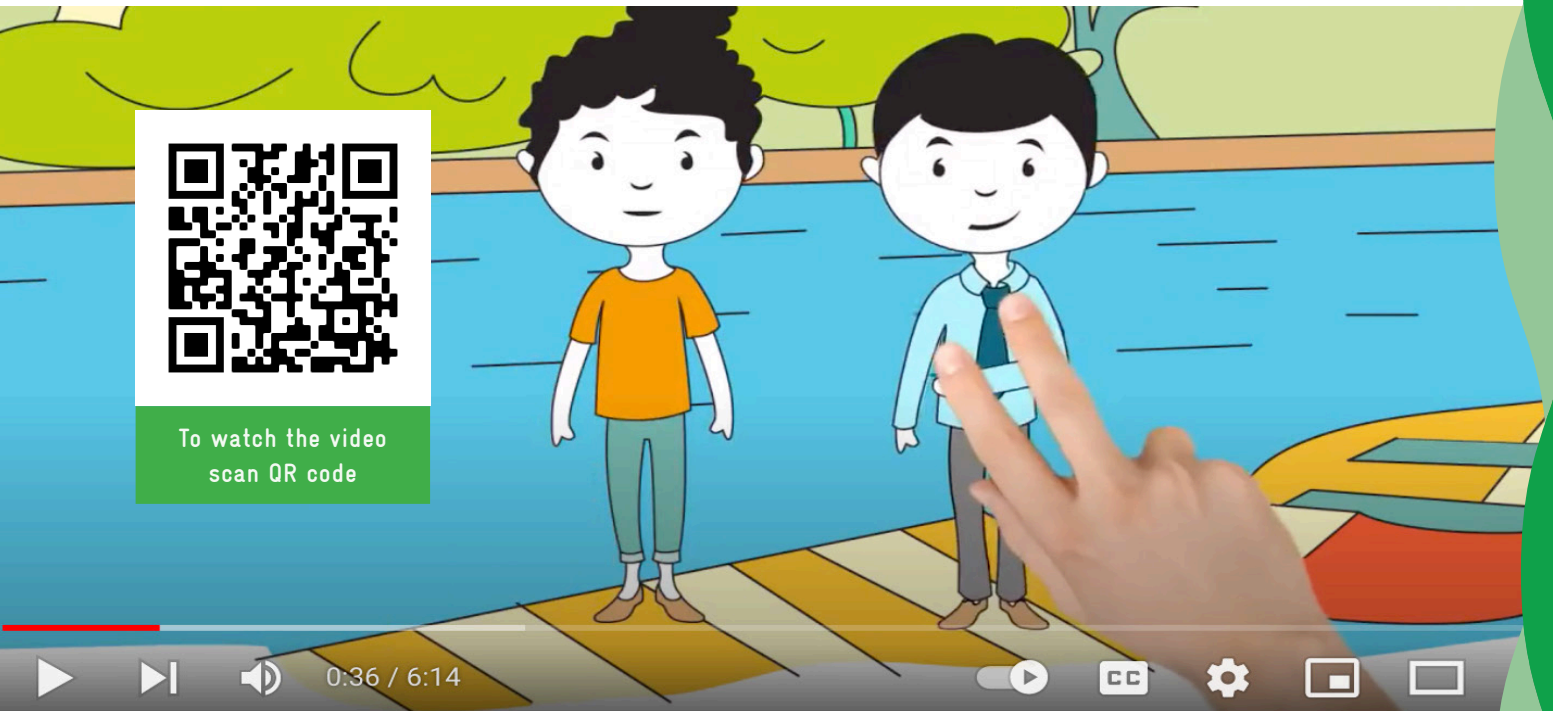


Developing Risk Management Approaches for Climate Risk



BACKGROUND

Loss and damage from natural disasters have increased substantially over the last couple of decades. In 2020, for example, 980 natural disasters struck the world, causing significant economic loss, destroying major infrastructure, and claiming human lives.¹

A single natural disaster can have enormous financial impacts. Some of these damages and losses can be reduced and transferred if appropriate policies and actions are applied. For this reason, Climate and Disaster Risk Management (DRM) has gained importance on international agendas and in many organisations. The main idea behind DRM is to focus on managing the risks that turn hazards into disasters.^{2,3}

Traditionally, DRM approaches focus on the following phases: “Prevention”, “Preparedness”, “Response”, and “Recovery”. However, not all risks can be entirely avoided through the implementation of these phases.

