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Policy Brief

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Task Force 4: Science and Digitalization for a Better Future

Building Risk Resilience through Digital Technology

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Abstract

The increasing incidence of disasters and the emergence of other risks are widening protection gaps, particularly in developing countries where resources and institutions often fall short of what is needed. To soften the burden on governments and households, it is important to find innovative solutions that will strengthen countries' resilience and, therefore, narrow associated protection gaps. The first step is to evaluate the risks, estimate the protection gaps, and come

up with policy solutions. However, the basic requirements for the reliable assessment of risks and gaps are quality data and tools, which are lacking in the majority of developing countries. This Policy Brief aims to address these challenges and requests the G7 to strengthen the mechanisms which are necessary for evaluating risks and developing appropriate policy responses, and to identify a core group of key policymakers, private sector players and researchers that will drive the agenda forward.

Challenges

Resilience to risks is crucial for sustainable economic and social development, and an indicator of risk resilience is the size of protection gaps in a country or region. A protection gap is broadly defined as the gap between total economic losses arising from risk events and the losses for those events covered by insurance and other forms of financial protection. Protection gaps arise from a wide range of risks, including natural catastrophes, mortality, health, retirement and even cyber risks.

The protection gaps worldwide have seen limited improvements historically and, in fact, have been widening in many areas, particularly in emerging countries. To make matters worse, climate change is bringing about increasing incidence and severity of natural catastrophes and emerging risks, and further widening protection gaps. Economic activities and poor adaptation also contribute to the problem.

Reducing protection gaps

There are three risk management approaches to reduce protection gap for each risk category (Thorburn 2023). The first approach is to reduce risks via risk mitigation, adaptation and prevention measures - this first approach seeks to reduce the total economic losses possible from risk events. The next two approaches are increasing insurance penetration and fiscal risk financing. These two approaches seek to increase the portion of economic losses that are covered by insurance or other forms of financial protection.

However, these solutions require a few critical elements as pre-requisites:

- Sufficient understanding and monitoring of the known, and new and emerging risks, as well as ongoing monitoring for unknown risks;
- The ability to quantify the risk exposures at both gross (total economic losses) and net (protection gap) levels; and
- The right supporting environment for solutions such as the regulatory environment, awareness of the risks and risk management solutions by all key stakeholders, available supporting infrastructure and capabilities. Importantly, strong awareness across government agencies of risk exposures and risk management solutions, recognizing that managing the

risks and prioritizing addressing protection gaps are necessary.

Without the first two elements of understanding the risks and the ability to quantify them, it will be difficult to create the right supporting environment for suitable solutions (the third element) and in turn, to strengthen risk resilience.

Enhancing data and methodologies

Timely, adequate and quality data, as well as appropriate risk models, are essential and the basic building block to addressing protection gaps – the first two elements above. However, these are not always available.

Most developing countries lack the resources to collect and maintain high quality databases, even for those who already have these databases. The access and/or cost of accessing proprietary data may also be restrictive. In addition, where data and risk models are available, these may have different scopes and measurements or be nuanced within the model or approach.[1] As a result, there is a varied and less efficient understanding of risks and limited sharing and application of best practices in risk management solutions across countries.

Differences in the way exposures, vulnerabilities and hazards are modelled often lead to large differences across model results, making decisions on risk reduction inherently difficult. Such differences also make risk assessment and, more importantly, risk diversification across jurisdictions different due to differences in models used.

Compounding the issue, climate change has introduced much greater uncertainty due to its impact on the frequency and severity of risk events. Even as the global risk modelling community is grappling with the availability of good natural catastrophe risk models for assessing longer term, tail-end risks, due to the availability and uncertainty of long-term historical assessments, the effects of climate change on such assessments is a continuously important element to take into account.

Role of the G7

Building partnerships to strengthen global resilience to risks

The G7 builds strong partnerships and emphasises support for developing countries. Developing countries need to acknowledge the importance of developing suitable comprehensive risk

[1] Limitations on disaster data is articulated in Chapter 5 “Use data to help communities” (IFRC 2023).

management strategies, although in most cases, they may have limited capacity and tools to evaluate risks and guide policymaking. Building knowledge and action on addressing protection gaps in developing countries where it is most needed is a challenge, but the G7 has taken actions that demonstrate the importance of risk management and has provided support as well.

- The G7 established the InsuResilience Global Partnership (IGP) for Climate and Disaster Risk Finance and Insurance Solutions[2] to improve resilience of developing countries to disasters. The IGP is supported by the Insurance Development Forum (IDF),[3] an industry led public-private partnership that promotes the use of insurance and risk management for sustainable development.
- Together with the Vulnerable Twenty Group (V20) and the Climate Vulnerable Forum, the G7 launched Global Shield against Climate Risks[4] at the 27th Conference of the Parties to the UN Framework Convention on Climate Change (COP27) as a funding facility to address protection gaps in V20 countries.

