

Policy Brief

PCC/PB/2024/003
December, 2024

Creating a Comprehensive Framework for Financial Risk Adaptation Framework for Climate Change

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Background

Over the past two decades, India has witnessed an alarming rise in the frequency and intensity of natural disasters. Cyclones, floods, droughts, and heatwaves have increasingly disrupted livelihoods, damaged infrastructure, and strained the country's economy. According to the Annual Report 2021-22 of the National Disaster Management Authority (NDMA), nearly 58.6 per cent of the Indian landmass is prone to earthquakes of moderate to very high intensity, 12 per cent of its area is susceptible to floods and land erosion, 5,700 km out of 7,516 km coastline is prone to cyclones and tsunamis, 68 per cent of the cultivable land is vulnerable to drought, hilly areas are at risk from landslides and avalanches, and 15 per cent of landmass is prone to landslides.¹

The Intergovernmental Panel on Climate Change (IPCC) reports highlight that climate change has intensified the variability of the monsoon and exacerbated the occurrence of extreme weather events.² As a result, the economic losses from natural disasters have surged, with damages reaching billions of dollars annually. The Cyclone Amphan in 2020 which left significant devastation across West Bengal and Odisha, caused an estimated damage of one INR 1,00,000 crore (~USD 13 billion).³ In 2021, India suffered damage worth USD 3.2 billion due to flooding while the loss from cyclone and storms was estimated to be USD 4.4 billion.⁴ A research report published by the State Bank of India in 2023 suggested that the estimated economic loss due to floods in India ranges somewhere between INR 10,000 crore to INR 15,000 crores, of which only around eight per cent was covered by insurance.⁵

In 2024, several states in India including Assam, Kerala, Himachal Pradesh, and Tripura had suffered extreme socio economic and ecological losses due to floods caused by incessant rains. As recent as till September this year, many parts of India, particularly the western and southeastern regions such as Gujarat, Andhra Pradesh and Telangana were reeling under severe and widespread flooding resulting in loss of lives and livelihood, and infrastructural damages. The loss in Andhra Pradesh due to floods is

¹ National Disaster Management Authority (NDMA), Annual Report 2021-22

https://ndma.gov.in/sites/default/files/PDF/Reports/NDMA_Annual_Report_2021-22.pdf

² India Today, August 10, 2021 <https://www.indiatoday.in/science/story/monsoon-extremes-likely-to-increase-over-india-south-asia-ipcc-report-climate-change-1838917-2021-08-10>

³ Nagchoudhary, S. & Paul, R., May 23, 2021, Reuters,

<https://www.reuters.com/article/world/cyclone-amphan-loss-estimated-at-13-billion-in-india-may-rise-in-bangladesh-idUSKBN22Z0G2/>

⁴ Prasad Seema, November 28, 2022, DownToEarth, <https://www.downtoearth.org.in/natural-disasters/loss-and-damage-from-floods-storms-cost-india-7-6-bn-in-2021-report-86233>

⁵ Chadha, S., July 18, 2023, Business Standard https://www.business-standard.com/finance/personal-finance/an-average-indian-is-insured-of-only-8-of-what-is-required-for-protection-123071800301_1.html

estimated to be INR 6,880 crores⁶ whereas, the corresponding figures for Telangana is estimated to be INR 10,300 crore⁷. With Gujarat, Tripura, Kerala, Assam and other flood affected states combined, the total loss this year is expected to surpass last year's losses. This constant upward trend, driven by climate change, signals the urgent need for robust financial frameworks to handle the fallout from these disasters effectively.

Current Financial Risk Mitigation Model for Natural Calamities and its Limitations

India's current financial model for managing natural catastrophes is primarily centralised, with the Government of India allocating funds for disaster management at the beginning of each fiscal year as part of its budgetary allocations. This framework operates under the National Disaster Relief Management Fund (NDRMF) and the State Disaster Relief Management Fund (SDRMF), which are pre-allocated based on historical data and anticipated needs. The money from these funds are then disbursed post assessment of damage in case of a natural calamity. The 15th Finance Commission has recommended that the Government of India allocate INR 68,463 crores towards NDRMF and INR 1,60,153 crores (total of INR 2,28,616 crores) in the SDRMF for the five year period of 2021-22 to 2025-26. In both funds, 80 per cent of the allocation is towards disaster response and the rest 20 per cent is allocated for disaster mitigation. The total fund released from the combined accounts of SDRMF and NDRMF in FY 2023-24 was INR 20,288.74 crore.⁸

Although the current model has the advantage of predictability of funds available, it also has significant challenges to this. Few of the challenges are as follows.

