Geophysical Research Abstracts
Vol. 15, EGU2013-2992, 2013
EGU General Assembly 2013

Assessment of Costs for a Global Climate Fund Against Public Sector Disaster Risks

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National governments are key actors in managing climate variability and change, yet, many countries, faced with exhausted tax bases, high levels of indebtedness and limited donor assistance, have been unable to raise sufficient and timely capital to replace or repair damaged assets and restore livelihoods following major disasters exacerbating the impacts of disaster shocks on poverty and development. For weather extremes, which form a subset of the adaptation challenge and are supposed to increase in intensity and frequency with a changing climate, we conduct an assessment of the costs of managing and financing today's public sector risks on a global scale for more than 180 countries. A countries financial vulnerability is defined as a function of its financial resilience and its exposure to disaster risk. While disaster risk is estimated in terms of asset loss distributions based on catastrophe modeling approaches, financial resilience is operationalized as the public sector's ability to pay for relief to the affected population and support the reconstruction of affected assets and infrastructure for a given event. We consider governments financially vulnerable to disasters if they cannot access sufficient funding after a disaster to cover their liabilities. We operationalize this concept by the term resource gap, which we define the net loss associated with a disaster event after exhausting all possible ex-post and ex ante financing sources. Extending this approach for all possible disaster events, the risk that a resource gap will occur over a given time-span can be calculated for each country individually and dependent on the risk level different risk instruments may have to be applied. Furthermore, our estimates may inform decisions pertaining to a "climate insurance fund" absorbing "high level" country risks exceeding the ability of any given country to pay in the case of an extreme event. Our estimates relate to today's climate, yet we suggest that estimates of current climate variability and related risks, although also associated with substantial uncertainty, can be interpreted as a baseline for very uncertain future projections.