

Promoting Risk Insurance in the Asia-Pacific Region: *A Convergence Approach for the Future Climate Regime*

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Abstract:

Risk insurance can provide an effective means of catastrophic risk reduction and climate change adaptation in the developing countries. The ongoing discussions by the Conference of Parties to the United Nations Framework Convention on Climate Change are putting substantial efforts to promote climate change adaptation through international cooperation in the form of providing additional finances and technologies including proposals to promote a global or regional climate risk insurance facility. Case studies from within and outside the Asia-Pacific region provide valuable lessons which could be used for promoting risk insurance by the future climate regime (post-Kyoto Protocol beyond 2012). The analysis of these risk insurance proposals to the Convention and comparison of what they intend to achieve with that of the existing issues within the risk insurance sector in the developing Asia-Pacific indicate that these proposals address some of the major issues that are limiting the spread of risk insurance. However, no single proposal is comprehensive enough to address all the issues and all the proposals lack details in terms of how they can achieve what they intend to achieve. There is a need for the proposals to the Convention to give more thought on how they address the issues such as high base risks, lack of historical data required for designing risk insurance systems, limited awareness in the utility of insurance instruments, keeping the premium prices within affordable levels, encouraging the role of private sector, enabling greater access to reinsurers, and instituting enabling policies to create a proactive risk mitigation environment with an eye on sustainability. A convergence approach wherein the proposals incorporate lessons from on-the-ground experiences from regional, national and local initiatives could provide an effective model for promoting the risk insurance.

Key Words: Climate risk insurance, UNFCCC, future climate regime, disaster risk reduction, Asia.

The views expressed in this working paper are those of the authors and do not necessarily represent those of IGES. Working papers describe research in progress by the authors and are published to elicit comments and to further debate.

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List of Abbreviations and Acronyms

AOSIS	Alliance of Small Island States	CRMF	Chronic Risk Management Facility
Bn	Billions	EM-DAT	Emergency events database of Center for Research on the Epidemiology of Disasters
CCRIF	Caribbean Catastrophe Risk Insurance Facility	LDC	Least developed countries
CIAF	Climate Insurance Assistance Facility	MAF	Multilateral Adaptation Fund
CIP	Climate Insurance Pool	MCII	Munich Climate Insurance Initiative
COP	Conference of Parties to the United Nations Framework Convention on Climate Change	NCCF	National Climate Change Funds
		SIDS	Small Island Developing States

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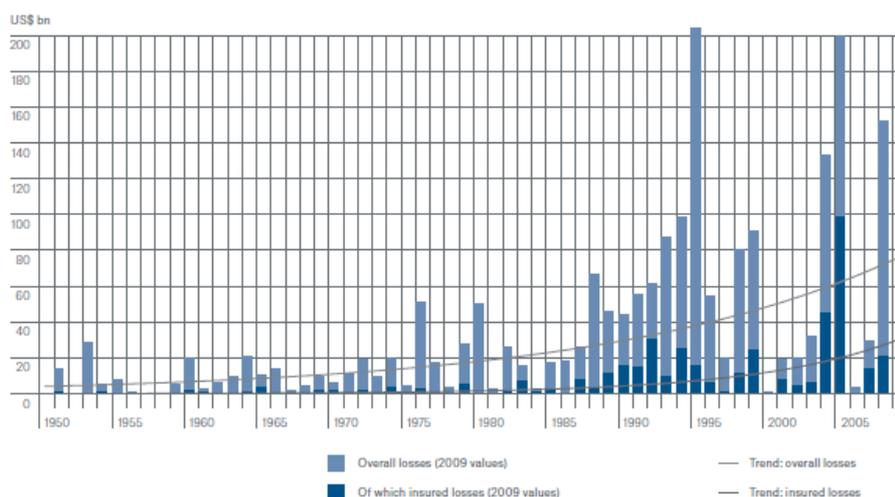
1. Introduction

The natural and man-made hazards have historically undermined the developmental gains across the world and the Asia-Pacific region is no exception. The Asia-Pacific region is one of the most vulnerable regions to a range of primary hydro-meteorological natural hazards such as storms, floods, and droughts. The data from EM-DAT suggest that the number of hydro-meteorological natural disasters has been increasing at an average annual rate of 217% over

the past 40 years in the Asia-Pacific region (EM-DAT, 2010).