- Impact on Exchequer: Over the years, increasing number of climatic disasters have proportionately increased the allocation of funds towards disaster relief programmes. Under the present disaster response model, allocation of funds has increased from INR 66,000 crores in 2014 to INR 2,00,000 crores in 2024.⁹ This

⁶ V Raghavendra, September 12, 2024, The Hindu, <https://www.thehindu.com/news/national/andhra-pradesh/andhra-pradesh-floods-central-team-gets-down-to-task-govt-pegs-preliminary-damage-at-6880-crore/article68631298.ece>

⁷ Koride Mahesh, September 11, 2024, The Times of India, <https://timesofindia.indiatimes.com/city/hyderabad/telangana-government-pushes-for-increased-flood-relief-from-centre/articleshow/113267861.cms>

⁸ Disaster Management Division, Ministry of Home Affairs, Government of India <https://ndmindia.mha.gov.in/ndmi/responsefund#:~:text=The%20Commission%20has%20also%20recommended,for%20State%20Disaster%20Mitigation%20Fund.>

⁹ PIB Press Release 2029494 <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2029494#:~:text=He%20said%20that%20in%2010,government%20is%20for%20a%20disaster.>

more than threefold increase in allocation of fund takes a large chunk of the pie from the public exchequer which is otherwise meant for development of the economy and also increases tax burden of the general citizenry.

- **Delayed Fund Disbursal:** Fund disbursal in a post disaster situation under the current model requires detailed assessment of the affected area by the central and state teams and preparing estimates of loss which need approval of several departments/teams working together. In a post disaster situation this could take long and cause delay in critical relief and rehabilitation efforts. On several occasions, bureaucratic hurdles have resulted in inefficiencies in disaster response.
- **Dispute in Loss Estimation and Fund Approval for Relief:** Disputes arising from estimation of losses after a natural disaster in a State and funds approved by the Centre, are common instances in India. These often prove to be a hurdle for reconstruction after initial relief and rehabilitation and result in a slowdown in rebuilding infrastructure, further hampering economic growth.
- **Disparities in Aid Distribution due to Political Alignment:** In the past, it has been observed that political alignment of a State with the Centre would decide the speed and volume of funds being approved and disbursed to a State. In a post disaster scenario, such delays can come at the cost of critical lifesaving and relief efforts.

These are only a few of the limitations, but given these, it is imperative for India to explore alternative financial risk adaptation strategies that can complement the current model. With the increasing frequency and unpredictability of natural disasters, there is a growing need for a more flexible, decentralised approach to disaster financing, that is more expeditious in disbursements, less cumbersome in terms of bureaucratic approvals, and can also meet with the increasing monetary demands rising from climate change driven risks.

Global Instances of Alternative Climate Risk Financing Models

As climate change intensifies the frequency and severity of natural disasters, countries worldwide are increasingly recognising the need to develop innovative financial mechanisms to manage disaster risks. Traditional post-disaster funding methods such as emergency budget reallocations, loans, and international aid are proving to be inadequate for the scale and speed of financial assistance required. In response, many countries are adopting proactive climate risk financing strategies, which ensure timely

disbursement of funds and mitigate financial stress on government resources. Models like parametric insurance, catastrophe bonds, and sovereign insurance pools have emerged as viable alternatives, offering both financial predictability and resilience. These frameworks are structured to reduce delays in relief operations and lower the fiscal burden on national governments, with countries such as Mexico, the Caribbean nations, and African states leading the way in experimenting with these solutions. These alternatives models offer more rapid, targeted financial support, ensuring quicker recovery and reduced dependence on the Central Government. Listed below are some key financial risk adaptation models for natural catastrophes adopted by different economic zones which operate purely on the lines of the above-mentioned financial instruments or are a hybrid model operating on a combination of one or more financial instruments.

