

Fiscal rules may also be reoriented towards the above mentioned policy goals. Taxes, in fact, are the major tool by which the governments direct and influence the reallocation of resources necessary to achieve a nation's economic and social objectives.

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 earthquake risk financing and to promote widespread access to such markets.

These measures may include:

- a) Strengthening the legislative and regulatory framework for the financial sector (especially the insurance sector) or amending this framework to facilitate and encourage the development of specific instruments or the coverage of specific risks (e.g., enacting special regulatory regimes for parametric products or cat-linked securities, introducing tax incentives for private insurance coverage);
- b) Establishing a financial scheme by industry, government or both, including by means of **Public-Private Partnerships (PPP)**.

1.2 Institutional arrangements

Institutional arrangements - or the frameworks, systems, organizations, instruments, rules, and processes established to promote the financial management of earthquake risk - may be necessary to support private-sector development of products designed to provide needed

financial tools for identified vulnerable populations or sectors of the economy. Institutional arrangements may also facilitate the coordination between public and private sector efforts in various fields, such as data collection, risk modelling and assessment, risk reduction and risk awareness. **PPP** also allow for risk sharing among governmental institutions, private sector (reinsurance industry) and civil society. These arrangements may be complemented by special subsidies or tax incentives.

A crucial element of effective compensation schemes is that such schemes provide **fair, timely and efficient disbursement of funds for earthquake relief**, recovery and reconstruction. Not only must financial resources for emergency response and reconstruction efforts be available, they must also be deployed in a well-timed and targeted manner.

Clear and streamlined legal and administrative procedures, including *ex ante* specific procedures for the disbursement of public and/or international donors' funds in the aftermath of an event, are key for ensuring a fair and efficient distribution of funds and promoting transparency and accountability at the public sector level.

In conclusion, the following policy objectives shall be considered in the development of financial management strategies aimed at coping with earthquake risk:

- Ensuring that *financial vulnerabilities within the economy are addressed through adequate and efficient compensation mechanisms*, whether public or private
- Ensuring *proper fiscal management* of earthquake risks by anticipating potential budgetary impacts and planning ahead to ensure adequate financial capacity and rapid release of funds
- Establishing *clear rules regarding post-event financial compensation* to enable rapid compensation, demonstrating solidarity and ensuring sound incentives
- Ensuring the *soundness and resilience of the financial sector* with respect to earthquake risk, including through proper regulation, business continuity planning, and stress testing
- Ensuring the *optimal allocation of resources for earthquake risk management*, including assessment of the cost-effectiveness of major public investments in structural and non-structural earthquake mitigation measures, including ecosystem-based approaches

Legal, fiscal and institutional approaches in this field should seek to ensure the adequacy of financial resources to meet the costs of disaster events, with the overall goal of strengthening financial resilience within the population and economy.

Against this background the role of the government in any financial scheme will be governed by the nature of the scheme, policy objectives, and an assessment of the extent to which the

government should assume the costs of disaster risks to be covered by the scheme. For pure compensation schemes, the government will directly assume responsibility for the financial liabilities specified by scheme (possibly co-shared with other levels of government), which must be funded either on an ex ante basis through reserves and other financial tools or on an ex post basis through budget reallocations, debt financing, and the like. Existing institutional arrangements for disaster insurance involve the government assuming different types of roles:

- **Backstop liquidity provider:** The government provides liquidity, through a pre-arranged loan facility, to insurers to relieve funding pressures and enable them to make payments on a potentially large number of claims linked to a catastrophic event. This arrangement can take the form of liquidity facilities provided to an entity established to reinsure disaster-related liabilities. Under this approach, insurance companies retain the ultimate risk, but the government provides risk financing to address immediate short-term liquidity needs or help to smooth catastrophe losses over time.
- **Reinsurer:** The government or a special entity established by the government assumes some or all of the liabilities assumed by insurers in connection with disaster risks, and then possibly cedes some or all these risks to global reinsurance markets. This arrangement is aimed at removing industry exposure to peak risks. It may be justified if insurers can retain a portion of the risk, but there is not enough reinsurance capacity on the private market to provide the required risk transfer arrangements. It may also be part of a broader institutional arrangement in which there is mandatory offer, purchase, or extension of disaster risk coverage, and thus may be aimed at protecting insurer sector solvency.
- **Direct insurer:** Alternatively, the government or a special entity established by the government in some countries directly provides disaster insurance. Some or all of these risks may be ceded to global reinsurance markets. This approach may be a response to a situation where the private insurance sector is unwilling or unable to provide any coverage of disaster risks. While there is no risk sharing with the insurance industry, private-sector operational capacity is often used to perform such functions as marketing, premium collection and claims handling on behalf of the government.
- **Guarantor:** Where institutional arrangements exist, governments often explicitly guarantee some or all of the liabilities assumed in connection with disaster risks. Such a guarantee might arise in connection with a special purpose entity, pool or fund created to cover catastrophic risks to ensure that it will meet all its obligations. Thus, the role of guarantor can be combined with other risk financing or risk transfer functions provided by the government. The guarantee may be capped, with a threshold after which losses may be recouped against, for instance, policyholders (e.g., special premium surcharge, reduction in claims).