Implementing innovative solutions to develop risk management capacity

Risk management solutions help reduce financing needs for recovery and reconstruction, thereby easing the burden on governments and households. These involve prior assessment and planning, which are data intensive. In cases where data is limited, innovative approaches to generate reliable data to estimate risks and protection gaps become indispensable. One solution to these data restrictions is the use of big data for post-disaster needs assessment and developing early warning systems.

- Germany together with the V20 established the Global Risk Modelling Alliance (GRMA).[5] The GRMA provides data, tools and expertise in developing risk management solutions, particularly risk financing, to strengthen resilience in developing countries.
- The United Nations Office for Disaster Risk Reduction (UNDRR) together with the World Meteorological Organization also launched Early Warnings for All (EW4All), an initiative that aims to improve preparedness and mitigate the impact of disasters on people (UNDRR 2024a). EW4All takes advantage of technology to strengthen the ecosystem for early warning systems, including monitoring and communication.
- The Asian Development Bank (ADB) and the Japan Fund for Poverty Reduction are exploring the use of high frequency data for impact assessment to support policymaking (ADB 2020).

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2 IGP (https://www.insuresilience.org) is based on the 2015 G7 Germany InsuResilience Initiative. See the German climate finance website: https://www.germanclimatefinance.de/?p=2968.

3 IDF website: https://www.insdevforum.org.

4 Global Shield website: https://www.globalshield.org.

5 GRMA website: https://grma.global.

Advancing open data and technology

The G7 recognises the importance of open data and facilitates collaborative data sharing.

- At the G7 United Kingdom in 2021, the G7 Digital and Technology Ministers agreed on a Roadmap for Cooperation on Data Free Flow with Trust (G7 2021), wherein one of the key areas of cooperation is "Government Access to Data" for valid reasons. The G7 Roadmap also emphasised support for the Organisation for Economic Co-operation and Development's Declaration on Government Access to Personal Data Held by Private Sector Entities (OECD 2022).
- Japan's Data Integration and Analysis System (DIAS)[6] illustrates the importance of collaborations on data and technology. DIAS was initially established to support disaster response in Japan but later evolved into a platform for developing solutions for climate adaptation and mitigation, not just in Japan but also across Asia and Africa. DIAS provides the infrastructure and technology to support interdisciplinary research on climate-related issues.
- The Belmont Forum,[7] a partnership among funding organizations and the scientific community that promotes transdisciplinary research on climate adaptation and mitigation and supports data sharing.

Drive for common taxonomy

Related to data and methodology, the G7 has done work to establish common definitions for various risk and protection gap elements to enable synergy and efficiency across jurisdictions in managing protection gaps.

- The IGP has a glossary of common terms and definitions used in disaster finance (IGP 2024) and has developed a Monitoring and Evaluation Framework (IGP 2022) that sets indicators and methodologies for the IGP Vision 2025 targets.
- A similar monitoring initiative is implemented for the Sendai Framework for Disaster Risk Reduction through the Open-ended Intergovernmental Expert Working Group on Indicators and Terminology (OIEWG), supported by UNDRR (UNDRR 2024b).

Recommendations to the G7

As mentioned previously, there are three categories of solutions to reduce protection gaps: (1) to reduce risks via risk mitigation, adaptation and prevention measures; (2) to increase insurance penetration; and (3) fiscal risk financing.

[6] DIAS website: https://diasjp.net/en.

[7] Belmont Forum website: https://belmontforum.org.

These three categories are inter-linked and should be assessed holistically. Even more importantly, the major risk types (such as disaster risks, mortality risk, health risk, longevity risk) must be considered simultaneously for holistic and efficient risk management. This holistic view is critical especially for assessing the optimality of risk management (and potentially budget allocation) in developing countries.

To design, develop and implement these solutions and assess them holistically, the ability to understand and quantify the major risks is essential. However, existing initiatives tend to focus on a single category of solution (for example insurance penetration or fiscal risk financing) and/or single risk type (such as disaster risks) and do not provide sufficient information and data for holistic risk management.

Given the active role of the G7 in supporting the agenda towards sustainable development, this Policy Brief proposes the following recommendations:

Promote and build data availability and capability in developing countries, aiming for common taxonomy and data standards. Quality and sufficiently granular, fit-for-purpose data is critical for effective and efficient risk management. However, this data is a major challenge in some developing countries due to lack of resources, funding and capabilities. Further, for efficient risk analysis and management that considers diversity across regions, it is also important that data across regions and across risk types are based on common taxonomy and data standards. However, even for countries where data is available, this issue of common taxonomy and data standards still presents a challenge.