Southeast Asia Disaster Risk Insurance Facility

The Southeast Asia Disaster Risk Insurance Facility (SEADRIF) is a regional risk pool designed to address the financial risks posed by floods and other natural disasters. SEADRIF was launched in 2019 and it employs parametric insurance, meaning payouts are triggered automatically based on pre-agreed parameters such as rainfall levels or flood intensity, ensuring prompt financial assistance. SEADRIF's fast-disbursing mechanism allows governments to access funds within days of a disaster, reducing delays associated with traditional post-disaster aid. Moreover, the regional pooling of risks lowers premium costs, making the insurance affordable for member countries. In 2023, the SEADRIF Insurance Company, which is a part of the broader SEADRIF initiative, made two payouts totalling USD 1.5 million directly to the Government of the Lao PDR to provide rapid support to the country. This was just one business day after the Lao PDR Ministry of Finance submitted the notice of loss forms to trigger two payouts on Friday 11 August 2023.¹⁰ The economic loss was estimated to be around LAK 19,199,305,000 (almost USD 1,000,000).¹¹

World Bank's Catastrophe Bond for Jamaica

In July 2021, the World Bank issued a natural catastrophe bond (Nat-Cat bond) providing Jamaica with up to USD 185 million in insurance coverage for hurricanes over three seasons (2021–2023).¹² The type of events that will trigger a payout were

¹⁰ Resilience Risk Pools, <https://resilienceriskpools.com/?p=639>

¹¹ XinhuaNet

<https://english.news.cn/asiapacific/20240313/8b25a6c589df43eb98a272fa37fd99b2/c.html>

¹² The World Bank, "World Bank Catastrophe Bond provides Jamaica with Financial Protection against Tropical Cyclones"

predefined during the structuring of the transaction based on the requirements of Jamaica. If a qualifying event occurs, Jamaica will issue a notice to the independent calculation agent (AIR Worldwide) who will determine the payout amount based on the central pressure and track of the cyclone. The trigger of the payout was predefined at the structuring of the transaction based on the requirements of Jamaica. In case of a trigger, Jamaica would report to an independent company (AIR Worldwide) that would decide how much the payout would be, based on the strength and path of the cyclone. The World Bank would have transferred the amount to the Jamaican Government within a week of the cyclone, notwithstanding the real loss in the country. Earlier too, in 2014, Jamaica had benefitted from a similar pay mechanism promoted by the International Bank for Reconstruction and Development (IBRD).

Japan's Earthquake Insurance System:

Japan's Earthquake Insurance Scheme, introduced in 1966, is a government-backed insurance with risk-sharing between the public and private sectors. Under this scheme, households can purchase earthquake insurance as an add-on to fire insurance, with the government assuming a portion of the financial risk. The scheme caps payouts at pre-specified limits, ensuring sustainability even during large-scale catastrophes. Reinsurance premiums are collected and managed separately in the Special Account for Earthquake Reinsurance. Reinsurance claims are paid out to private insurance companies at the time when massive earthquakes occur. The total amount of reinsurance claims to be paid by the government for a single earthquake, etc. must fall within the limit decided every fiscal year. The current limit is 11.6586 trillion yen. Combined with the liability sharing for private insurance companies, the limit on total payouts for a single earthquake, etc. sums to 12 trillion yen (~ USD 79.51 million).¹³ This model has proven essential in enhancing financial preparedness, particularly in a country prone to seismic activity by striking a balance between affordability for consumers and risk management for insurers through shared financial responsibility. This mechanism plays a vital role in accelerating recovery efforts and minimising long-term economic damage by ensuring rapid payouts after major events.

<https://thedocs.worldbank.org/en/doc/43a111757d3b1ff1cabde80ee7eb0535-0340012021/original/Case-Study-Jamaica-Cat-Bond.pdf>

¹³ Ministry of Finance, Japan

https://www.mof.go.jp/english/policy/financial_system/earthquake_insurance/outline_of_earthquake_insurance.html#:~:text=Reinsurance%20claims%20are%20paid%20out,limit%20is%2011.6586%20trillion%20yen.

