



Quantifying and attributing pay-out and premia increases of parametric insurance to climate change – A framework for scalable, objective, transparent and pragmatic integration into a loss and damage finance architecture

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In the realm of finance for loss and damage, new funding mechanisms are emerging, yet the task of identifying and quantifying the losses and damages from extreme weather events attributable to climate change remains a complex challenge. Impact attribution, which extends beyond traditional attribution analyses of extreme weather events, is gaining more attention and methods are improving. However, their systematic integration into the loss and damage finance architecture will not be possible any time soon. With the rapidly escalating impacts of climate change, financial solutions designed to support affected communities and countries must align with the real-world necessity for predictability and swiftness of disaster risk finance.

Insurance, while not a panacea, has traditionally been envisioned as an important player in the domain of loss and damage finance. Nonetheless, insurance premia become prohibitively expensive in many regions and specific risks inch towards becoming uninsurable. Increasing the uptake of insurance and making it more affordable, e.g. through subsidies, can relieve some of the impacts and support affected communities with reliable financial flows. Here, parametric insurance is posited as a generally suitable solution with advantages over traditional indemnity insurance. It provides transparent and quick financial responses after extreme weather events, is less exposed to moral hazard and adverse selection.

This research develops a scalable, objective, transparent, and pragmatic framework for the quantification and attribution of payout and premium increases of parametric insurance due to climate change. Apt for incorporation into new solutions such as the loss and damage fund and the Global Shield initiative, the framework would allow to mobilise substantial funding by blending public and private funds and leveraging the infrastructure of insurance companies. Employing this framework within a loss and damage finance architecture not only capitalizes on the inherent benefits of parametric insurance but also ensures that the allocation of resources is more closely aligned with changes in weather patterns, and therefore impacts, that are attributable to climate change.

The framework is applied to the context of tropical cyclone parametric insurance in various

locations, as well as to heatwave parametric insurance in India. The results illustrate the alterations in payouts and premia attributable to climate change and quantify the loss and damage finance required to compensate for the climate-change related risk increases, whether as direct payments to policyholders/insurance companies affected by the insured events or as subsidies for insurance premia.