In the region, the total human lives lost due to disasters were 3729 with estimated damage costs of 11.54 billion USD in 2009. Similar increase in the number of catastrophic natural disasters and related losses was also reported by Munich Re according to which both the insured and uninsured losses have been increasing over the years (Figure 1).

Figure 1. Trends in overall and insured losses due to catastrophic events since 1950



Source: Munich Re 2010

The region's high vulnerability to the natural disasters, compared to other regions in the world, is primarily due to a range of geophysical, socioeconomic and developmental conditions. These include a long coast line of 187,193 km, historically highly variable monsoon system, high volcanic activity, high poverty both within and outside of urban area, high population densities associated with massive inflow of populations into cities, poorly planned urban development, and absence of proper disaster risk mitigation mechanisms and institutional/regulatory framework including prevalence and enforcement of structural standards such as building by-laws and land use planning regulations, and risk spreading instruments such as

risk insurance systems.

Climate change has brought an additional dimension to disaster risks in the Asia-Pacific region as it is projected to exacerbate the intensity and magnitude of various natural hazards such as storms, high-intensity rainfall events, heat waves, floods and droughts. Especially, the projections suggest high probability for an increasing trend in the high-intensity and low probability events (IPCC, 2007; Kunreuther and Michel-Kerjan, 2007). These increased catastrophic risks will further undermine the developmental gains already made in the Asia-Pacific region.

Taking agricultural sector as an example, being one of the highly vulnerable sectors in the region, farming communities are in particular at greater risk due to weather related crop failures. Often, farmers borrow loans from local banks prior to the cropping season. However, farmers, banks, and governments are put at higher financial risk due to increasing frequency of crop failures, and often governments are forced to waive the loans. In case of India, estimates suggest that the government waived off crop loans worth 16 billion USD in 2008 alone (Srinivasan, 2008). Similar incidences are observed across other countries in the Asia-Pacific region (Sompo Japan Insurance Inc., 2010).

Hence, in order to address additional risks brought by the impact of climate change, there is a need to relook at and reframe the current risk reduction strategies especially in terms of development and utilization of risk spreading instruments within the Asia-Pacific region. This working paper reviews the current status of risk insurance and identifies emerging issues and experiences. These issues and experiences are applied to various risk insurance proposals made by the Conference of Parties (COP) to the UNFCCC for assessing the extent to which they consider experiences to address issues for promoting the risk insurance.

2. Risk Insurance and Climate Change Adaptation

The concept of risk transfer or risk spreading entails that the individual (the insured) risks be reduced by spreading or transferring the risks from the insured to the insurance provider (the insurer) since the insurer is in a stronger financial position than the insured (Njegomir and Maksimovic, 2009). The insurance provider is able to insure the risks of the insured largely due to the fact that the insurer obtains premiums from a large number of insured who are at different levels of risks by making sure that the total amount of premiums collected are far greater than or exceeds the underwriting of risks (termed as law of large numbers). Insurance agencies in turn underwrite some of these risks with reinsurance firms that provides needed buffer against

catastrophic event related losses. In sum, the risk insurance scheme functions as part of the social security net through risk transfer mechanism and thereby contribute to build the resilience of vulnerable societies.

Risk transfer has been widely advocated as one of the best means of risk mitigation across the world (Arnold, 2008; Siamwalla and Valdes, 1986; Swiss Re, 2010) due to several advantages it provides:

- Promotes emphasis on risk mitigation compared to the current response-driven mechanisms.
- Provides a cost-effective way of coping financial impacts of climate and weather induced hazard events.
- Supports the climate change adaptation by covering the residual risks uncovered by the other risk reduction mechanisms.
- Stabilizes rural incomes and hence reduce the adverse effects on income fluctuation and socio-economic development.
- Provides opportunities for public-private partnerships.
- Reduced burden on government resources for post-disaster relief and reconstruction.
- Helps communities and individuals to quickly renew and restore the livelihood activity.
- Depending on the way the insurance is designed, the insurance mechanism can address a wide variety of risks emanating from climatic and non-climatic sources.