Domestic Experience of Alternative Risk Financing programmes

In India, a sovereign led risk financing programme is not an unheard-of case. In fact, India has several globally acknowledged prime climate change adaptation strategies for the agriculture sector such as the Pradhan Mantri Fasal Bima Yojana, the Weather Based Crop Insurance Scheme, and Coconut Palm Insurance. India also has a terrorism pool. More recently, local governments and independent organisations have been actively testing risk transfer solutions for natural calamities with an aim to reduce the burden on public exchequer and have swift access to funds post a disaster.

Pradhan Mantri Fasal Bima Yojana

Pradhan Mantri Fasal Bima Yojana (PMFBY) provides insurance coverage and financial support to the farmers in the event of yield loss of any of the notified crops as a result of natural calamities, pests and diseases; prevented sowing (on notified area basis); post-harvest losses, (individual farm basis); and localised calamities. In PMFBY, Farmers pay a nominal premium (2 per cent for Kharif crops, 1.5 per cent for Rabi crops), while the rest is subsidised by the central and state governments. The payouts are based on crop damage assessment, with claims settled after the damage has been verified.

Indian Market Terrorism Risk Insurance Pool

The Indian Market Terrorism Risk Insurance Pool (IMTRIP) has been set up 2002 by the General Insurance Corporation of India (GIC Re) and other domestic insurers in response to growing terrorism-related risks post the 9/11 attacks. It provides terrorism risk insurance coverage to Indian businesses, offering financial protection against property damage and business interruption caused by acts of terrorism. The IMTRIP has a pool capacity of INR 15,000 crore (USD 2 billion) built through contribution from its twenty-five-member (participant) companies. In 2022-23, the IMTRIP paid INR 17.8 million against 18 losses.¹⁴

Disaster Risk Transfer Parametric Insurance Solution in Nagaland

Nagaland became the first state in India to pilot an insurance as a risk transfer mechanism to mitigate disaster-related financial risks through parametric insurance. Nagaland first piloted a parametric insurance solution in March 2021 (till 2023) for a small premium of INR 70 lakh for a total cover of INR 5 crores for selected disaster-prone

¹⁴ Insurance Asia, India <https://insuranceasia.com/insurance/news/indias-terrorism-risk-pool-pays-high-18-claims-last-year>



areas with the trigger threshold initially set between 290 and 350 mm of rainfall.¹⁵ However, despite heavy rainfall and floods during the period, the insurance failed to trigger a payout as the parametric components remain unfulfilled during the rains. Learning from its shortcomings in the pilot, the Nagaland State Disaster Management Authority (NSDMA) has signed a new Memorandum of Understanding (MoU) with the SBI General Insurance for implementation of the Disaster Risk Transfer Parametric Insurance Solution (DRTPS) for three years from 2024-2027, with local stakeholders customising the parameters based on the regional risk. The DRTPS covers the area of entire state of Nagaland which is insured for a total of INR 150 crores, with the State Government of Nagaland paying a premium of INR 4.20 crores per year, totalling to INR 12.60 crores in three years.¹⁶ The Nagaland pilot has garnered interest among other State Governments.

Parametric Insurance Pool by the Self-Employed Women's Association

The Self-Employed Women's Association (SEWA) along with Climate Resilience for All (CRA) introduced parametric insurance schemes introduced the parametric insurance pool to safeguard rural women engaged with SEWA, who rely on agriculture, animal husbandry, and daily wage labour from unpredictable weather events such as droughts, excessive rainfall, and temperature fluctuations in states like Maharashtra, Rajasthan, and Gujarat around 2021. The parametric insurance was introduced as traditional insurance products often failed to meet the needs of these women due to delays in payouts and high administrative costs. Premiums are typically co-funded by the insured members and SEWA, with the organisation negotiating low-cost coverage with insurance providers. The coverage of SEWA's parametric insurance pool extends to weather-related risks, with triggers customised to pre-defined environmental parameters, such as minimum or maximum rainfall thresholds and temperature deviations as per the geography. While not designed to fully compensate for losses, the parametric model provides critical liquidity to help these women meet short-term expenses and prevent them from falling into debt.