See Table 1 below for an overview of the advantages and disadvantage of each of the main approaches (liquidity provider, direct insurer, reinsurer).

Table 1
Schemes designed to support disaster insurance

	<i>Advantages</i>	<i>Limitations</i>
Backstop liquidity provider	<ul style="list-style-type: none"> • Appropriate where risks are more easily managed by the industry 	<ul style="list-style-type: none"> • Depending on pricing, terms and conditions, may crowd out capital market solutions
Reinsurer	<ul style="list-style-type: none"> • May be implemented easily and quickly • Seeks to maintain, to the greatest extent possible, industry involvement and may help to limit fiscal exposure • With industry retaining the first layer of loss, aligns incentives of insurance industry with the reinsurance provider • Able to fine-tune risk-sharing and, should circumstances warrant, gradually withdraw government support 	<ul style="list-style-type: none"> • Depending on the extent of compulsion, pricing, terms, and conditions of the reinsurance, may crowd out reinsurance market capacity and inhibit the development of capital market solutions
Direct insurer	<ul style="list-style-type: none"> • Promotes widespread financial coverage • Able to introduce social objectives into coverage should there be a need 	<ul style="list-style-type: none"> • May discourage adaptation and innovation in insurance markets in the long run • May be difficult for the government to limit fiscal liability or to exit without disruption

1.3 Compulsory or quasi-compulsory insurance schemes

The mandatory nature of the disaster insurance scheme is often cited as a key component of several institutional arrangements implemented in the OECD area, where different forms of compulsory or quasi-compulsory catastrophe insurance schemes have been set up. However, one must clarify the meaning of “mandatory” under a scheme.

Some countries have made the purchase of catastrophe insurance coverage mandatory: this is the case, for instance, of Turkey (earthquake) and Iceland. The purchase of fire and natural disaster insurance is also mandatory in the Swiss cantons of Schwyz, Uri and Obwalden. Others have simply required insurance companies to make catastrophe insurance available, by introducing a mandatory offer of coverage that can be declined by the policyholder: this is how the Japanese and the Californian earthquake schemes work.

In a number of countries, moreover, fire or other first party insurance policies are marketed on a voluntary basis, but insurance companies are required by law to include coverage for catastrophic risks in such policies: this is the case, for instance, in Australia (terrorism),

Belgium, France (natural catastrophes, terrorism and technological disasters), New Zealand (earthquake), Norway, Spain and Switzerland (with the exception of the cantons of Schwyz, Uri and Obwalden, where fire and natural perils coverage is mandatory). Finally, the mandatory component of the scheme may concern the participation of private insurance companies in special pooling and/or reinsurance arrangements, such as the Natural Perils Pool in Norway. In this respect, it is important to note that different levels of compulsion reflect different policy objectives and market conditions, and have different advantages and disadvantages:

- The **mandatory offer of catastrophe insurance** is consistent with the goal to ensure that disaster coverage is available on the market, so that businesses and individuals who are willing to purchase financial protection can do so. However, low risk awareness or cognitive biases that may affect the demand side could lead to sub-optimal take-up rates, since prospective policyholders, who are not obliged to purchase catastrophe coverage, would not be able to make rational decisions. As a result, there could be several individuals who realize too late that they made the “wrong” decision when they elected not to purchase coverage; moreover, if the penetration rate remains very low, this may generate insufficient risk pooling.
- The **mandatory purchase of catastrophe insurance** is consistent with the objective of making sure that all those exposed to disaster risks, willing or unwilling, are covered by insurance, at least up to a certain extent. While this option - assuming that an effective enforcement mechanism is in place - ensures widespread diffusion of catastrophic risk coverage, it may be unpopular; it is, in fact, paternalistic, in the sense that it limits private autonomy, forcing everyone to purchase coverage. Such a choice may be justified by the above mentioned constraints to rational decision making that may affect the demand side, but also by the risk of negative externalities (i.e., situations when individual’s actions impose costs on others which are not reflected in the private cost function of the agent) and/or opportunistic behaviours: it may be argued, for instance, that the individual decision not to purchase financial protection against catastrophes *ex ante* imposes costs on the society as a whole (i.e., social costs), in terms of required post-disaster aid and/or negative macroeconomic consequences. More generally, this policy choice becomes less unpopular if the government is able to explain how, under the circumstances, a mandatory disaster insurance scheme can save taxpayers’ money as compared to other mechanisms to compensate for disaster losses. To facilitate public acceptance of this option, it could also be explained that risk-based disaster insurance - when correctly priced, affordable, and linked to actionable measures by policyholders - provides financial incentives to encourage investment in cost-effective mitigation measures to reduce vulnerability and, as a consequence, it contributes to the reduction of the social costs of disasters.