3. Current State of Risk Insurance

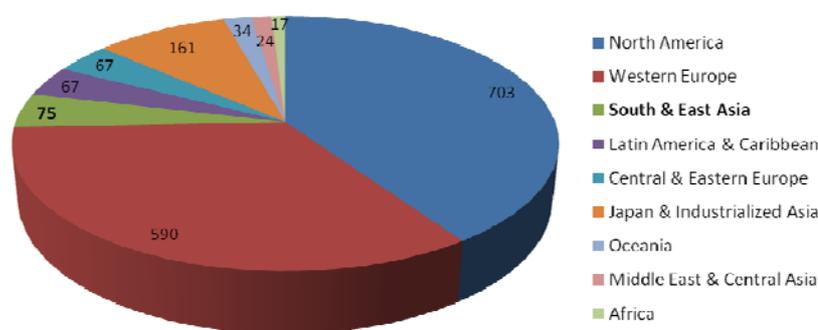
The prevailing insurance widely observed in the developing Asia-Pacific region could be broadly classified into health and non-health based insurance which are offered both by the government based insurance programs and also by the private sector insurers. Most popular form of insurance mechanisms put in place among most of the Asia-Pacific countries is life insurance where the insurance companies pay the insurer upon death or other risks such as critical terminal illness. Other forms insurances include health, vehicles, properties, liability, credit, housing, earthquake, flood, and crop

among others. Though both life and non-life insurances are essential form of risk reduction, promoting the non-life insurance is of paramount importance in the region due to its poor spread compared to the life insurance.

Within Asia, penetration of insurance is highest in Japan followed by China, South Korea and India and the developing South and East Asia stands fourth among all the regions in terms of volume of non-life

insurance premiums (Figure 2; Swiss Re, 2010). In general, the spread of health insurance is much higher than the non-health insurance premiums in the region, though the magnitude varies between developed economies and emerging economies within the region. Auto insurance and insurance for the industrial and commercial establishments are some of the dominant forms of non-life insurance in the region.

Figure 2. Penetration of non-life insurance premiums (USD bn) in different world regions



Source: Swiss Re, 2010

It should be noted that most insurance mechanisms have largely been initially conceptualized and developed in the developed country markets and are being adapted to the developing countries. While most high-income households in the developing countries pay their own insurance premiums, most of the premiums of the low- and middle-income families are often enrolled by their employers (O'Donnell, 2008).

3.1. Issues

The poor spread of the insurance remains to be a concern for the Asia-Pacific region especially in non-health catastrophic risk insurance sector, which is attributed to the following factors:

1) Affordability: The issue of affordability could be put at the top of all the bottlenecks limiting the spread of risk insurance in the developing

Asia-Pacific. Though insurance premiums in most of the developing Asia-Pacific region are lower than that of those in the developed countries, the annual insurance premium costs are still not affordable for most of the income groups in the developing countries. Part of the high insurance premium costs emerge from the high residual risks and low spread in terms of number of insured.

2) Residual risks: High residual risks are one of the major causes for the poor risk insurance coverage in the region. The high residual risks are due to poor disaster risk mitigation mechanisms, lack of or poor enforcement of laws and codes such as building bylaws, structural codes, and laws pertaining to land use planning.

3) Presence of insurers and reinsurers: One of the reasons behind poor penetration of insurance and insurance prices above affordability is limited

presence of private insurers and reinsurers. Reinsurers play an important role of providing shock absorbing capacity to the insurers. To date, very few national (e.g. General Insurance Corporation in India, China Reinsurance Company in China, Zenkyoren or *Zenkoku Kyousai Seikatsukyoudokumiai Rengou Kai* in Japan) and international (e.g. Munich Re, Swiss Re, Toa Re, Axis Re) reinsurers operate in the region. Hence, there is a very high potential for the expansion of the reinsurance sector. Insurers and reinsurers cannot afford to operate in the region unless there is sufficient enabling environment including efforts to reduce the residual risks.

4) High premium costs: The high residual risks, lack of optimum number of insurers, low competition, and low number of insured population all lead to the higher premium costs than what they could be in the Asia-Pacific region.

5) Policy environment: Though risk insurance is a ‘market instrument’, its dynamics are determined or governed by the principles of an open market, government policies and regulatory guidelines act as precursors for flourishing of the sector and ensures the effectiveness of the instrument. Hence, the role of government in promoting the culture of risk mitigation by promoting awareness generation, and designing and implementing structural and non-structural disaster risk mitigation codes and laws including institutional mechanisms and regulations for promoting risk insurance is paramount.