As per CRA, 21,000 of the total 2.9 million women workers of SEWA were provided the innovative heat cover in 2023, with the beneficiaries crossing 50,000 women workers in 2024.¹⁷ Under the parametric cover, beneficiaries receive cash payouts of up to INR 1,800,

¹⁵ Simrin Sirur, June 20 2024 Mongabay <https://india.mongabay.com/2024/06/india-experiments-with-parametric-insurance-to-mitigate-costs-of-disasters/>

¹⁶ Nagaland Page <https://nagalandpage.com/nagaland-government-inks-mou-on-disaster-risk-insurance-worth-rs-150-cr-with-sbi-general-insurance/>

¹⁷ Madhusudan Sahoo, October 13 2024, Deccan Chronicle, <https://www.deccanchronicle.com/news/parametric-insurance-offers-climate-safety-for-women-1829886>

based on the intensity of the weather conditions. A payout of INR 400 is triggered when the temperature reaches 40°C. If the temperature exceeds 43°C, women beneficiaries receive payouts ranging from INR 535 to INR 1,800, depending on the severity of the heat.¹⁸ The SEWA model of adoption of parametric insurance has demonstrated positive outcomes, enabling faster recovery for beneficiaries and reducing their dependency on high-interest loans from informal lenders.

Kerala Co-operative Milk Marketing Federation (MILMA) Parametric Insurance Model

The Kerala Co-operative Milk Marketing Federation (MILMA) and the Agri Insurance Company of India Limited (AIC) launched a heat index-based insurance model under the Saral Krishi Bima Scheme in April 2023 to support dairy farmers rearing cows and buffaloes, during heatwaves and unseasonal rainfall, which directly affect livestock productivity.¹⁹ The scheme was piloted in the Malabar region and the parameter of the insurance was linked to the temperature crossing a prescribed limit of a geographic location. The scheme aims to reduce the financial risk to small dairy farmers who heavily rely on stable climatic conditions to maintain herd health and production levels. Under this scheme, MILMA shares the cost of the premiums with farmers, ensuring that coverage remains affordable. In some cases, the cooperative negotiates premium subsidies through partnerships with insurance companies or development funds. The extent of coverage is designed to provide partial compensation that allows farmers to continue operations during adverse conditions, although it is not intended to cover all potential losses. The scheme provides a dairy farmer an amount of INR 140 in compensation if the temperature rises continuously or persists above a prescribed limit for six days in a row. Similarly, the compensation rises if temperature/heat level rises or persists above a certain limit such as INR 440 for eight days, INR 900 for ten days, and INR 2000 for twenty-five days or more.²⁰ In 2023, 2,278 cattle in Kannur and Kasaragod received claims out of the total 14,338 cattle insured in the six districts with the final claim paid out being INR 29 lacs against a total premium of INR 6 lacs.²¹ The outcomes so far have been encouraging, with many farmers reporting enhanced resilience to weather shocks.

¹⁸ IBID

¹⁹ PIB Release No. 1915851 <https://pib.gov.in/PressReleasePage.aspx?PRID=1915851>

²⁰ IBID

²¹ Unnikrishnan S., March 18 2024, The New Indian Express, <https://www.newindianexpress.com/cities/thiruvananthapuram/2024/Mar/18/milma-facilitates-insurance-scheme-for-dairy-farmers-facing-heat-distress-in-thiruvananthapuram#:~:text=A%20farmer%20can%20claim%20up,decreased%20milk%20yield%20and%20quality>.