The traditional DRM approach was missing an important phase: “Retention and Transfer”. This phase addresses the issue that, even when all the necessary steps have been taken to reduce risk, some amount of residual risk remains.

On behalf of



WHAT IS AN “INTEGRATED DISASTER RISK MANAGEMENT” (IDRM) APPROACH?

The Integrated Disaster Risk Management (IDRM) approach is a further developed and refined version of the traditional DRM approach. The IDRM approach includes the “Retention and Transfer” phase, which employs financial instruments like insurance to allow funds to be mobilised quickly after a disaster occurs.

Furthermore, the IDRM approach offers a holistic conceptual framework to address various dimensions associated with risk emergence, risk management, and the manifestation of disasters. It is a risk-oriented guide, which incorporates climate change adaptation measures into disaster risk management policies and plans for sustainable development.

Moreover, the IDRM approach explores necessary processes and factors to be considered to assess risk, analyse cost-benefits attributions adaptation management (in all phases), finance those measures, analyse and determine risk retention and transfer capacities, prepare for eminent disaster impacts as well as respond and recover from disaster impacts to build back better.

FEATURES OF THE IDRM APPROACH



The figure above shows how the various stages are interconnected. The outer circle shows the five phases: “Prevention”, “Retention and Transfer”, “Preparedness”, “Response”, and “Recovery”.

The middle circle (in light blue) describes the main activities at each phase. Resilience, in the center, represents a crosscutting aspect that contributes to and benefits from the achievement of integrated disaster risk management.

The unique feature of the IDRM approach is that it builds up dependencies between the five phases and their respective activities. As such, the “risk analysis” activity in the middle circle for example does not only apply to the Prevention phase but can also complement other phases. Thus, the DRM approach, which developed into the IDRM approach, is complete for the first time.

DIFFERENT PHASES OF AN IDRM APPROACH

Prevention

The Prevention Phase aims to reduce (a) the chances of risk incident occurring and (b) the extent of the damage if a disaster occurs. This phase starts with assessing the risk, which includes analysing hazards, exposure, and vulnerability of a particular region or target group.

These first analyses are followed by impact and DRM performance analyses, which measure the effects of extreme weather on people’s lives, ecosystems, economies, and physical infrastructure.

They also measure the effectiveness, affordability, feasibility, scalability, and sustainability of applied DRM mechanisms. The final step in the Prevention Phase involves turning proposed measures into policies.

Retention and Transfer

Even when preventative actions have been taken, some residual risk remains. In the Retention and Transfer Phase, it is important to conduct a cost-benefit analysis to determine which type of pre-disaster financing⁴ mechanisms would be appropriate to adopt.

Risk-retention and transfer mechanisms⁵ enable the quick mobilisation of disaster funds after a natural hazard strike. Implementing a “risk layering”⁶ approach, which combines preventive actions with different risk-retention and transfer mechanisms, can significantly reduce post-disaster financing⁷ and the overall risk exposure.

Preparedness

After analysing the need and suitability of pre-disaster financing, it is vital to prepare for the impact of a natural hazard. The Preparedness Phase aims at enabling rapid and effective response in the aftermath of a disaster.

Important elements include monitoring risk, setting up response structures and procedures (such as conducting a gap analysis, building disaster scenarios, and introducing standard operating procedures), and developing contingency plans.

1 Record hurricane season and major wildfires – The natural disaster figures for 2020 | Munich Re relations/media-information-and-corporate-news/media-information/2021/2020-natural-disasters-balance.html

2 A natural hazard, such as hurricanes, floods, earthquakes or tsunamis, becomes a disaster when it occurs in such a way that people are harmed. For example, a hurricane that is travelling across the sea is a natural hazard. When the hurricane reaches land, destroys buildings, and kills people, it becomes a disaster.

3 Source: the role of insurance

4 Pre-disaster financing refers to measures implemented prior to a disaster occurring, e.g. accumulated reserves, precautionary savings, contingent credit, and risk transfer approaches such as insurance.

5 Risk retention refers to the financial protection through the accumulation of funds set aside for future use or obtained externally through prearrange credit facilities for any losses that may occur. While risk transfer is the process of shifting the financial burden that would be too large for stakeholders to cover on their own to another party such as an insurance company.