Though there has already been significant improvement in terms of policy support to insurance sector, as observed from the high growth rates of insurance sector in the region, the support is still not comprehensive enough. For example, currently, most developing countries in the Asia-Pacific region are at the nascent stages of formulating national disaster risk mitigation plans and policies (GFDRR, 2009) and haven’t fully utilized the potential of risk insurance in promoting risk reduction. Traditionally, strong emphasis of most governments on disaster

response over mitigation is known to hinder the public participation in risk insurance schemes (Yucemen, 2008). Limited financing is the major reason behind the poor emphasis on disaster risk mitigation in the region.

6) Cultural and perceptual issues: General lack of awareness and misplaced perceptions about dealing with the risk in general and about the risk insurance in particular among the common people and business sector also serves as a bottleneck (Yazici, 2005; Yucemen, 2008). Sociological research has indicated the existence of behavioral situation that can be characterized as ‘lethal attitude’ which suggests that things will happen whatever is done and that things are beyond ones’ control, which limit the risk mitigation behavior of individuals.

7) Lack of data: Information infrastructure for collecting and managing the systematic and comparable data on past risks, vulnerabilities, disasters, and the nature of disaster losses provides important information for designing risk insurance schemes which is either not fully developed nor readily available and accessible to the risk insurance industry and for the general public in most of the developing nations in the Asia-Pacific region.

Another important challenge that could undermine the implementation of an affective insurance facility that didn’t receive much attention in the region is the liability challenge (Kunreuther and Michel-Kerjan, 2007; O’Connor, 2005; Iizumi et al., 2008), and the high vulnerability of insurance payouts due to high potential for yield losses in a changing climate scenario. As a result of these limitations, most of the initiatives couldn’t be scaled-up to cover larger, and sometimes important, areas which could benefit from insurance related instruments.

It can be seen that most of the above factors are inter-linked and provides an example of the “chicken and egg” dilemma. In order to promote the risk insurance in the Asia-Pacific region, there is a need to overcome these limitations. In this

regard, drawing lessons from some of the existing examples of implementing risk insurance in the Asia-Pacific region and elsewhere can provide insights as to overcoming these limitations.

3.2. Current Experiences

At present, several pilot cases exist within and outside the Asia-Pacific region that provide lessons and best practices in promoting risk insurance. Table 1 provides a brief outline of selected cases considered for extracting lessons and best practices. One of the features of existing case examples is that most of these experiences emanate from efforts to promote disaster risk reduction funded by the multi- and bi-lateral assistance organizations implemented at the local, national, and regional scales.

The Caribbean Catastrophic Risk Insurance Facility (CCRIF) is probably the most successful and the only insurance facility implemented on a regional scale where national governments pay the

premiums for the insurable risks assessed at the national level and the premiums are pooled at the regional level. There are number of examples for national level insurance facilities (e.g. Mexico Cat bonds, Turkish catastrophic insurance pool, and Indian national agricultural insurance scheme, Japanese rice insurance) and numerous examples for the local level insurance facilities mostly implemented by the non-governmental organizations (e.g. BASIX-ICICI Lambard micro insurance in India). Among the local level experiences, India and Mexico are reported to have well developed weather based insurance programs (Barnett and Mahul, 2007).

These examples offer several lessons and best practices in terms of what should be the essential design elements of an insurance scheme and how they should be implemented which could be relevant for promoting risk insurance under the future climate regime. Some of the lessons drawn from these practices are discussed below.

Table 1. Selected Existing Cases of Risk Insurance and Financing Mechanisms

S No	Case	Geographical coverage	Hazards covered	Direct benefactor	Payment trigger
1	Caribbean Catastrophe Risk Insurance Facility	Caribbean (Regional)	Hurricane and earthquakes	National governments	Parametric
2	Mexico Cat Bonds	Mexico	Earthquakes	Individuals	Parametric
3	Turkish catastrophic insurance pool	Turkey	Multi-peril (Currently earthquake only)	Building owners	Indemnity
4	BASIX-ICICI Lambard micro insurance	Andhra Pradesh, India	Monsoon failures	Farmers	Index
5	Indian National Agricultural Insurance Scheme	All over India	Crop failure due to a range of conditions	Farmers	Indemnity
6	Agricultural weather index insurance	Thailand	Crop failure (Maize and rice)	Farmers	Index
7	Crop insurance in Japan	Japan	Crop failure (Rice)	Farmers	Indemnity

Sources: Compiled from different internet sources.