Access to Global Markets for India's Climate Catastrophe Financing Needs

The Indian Financial Services Centre (IFSC) at Gujrat International Finance Tech (GIFT) City is well-positioned to become a leading hub for innovative financial instruments designed for disaster risk management. By creating a conducive regulatory framework for products like natural calamity bonds, disaster insurance and reinsurance, and catastrophe-linked financial products, the IFSC can attract global investors looking for risk reduction strategies. This can significantly enhance India's ability to manage the financial impacts of climate-related disasters. An NCAER (2021) paper highlights several key aspects for positioning the IFSC as a global reinsurance centre, based on a comparative study of other international financial hubs like London, Singapore, and Dubai.²² The paper emphasises the importance of regulatory frameworks, ease of doing business, the role of the Indian Financial Services Centre Authority (IFSCA), and the potential for building specialisation in niche markets such as aviation and marine insurance. The paper highlights four distinct areas for the IFSCA to focus on that include,

- **Reinsurance Opportunities:** The IFSC can cater to both domestic and international markets, providing reinsurance and retrocession services. The existing regulatory framework, managed by IFSCA, allows flexibility for foreign reinsurers to operate under the solvency margins of their home jurisdictions.
- **Regulatory Framework:** The IFSC has created an attractive business environment by offering a unified regulatory structure and providing flexibility in maintaining solvency margins and capital requirements. This makes it easier for foreign reinsurers to enter the market.
- **Alternative Risk Transfer:** The paper also emphasises the need for alternative risk transfer mechanisms like Nat-Cat bonds and other Insurance Linked Securities (ILS) products, which are popular in hubs like Singapore and London. Currently, the framework in IFSC for such instruments is underdeveloped.
- **Cluster Development:** The paper stresses the importance of developing a cluster effect—creating a network of interconnected companies, service providers, and specialised personnel that will strengthen the reinsurance market. It encourages the presence of legal services, intermediaries, and dispute resolution mechanisms within the IFSC to build a conducive environment.

²² National Council of Applied Economic Research (NCAER), December 31, 2021, "Report on Making the IFSC a Reinsurance Hub", New Delhi
<https://ifsc.gov.in/Document/ReportandPublication/ncaer-report20042022032732.pdf>

Developing IFSC as a global market for financial risk management product specialising in disaster finance would not only integrate India into global financial risk adaptation networks but would also significantly enhance India's ability to manage the financial impacts of climate-related disasters. Hence policymakers should consider developing appropriate strategy, tailoring them to suit the needs of the global market participants.

Outcome of the Discussion

Building on these global and domestic experiences, India needs to develop customised, hybrid climate financing models to address the growing impact of natural disasters in different states/regions. These models may integrate parametric insurance solutions, catastrophe bonds, sovereign insurance pools, and/or private-public partnerships while being tailored to the specific vulnerabilities of different geography. Such a framework would complement the existing government-led relief funds, ensuring timely fund disbursement and reducing dependency on the public exchequer. Regional collaborations, private sector participation, and the use of technology for predictive analytics can further enhance the efficiency of these models, creating a decentralised and responsive risk financing system.

This discussion on "Creating a Comprehensive Financial Risk Adaptation Framework for Climate Change in India" by the Policy Consensus Centre, on 24th October, 2024, envisaged to examine global and domestic best practices to identify scalable solutions for India aims to identify practical steps toward creating an efficient, sustainable, and inclusive climate risk financing ecosystem. To achieve this, the discussion aims to explore a range of questions and strategies crucial for shaping India's climate financing roadmap regarding the viability of blended financing models combining parametric insurance, Nat-Cat bonds, regional risk pools and public and private funds in different geographies in India, feasibility of using a portion of the NDMF and SDMF funds towards new financial models, role of technology in streamlining parametric insurance triggers, and market development and regulatory innovations for new climate financing products in India among others. The panellists for the discussion were Mr Arup Chatterjee, Principal Financial Sector Specialist, Asian Development Bank; Ms Neha Kumar, Head - South Asia Programme, Climate Bonds Initiative, and Mr Vivek Sen, India Director, Climate Policy Initiative. The panel was moderated by Ms Nirupama Soundararajan, Co-founder & CEO, Policy Consensus Centre. The discussion also included inputs and suggestions from other participants and guests. The recommendations that emerged from this discussion are provided below.