6 Risk layering refers to the process of risk identification, risk assessment, and risk management.



The government can build capacity in rescue and emergency services, establish early warning systems, and develop an emergency response plan. By investing in adaptation measures such as forecast-based early warning systems and social protection mechanisms, the government can ensure to buffer the impact of weather-related events.



Response

Relief, emergency aid, and other immediate actions after a natural hazard strikes are involved in the Response Phase. This phase requires immediate action, particularly from the government, delivering relief to individuals and communities, providing temporary shelter and food, and quickly repairing the most needed infrastructure.

Pre-disaster financing plays a big role in making this quick response possible. It may also be necessary to acquire some post-disaster financing by increasing taxes, reallocating national budgets, or taking out credit.



Recovery

Once relief programmes have been implemented and risks of further impact have been minimised, it is time to start the Recovery Phase.

Resilient recovery contains a multitude of sector-specific activities that can be clustered under the following key steps:

1. **setting sector priorities and implementing recovery programs**
2. **adjusting institutional frameworks**
3. **establishing/refining effective coordination and communication mechanisms**
4. **developing standard implementation procedures**
5. **developing a monitoring and evaluation (M&E) system**

With the right assistance, savings, and possible pay-outs from insurance schemes, these steps, as well as and implementing the “build back better” concept in certain sectors will be much easier.

IN WHICH ORDER DO YOU IMPLEMENT AN IDRM APPROACH?

The process generally begins with the Prevention phase. Nonetheless, the Integrated Disaster Risk Management (IDRM) approach sees the various phases mentioned above as time and content-wise overlapping, thus its circular design.

Their relationship is not linear, in that the components do not flow directly into one another and may occur in parallel. Thus, the IDRM approach works best when all stakeholders in each phase are involved in the planning and implementation of the different steps. This is a constant process of (re-)planning, implementing, (re-)evaluating, and adapting strategies and measures relating to the analysis, reduction, retention, transfer of, and response to the disaster (risks).

WHO ARE THE TARGET GROUPS OF AN IDRM APPROACH?

The target groups of an IDRM approach can be categorized into three different levels:

- **Micro-level**
Vulnerable population groups in specific communities, market centers, micro, small and medium enterprises (MSMEs), etc.
- **Meso-level**
Vulnerable population groups in specific communities, market centers, micro, small and medium enterprises (MSMEs), etc.
- **Macro-level**
National governments and ministries, official agencies and departments.

WHAT ARE THE IMPORTANT ACTORS INVOLVED IN AN IDRM APPROACH?

Public sector

Pro-active management of climate risks requires a long-term commitment from the public sector. This includes relevant government ministries, official agencies, and departments such as the ministries of finance, local government and rural development, agriculture, energy, housing, and environment as well as government agencies and departments that are dealing with emergency planning/response, health services, and climate change adaptation. Geoscience experts, meteorological and hydrological agencies provide technical expertise in the assessment of risk.

Private sector

This includes but is not limited to financial institutions that should lead the development process of financial and insurance products in a participatory manner with the respective regulators and supervisors for product approval and an enabling environment.



Furthermore, consulting, modeling, advisory, and think tanks firms can offer risk analysis tools before a disaster strikes while construction companies work on reconstructing damaged infrastructure after a disaster strike. The private sector is an important actor due to different capacities, which the public sector cannot provide.

These actors have specialised in providing particular services, including physical solutions or financial measures, to better deal with extreme weather events, and have the best expertise and experience. The private sector, anyhow, also should be considered as a target group to conduct an IDRM to minimise their risks.

International support and development partners

International and regional policy frameworks (Paris Agreement, Sendai, SDG, etc.), multi-lateral donors (e.g. World Bank, EU, etc.), regional development banks (e.g. ADB, CAF, etc), regional policy frameworks, non-governmental organisations (Red Cross, UNDP, UN-OCHA), bi-lateral donors (e.g. BMZ, DEZA), networks (e.g. InsuResilience, Microinsurance Coalition for Disaster Resilient Infrastructure, etc.) and national development agencies (e.g. GIZ, USAID, SIDA) belong to this group, the latter one in support of the processes on the regulatory environment, product design, and capacity development.

Civil Society Organisations (CSOs)

Most local non-governmental organisations (NGOs), including community-based, faith-based, labour, environmental organisations, or independent research organisations, have a direct link to populations of concern. Therefore, they provide an important bridge function to involve those who are ultimately and directly affected by an extreme event and build trust among beneficiaries.