- The **mandatory inclusion of catastrophe coverage in basic property insurance policies** (e.g., fire, homeowners, motor) marketed on a voluntary basis can be effective if the penetration rate of such basic policies is relatively high, so that they are used as a “vehicle” to spread catastrophe insurance coverage among businesses and individuals; compared to the mandatory purchase of catastrophe insurance, this option entails a lower extent of compulsion and may, therefore, be less unpopular. However, it may have negative effects on the market for the basic property policy to which the mandatory catastrophe extension applies. First, there is a risk that those who do not perceive the benefits of disaster insurance, or are rationally unwilling to purchase it, may decide to drop the basic property coverage due to the increased cost of the “package”; it shall nevertheless be noted that in some countries the widespread diffusion of basic property policies is due to a requirement imposed by mortgage lenders, so that the decision to drop all insurance coverage would be inhibited by such private commitment. Second, tying different insurance products together (e.g., fire insurance and flood insurance) may distort competition, since policyholders would be forced to choose the same insurance company for the coverage of both risks: this, of course, becomes problematic only if the price, terms and conditions of the compulsory extension of coverage are not mandated by the law.

1.4 Scope of coverage: type of losses

The various OECD institutional solutions differ in terms of type of losses covered. Most of the schemes provide compensation for property damage, but the nature of the property covered may vary (commercial vs. residential properties; private properties vs. public properties and infrastructures, etc.). In France, the CAT NAT scheme covers commercial and residential property damages as well as business interruption losses (but not damages to public property owned by the State). The earthquake scheme in Turkey is also limited to registered residential properties. The coverage offered by the Spanish *Consortio*, on the other hand, includes residential and industrial property damages, business interruption losses, as well as personal injuries and death. The scheme implemented in New Zealand covers direct losses to residential dwellings (self-contained premises used as a home, including apartments), most personal property (excluding some types e.g. motor vehicles and art) and the land immediately around the dwelling. The scope of application of the Japanese earthquake insurance scheme is also limited to residential buildings and household property.

There has been movement towards the inclusion of business interruption losses, as witnessed by the experience of *Consortio* in Spain. Nevertheless, in some countries, including Iceland, the coverage is still limited to property damages.

1.5 Pricing mechanisms

The pricing of catastrophe coverage is yet another feature of the various public-sector schemes and within private insurance markets. While some coordination schemes apply a risk-based pricing mechanism, others have opted for flat pricing, invoking the principle of

solidarity. It is important to recognize the impact of risk differentials across the territory of a country or region and to incorporate such risk differentials in the pricing mechanism, with a view to providing proper incentives for risk prevention and mitigation to those most exposed to risk, while keeping coverage affordable and pricing manageable.

Risk zoning is used for pricing purposes by private insurers in the Czech Republic, Germany, Japan, Mexico, Turkey and the United States, and its use is now also considered in Austria, Belgium and Poland. In the United States, moreover, premiums are heavily based on the prior claims experience of the insured and discounts are available for installing specified equipment such as storm shutters, wind resistant glass and fire suppression systems. Similarly, in other countries premiums are linked to the level of prevention measures; with regard to premiums of earthquake insurance in Japan, the application of different rates depends on the location the material used in the building (wood or non-wood) and special discounts are applied according to construction age and the installation of specific quake-resistance structures. In Turkey, premiums vary across the country depending upon seismicity, local soil conditions, and the type and quality of construction. Risk-based pricing is also adopted by British insurers to cover flood risks.

In France, on the other hand, pursuant to the applicable legislative provisions, pricing of insurance against natural catastrophes is based on a fixed percentage of the basic premium charged for the underlying property insurance policy, without specific risk differentials. In New Zealand, according to the applicable Earthquake Commission Regulation, the earthquake insurance premium is also calculated as a percentage of the amount to which the property is insured, without further differentiations. As a result of a change in the Spanish scheme, for property and business interruption coverage (with the exception of property coverage for motor vehicles, whose price is set at a fixed amount per vehicle) the *Consorcio*'s surcharge is now calculated as percentage of the sum insured, instead of being a fixed percentage of the base premium.

Flat rates are easy to administer and, if coupled with mandatory insurance, may be an effective mechanism to cross-subsidize the cost of insurance across the insured pool, which is consistent with the principle of solidarity. However, this option entails moral hazard and reduces the incentives to adopt cost-effective risk prevention and mitigation measures. Deductibles and coinsurance may help coping with moral hazard, but may not be sufficient. Risk-based deductibles, nevertheless, may be a possible alternative to risk-based premiums, even if the incentive mechanism is different insofar as the reward for the adoption of risk-reduction measures (i.e., a lower deductible in case of future potential losses, instead of a lower premium at renewal) may be perceived as too distant (time wise) and/or uncertain by the policyholder.