Recommendations

- India needs to develop a national disaster risk financing plan outlining state and district wise vulnerabilities to natural disaster, exposure to the risk of a particular disaster in terms of human capital, livestock and infrastructure, and protection gap in the event of the said disaster. This in turn will help create a risk layered disaster risk financing strategy and help tailor different financial instruments in terms of frequency and severity of disaster. Insurance premiums for frequently occurring and severe catastrophes will be higher and expensive and need to be fulfilled by budget or contingent financing mechanism such as disaster relief fund.
- Data is critical for risk management and risk financing. Hence, India must consider developing a robust scientifically backed mechanism for data collection and analysis to assess the extent of loss in case of a natural disaster. This would entail regular reporting of data from states and districts on human capital, livestock and infrastructure in a particular region. Quality data gathering can be done through collaborating with international and multilateral organisations, amalgamating indigenous technology with overseas transfer of technology and learning from regional best practices with similar geography and topography. Granular data collection would further help in tailoring better climate insurance models as per the need of the region. Furthermore, the climate finance taxonomy for India, announced in the Union Budget of 2024, must be rolled out at the earliest.
- Policymakers in India must consider developing a shock responsive social protection plan tailoring it to the need of vulnerable regions across India. A shock responsive social protection plan should be integrated and linked with social protection policies such as the Pradhan Mantri Jan Dhan Yojana or the Pradhan Mantri Jeevan Jyoti Bima Yojana which can provide an infrastructure for the delivery of disaster responses immediately after a natural calamity and help vulnerable households recover and rehabilitate faster. A shock responsive social protection plan will ensure that a “first loss” cover is provided in event of a loss from disaster, while further cash flow is provided by insurance policies.
- Insuring critical infrastructures and public sector assets are extremely important and it can minimise financial burden on public exchequer and reduce the time lag for reconstruction. The NHPC’s Teesta Power Plant Project in Sikkim that suffered severe damages in October 2023 and in August 2024 due to Glacial Lake Outburst Floods (GLOFs) causing a combined financial loss of close to INR 15000

crores, is an example of grave disaster loss to critical public infrastructure. This will further heighten fiscal discipline and corporate governance among public sector units as insurance companies usually charge higher premiums for undisciplined government assets.

- In the past few years, parametric insurance has emerged as a successful risk financing mechanism against climatic disasters across several geographies. In India too, Nagaland has been actively piloting with parametric insurance for the last three years. It is recommended that the Government of India work with State Governments to undertake further pilots across vulnerable and disaster-prone regions in the country. Similarly, regional insurance pools for specific kind of disasters too could be considered.
- Access to finance from both large and microfinance institutions, is a common challenge in a post disaster scenario. Particularly, microfinance institutions (MFIs) funding micro enterprises and low net worth individuals, often find themselves crippled due to low liquidity, thus making it difficult for them to restructure or provide fresh loans to their customers. An insurance scheme for such MFIs would ensure liquidity in a post disaster scenario and help them fresh loans and/or restructure existing loans to help rebuild lives and businesses of vulnerable communities. Further, policymakers should consider integrating micro-insurance with state sponsored savings scheme to help vulnerable communities and micro businesses for reconstruction.
- Government must encourage the private sector to invest towards creating climate resilient infrastructure and investing in climate risk reduction measures. Development financial institutions, mainstream commercial lenders and financial engineers must be encouraged and incentivised to collaborate and develop new and bespoke products catering to the needs of disaster-prone regions and vulnerable communities in India. Developing climate resilient infrastructures and assets through public-private partnerships (PPPs) for public use can be one way to go about it. Additionally, providing tax incentives to the private sector for developing and maintaining disaster relief infrastructures would encourage private entities to actively participate in such public welfare projects. These apart the government must consider using novel strategies to incentivise the private sector in such projects.
- Due to its vast geography, India should consider adopting different financial strategies for disaster reduction, disaster recovery and disaster resilience programmes. A stand-alone strategy may not be the best way forward

considering the varied topography and the wide range of natural disasters that has affected these areas in the past. Hence, policymakers may consider adopting a mix of disaster risk financing instruments such as parametric insurance, calamity bonds, PPP partnerships, and blended finance, among others to financially safeguard lives and infrastructure.

- India should consider expanding the deployment of funds collected from the Sovereign Green Bond (SGrB) issued by the Government of India in climate risk mitigation programmes and climate resilience programmes (for e.g. flood control). Currently, the funds collected from the SGrB are largely limited to developing renewable energy, clean transportation and green building infrastructures projects, making its scope of deployment narrow and restricted.



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