CSOs usually possess deep insights into strategies and measures traditionally employed by the target groups. They can provide crucial links to better match externally designed measures and internally or traditionally employed strategies to increase the overall efficiency of the implemented risk management solutions.

HOW CAN THE DIFFERENT ACTORS INVOLVED IN AN IDRM APPROACH WORK TOGETHER?

Risk layering asks that the burden of improving resilience has to be spread over various stakeholders according to the need and access to finance, their risk targeting, and ability to invest in adaptation measures. A joint and harmonised effort from the public and private sector with help from international support and development partners and in close cooperation with civil society organisations is key to approaching disaster-risk management more effectively to build long-term resilience against climate risks. Here are some examples:

- National governments should develop a Disaster Risk Finance Strategy for various sectors enabling corridors for stakeholders to become active (risk layering), provide incentives and regulatory frameworks.

- National and local governments should engage with relevant stakeholders, including the community of practitioners, and academics from the beginning of the design of policies and standards.
- The financial industry has to develop products that are demand-driven to finance measures or transfer the risks. This demands an intensive exchange with the target group on how risks can be further reduced, to build up, for example, insurability of risks.
- Governments shall engage with civil society to promote the incorporation of disaster risk knowledge, including disaster prevention, mitigation, preparedness, response, recovery, and rehabilitation, in formal and informal education, as well as in civic education at all levels, and in professional education and training.

Thus, a sustained engagement with civil society ensures locally driven design and ownership of policies as well as risk awareness and education.

TO WHAT EXTENT CAN INSURANCE CONTRIBUTE TO RISK REDUCTION?

The contribution of insurance to risk reduction and resilience depends upon the quality of the insurance tool and whether it has been designed to respond efficiently to the needs of the policyholder or final beneficiaries. Therefore, insurance must be incorporated within an integrated approach to disaster and climate risk management, where its role concerning each element of risk management (prevention, preparedness, transfer, response, and recovery) is determined through a thorough risk assessment.

Insurances are commonly used to manage risks that would be too large for stakeholders to cover on their own. By transferring some of the risks to a third party, insurance can protect institutions from the financial burden due to the loss of assets and livelihoods and thus facilitate efficient recovery after disasters. Thus, insurance as a risk management tool can contribute to the efforts of governments and households to reduce the immediate and long-term financial impact associated with extreme weather events.

As such, insurance holds the potential to incentivize people to start adapting to climate change and develop strategies to reduce their own risk. By being prudent and planning with a long-term perspective in mind, the costs of insurance premiums can go down, thus easing the financial burden on the policyholders.

For example, public authorities can engage in risk reduction activities to lessen the burden of paying high premiums. Essentially, they invest part of their time and labour into, for instance, waste management activities to reduce the risk of flooding, planting grass, and native plants to decrease soil erosion.

The role of insurance in managing disaster risks can be classified into risk reduction and impact reduction.



If well designed, insurance can reduce the chances of the disaster occurring by:

1. **discouraging development in hazard-prone areas as the cost of insuring a building situated there is relatively high,**
2. **encouraging investments in risk reduction (for example, retrofitting a building to safeguard it against floods) in exchange for a reduced premium, and**
3. **reducing exposure by requiring that certain minimum standards are met before granting insurance coverage (for example, building codes).**

Insurance can also reduce the impact of natural disasters by spreading losses over space and time as well as among diverse social and commercial communities. If individuals bear the cost of damage to their homes all by themselves, the impact can be devastating.

However, if they pool their risks with others through insurance, the loss is spread among several individuals, thus 'softening the blow'. Additionally, the premium represents a predictable cost, which facilitates planning and gives the policyholder peace of mind as they do not need to worry about the possibility of a large loss.

WHO IS BEING INSURED AT THE MICRO, MESO, AND MACRO LEVELS?

Micro-level

Policyholders are individuals, e.g. urban residents/households, MSMEs such as market vendors, fishers, or small production companies who hold policies and receive pay-outs directly. These policies are often sold at the local level and delivered through a variety of channels, including microfinance institutions (MFIs) or agents. Premiums are either paid in full by clients or subsidised (or both).

Meso-level

Meso-level insurance operates through meso-level institutions including local authorities, regional financial institutions, associations, and cooperatives, or even cities. It typically involves an insurance company making pay-outs to these institutions and individuals.