Risk-based disaster insurance, if correctly priced, affordable, and linked to actionable measures by policyholders, can provide not only coverage against damage - permitting more rapid economic and social recovery - but also signals to individuals as to the hazards they face, as well as financial incentives to encourage investment in cost-effective mitigation measures to reduce vulnerability, thereby contributing to the risk communication and

education efforts.

Approaches to pricing may need to be more pragmatic in disaster insurance schemes than would normally be the case if the schemes are to be sustainable in the long run and be effective. Nevertheless, risk management incentives should be encouraged.

1.6 Lessons learned

- In the design of a sound financial management strategy to cope with earthquake risk, it is important to consider the following variables:
 - The vulnerability and exposure of the country to earthquake hazard and the risk differentials across the country;
 - The extent of public sector financial resources available for the coverage of emergency relief costs and disaster losses;
 - The policy objectives to be pursued by the strategy (e.g., obtaining liquidity to cover emergency relief costs; protecting public assets and infrastructure exposed to risk; providing full protection to private assets exposed to risk; making coverage available to individuals and businesses, leaving the decision to them; introducing incentives to invest in cost-effective disaster risk prevention and mitigation measures);
 - The financial capacity of the insurance industry (capitalization, access to reinsurance, access to capital market instruments, etc.);
 - The operational capacity of the insurance industry (marketing, premium collection, claims management and payment services, business continuity plans, etc.).
- While governments are often expected to play an important role in the financial management of large-scale disasters, especially for mega-risks, crowding out of private sector initiatives and moral hazard should be avoided or at least limited.
- Public and private stakeholders should be made aware of their respective roles and responsibilities. The clear and transparent allocation of risks and responsibilities among public authorities, firms and individuals is a key component of effective coordination schemes, and a driver to the success of any catastrophe risk management program.
- Another critical element is the ability to link policy tools (i.e. the technical features of a coordination scheme) with the underlying policy objectives pursued by the government, such as providing adequate financial protection to all individuals and entities, or simply making coverage available.

- There are great advantages to having an operational private insurance industry: first, the insurance market may be able to absorb some catastrophe risk that would otherwise fall on the government; second, even if there is no sufficient financial capacity in the market to provide meaningful protection, the administrative resources of the private insurance industry can provide a platform for establishing a government funded and directed program. In this respect, insurance companies can perform key services such as marketing of the policies, premium collection, loss adjustment and claim payment.
- In theory, once those who are exposed to disaster risks have been granted access to, or have utilised, financial management tools such as disaster insurance, the public authority should refrain from making *ex post* compensation payments to the victims of catastrophes in a manner that would undermine *ex ante* solutions. It is, however, extremely difficult for the government to make a credible commitment that it will not provide compensation once a catastrophe occurred (this is usually referred to as the Samaritan's Dilemma). In this context, structural catastrophe funds may provide greater transparency and credibility regarding government compensation and may reduce, if not eliminate, the need and demand for *ad hoc* programs.
- Financial management strategies should primarily focus on promotion techniques of prevention, adaptation and mitigation.
- A disaster insurance program should collect sufficient premium income to build reserves to meet the long-term future expected disaster losses.
- Risk-based premiums lower moral hazard and encourage risk prevention, but coverage can be expensive. In the context of a national or regional risk pool, some degree of cross subsidisation may be needed to make the system acceptable and workable. In any case, it is important to recognize the impact of risk differentials across the territory of a country or region and to incorporate such risk differentials in the pricing mechanism, with a view to providing proper incentives to those most exposed to risk, while keeping coverage affordable and pricing manageable.
- Compulsion of catastrophic risk insurance is viewed in several countries as an approach to develop more comprehensive insurance coverage and build national insurance capacity. Insurance penetration (take-up rates) remains an issue in several countries, even if the purchase of coverage is mandatory. This may depend on the insurance culture of the population, on the level of disaster risk awareness and on the "credibility" of the *ex ante* arrangements. If government aid is provided *ex post* to those who have not purchased insurance, then the incentives to purchase coverage are severely reduced. If businesses and individuals exposed to risk perceive that they receive government aid regardless of their purchase of insurance, the resistance to purchasing the insurance will increase. It is advisable to introduce checks on compliance with mandatory insurance requirements.

- Public and private investments in disaster risk reduction and mitigation measures, by limiting exposure and vulnerability to disaster risks, facilitate the development of new risk financing, risk sharing and risk transfer tools. Disaster risk reduction, mitigation and financing efforts, therefore, are closely linked to one another, and should be carefully coordinated by policymakers.