Considering the expansive limitations on data and skills in developing countries compared to developed countries, it is important to support capacity building in developing countries to build their expertise on risk management. Many countries in Asia, particularly those in the East and Southeast, are among the most susceptible to natural catastrophes due to their location. Many are also facing ageing societies while their large populations make them vulnerable to epidemics and health risks.

In view of these, it is recommended that the G7 support the promotion and building of data availability and capability in developing countries, based on common taxonomy and data standards, via the following ways:

- Set up a taskforce of relevant experts to work with selected developing countries to (i) assess data availability and capability in each country; (ii) establish an action plan with two key objectives - to develop data availability and to build data capability both in terms of infrastructure and talents; and finally, (iii) to implement the action plan.
- Allocate funding for the implementation of the developed action plans and the required expertise support.

Facilitate data sharing between public and private sectors as well as across borders, to strengthen data and models on risks and protection gaps. Countries have existing mechanisms for data sharing and analysis, usually established as part of intergovernmental processes. Examples from the health sector are the World Health Organization's mortality database and the coronavirus disease (Covid-19) dashboard which was developed in response to the Covid-19 pandemic. Recently, the UNDRR also launched the Risk Information Exchange (RiX) platform within the Sendai Framework. Sharing of data across borders requires stringent governance and acknowledgement of the sensitivities inherent in such sharing. These initiatives are examples where data is shared across borders and should be exemplified.

On the other hand, these mechanisms in general fail to consider that advancements in digital technology have put vast data and information with the private sector. The contribution of the private sector in data and modelling platforms remains limited, despite the huge potential to advance knowledge and capacity to address protection gaps.

Considering this, it is recommended that the G7 initiate a partnership or forum among various government agencies across different countries (in particular the developing countries), and with relevant private sector or public-private sector players which collects and utilises the relevant data. This partnership will assess data sharing needs and standards, and explore the scaling and standardisation of data solutions for sharing of data across borders and across public and private sectors, for the purpose of enhancing risk assessment and management. The G7 policies on data sharing (such as deidentification, data aggregation, data sharing method, and non-disclosure agreement) will help address different parties' concerns on privacy, sovereignty and security.

Support innovative risk management solutions through the use of technology. A holistic approach to risk management that considers the major risk types concurrently is required to efficiently and effectively manage the risks and protection gaps. However, this is dependent on available and reliable data of major risk categories and importantly, the right tools for holistic risk management.

Digital technology captures big data that can be harnessed for needs assessment and risk management and supports data analytics such as the internet of things and automatic identification system. As well, digital infrastructure provides an accessible platform for promoting knowledge sharing and capacity building on risk management. With adequate data shared from both the public and private sectors, the digital platform can facilitate international collaboration to develop models and risk management solutions.

Currently, different disaster-related platforms cater to researchers and policymakers working on post-disaster needs evaluation and risk management. These platforms include one or a combination of the following: data, tools and/or research. The majority cover natural catastrophes only, and a few include epidemics. Emerging risks such as those concerning ageing or health

(excluding epidemics) are ignored, and few provide the option to assess possible risk management (financial) solutions. Moreover, there is more focus on developed countries because these are the ones with readily available and reliable data. Many developing countries that do not have the resources are left out even if they have critical need for risk management.

Therefore, it is recommended that the G7 promote an integrated framework for risk management that includes major risk categories such as mortality risk, health risk, longevity risk and disasters. The G7 can do so by supporting the development of the Asia-focused Online Risk Platform, an online tool being developed by Global Asia Insurance Partnership (GAIP) and Asian Development Bank Institute (ADBI), in partnership with Nanyang Technological University (NTU). The online risk platform is intended to support Asian policymakers and stakeholders in evaluating risks and protection gaps, and to provide information on existing best practices and policy solutions in addressing protection gaps. It is designed to be accessible and easy to use but it is dependent on data availability and access. The G7 can leverage on this tool to advocate a simple but comprehensive risk management framework in reducing protection gaps in developing countries. As well, the G7 can support the development of this tool by allocating funding and data expertise.

Overall, with the above three recommendations, the G7 can support the creation of a conducive ecosystem that fosters data sharing, with harmonised data and methodologies, and an integrated risk management framework. The G7 can also leverage on this ecosystem to advocate innovative solutions to strengthen country capacity for risk management, thereby reducing protection gaps especially in development countries.

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About Think7

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