Meso-level institutions can aggregate risk, whereby the diversification of risk profiles and economies of scale allow for reduced premium costs. For insurance companies, this approach provides them with access to a pre-established network.

From the perspective of beneficiaries, the established presence of policyholders in the local area improve their chances of receiving pay-outs relatively quickly. Meso-insurance schemes demand significant capacity from the policyholders – particularly in terms of financial literacy and operational ability.

Macro-level

Policies are held by governments or national agencies. Pay-outs can be used to manage liquidity gaps e.g. for financing post-disaster programmes for predefined target groups that can include individuals (indirect beneficiaries). These schemes can be operationalised through regional/pan-national risk pools.

WHAT KIND OF HAZARDS CAN BE INSURED?

In theory, most of the hazards could be insured based on the market offerings. This, however, comes at a different cost based on the price of the risk. The risks can be bundled in a standard insurance policy based on the market standard.

The most typical physical hazards include floods, droughts, storms, earthquakes, hail, storms, and others.

WHAT ARE THE TWO MOST COMMON TYPES OF INSURANCE SCHEMES?

Indemnity Insurance (traditional insurance)

It refers to an insurance policy that compensates an insured party for certain damages or losses up to a certain limit—usually the amount of the loss itself.

After an insured event occurs, a team of loss adjusters will assess the damage and determine the sum of the pay-out. Indemnity insurance is widely used in established insurance markets of developed countries and covers a range of hazards/risks.

Index insurance

Unlike traditional insurance, which makes pay-outs based on case-by-case loss assessments, index-based insurance pays policyholders based on an external indicator that once set off, triggers a payment to all insured clients within a geographically defined space.

Pay-outs are made when the index exceeds a certain threshold, often referred to as a "trigger". Indexes may be direct, such as a livestock mortality index, or indirect, such as weather or area-yield index.

Index insurance is prominent in developing countries – mainly for flood, drought, excessive rainfall, and earthquake risk since it can ensure a quick payment compared to a longer claims assessment in indemnity insurance.

WHAT ARE THE ADVANTAGES/ DISADVANTAGES OF INDEMNITY INSURANCE TO INDEX-BASED INSURANCE FOR URBAN FLOODS?

	INDEMNITY-BASED	WEATHER INDEX
Set-up costs	Medium	High
Operational costs	High	Low
Claims settlement speed	Slow	Fast
Risk of moral hazard or adverse selection	High	Low
Basis risk	Low	High
Actuarial difficulty	Low	High

The key advantage of index insurance over indemnity-based one is the speed of pay-out. Whereas for conventional indemnity insurance each damaged asset should be visited to assess the extent of loss (which increases the administrative cost), index insurance is linked to an index, be it rainfall, temperature, etc. rather than the actual loss.

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Disclaimer

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So, for index insurance for public assets, for instance, if the rainfall measured at the weather station exceeds an agreed threshold, then it is assumed that assets within the locality have experienced the same conditions and hence have been damaged. The policyholder receives a pay-out without the need for the insurers to visit the assets.

To work well, the index should correlate, as much as possible, to the damage that floods cause. Otherwise, the issue of basis risk could arise. Basis risk is where conditions at the asset’s location differ from that of the weather station. Then, the policyholder might not receive a pay-out even though he might have suffered a loss. It is also possible for the policyholder to receive pay-out even though there has been no damage to the assets.

GLOSSARY

Disaster Risk Management (DRM): is the usage of Disaster Risk Reduction (DRR) strategies and the application of policies to prevent new disaster risk, reduce existing disaster risk, and manage residual risk, to contribute to the reduction of disaster losses and build resilience.

Build Back Better concept (BBB): is an essential concept of resilient recovery aiming at reducing vulnerability and improving living conditions while promoting a more effective and sustainable reconstruction. This can be realised through a variety of measures such as enhancing preparedness, relocating critical facilities to safer areas, integrating DRR into infrastructure improvements, strengthening governance structures, and establishing predictable contingent financing mechanisms including insurance.

Photo credits

Video: [Munich Climate Insurance Initiative](#)

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For further information, please refer to the complete study: GIZ (2021). Sovereign Flood Risk Pre-Feasibility Study in Ghana.

For further information on the developPPP.de project between GIZ and Allianz, please refer to the factsheet “Developing Disaster Risk Management Approaches for Climate Risks in Ghana”.