1) Keeping the price of the insurance premium

low: The price of the insurance premiums is one of the major determinants for enrolling maximum number of insured and hence keeping its price bare minimum is an important aspect of the overall design of the insurance system. In the case of Japan, the premiums were heavily subsidized (over 50%) to make the premiums affordable (Tsuji, 1986). Since the amount of residual risks and premium prices are directly correlated, other insurance programs such as Turkey catastrophe insurance pool have combined promoting the risk mitigation measures such as enforcing seismic resistance codes along with the insurance program. In most cases, keeping the premiums at affordable levels have been a major problem affecting their sustainability.

2) Generating public awareness: Apart from the issue of the price of the premium, the lack of awareness among various stakeholders is a major hurdle in spreading the risk insurance. This hurdle was mostly overcome by incorporating the grassroots level awareness generation activities. For instance, such an effort could be seen in agricultural weather index insurance, Thailand; and in various locally implemented insurance programs (e.g. BASIX-ICICI Lombard micro insurance; Turkey catastrophe risk insurance pool).

3) Avoiding the moral hazard: One of the major problems with the traditional insurance programs including the crop insurance programs has been the moral hazard i.e. unfair insurance claims leading to higher risk for the insuring agencies (Giné, 2009). This limitation has largely been overcome by the advent of index based insurance systems where payment is triggered by factors that are extraneous to the human control i.e. the actual incidence of the particular intensity level of the hazard (e.g. 60% reduction in rainfall). These types of insurance schemes depend on the strong correlation between the incident rainfall and related yield losses and hence avoiding the moral hazard. One factor that needs to be taken into consideration, however, is the

weather data required for developing such indexes.

4) Linking with reinsurers and investment in financial markets: Support by reinsurers is one of the important considerations for putting in place robust risk insurance systems as reinsurers provide needed financial backup to the insurers. In addition, insurance facilities created may also consider investing the national or regional funds, in part or total, in international financial markets by the support of the international reinsurance facilities. Such example is epitomized by current agricultural weather index program in Thailand (Sompo Japan Insurance Inc., 2010) and the Caribbean catastrophe risk insurance facility (Ghesquiere et al. 2007).

5) Enhanced availability of risk information: Availability of reliable rainfall data and associated crop losses is a prerequisite for designing a robust index based insurance facility. Similarly, comprehensive information on physical characteristics of the infrastructure such as buildings, warehouses etc to be insured is needed for estimating the risk from hazards such as floods, droughts, and earthquakes. Such robust information infrastructure is still not readily available in the large-scale in most of the developing countries, including the Asia-Pacific region, hindering expansion of the risk insurance facilities.

For example, the lack of widespread historical data to assess relationship between weather parameters and crop losses has limited the implementation of risk insurance facility to the area where historical weather information is available in Thailand (Sompo Japan Insurance Inc., 2010). Risk insurance facilities have overcome this limitation by investing the resources to collect and analyze the available information, employing simulation modeling, and interpolation and extrapolation techniques and by increasing the risk margin while calculating the price of the premium (United Nations, 2007; O'Connor, 2005). Nevertheless, in all the cases, the availability of risk information determined the feasibility and success of an insurance facility.

Comparing these experiences with the issues identified in the beginning of this section, the insurance initiatives didn't translate in terms of scaling up and sustainability of these initiatives which are areas where the future climate regime could play an important role.

4. Proposals to the UNFCCC for the Future Climate Regime

The future climate regime can facilitate promoting the climate risk insurance in the Asia-Pacific region through providing the additional finances required which is one of the major limitations in promoting disaster risk mitigation (GFDRR, 2009). The mentions to the risk insurance can be found in the negotiated text of the UNFCCC and Conference of Parties. The Article 4 paragraph 8 of the UNFCCC text refers to the risk insurance as a funding mechanism to meet the needs of the developing countries arising from the adverse effects of climate change (UNFCCC, 1992) "...including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact...". The UNFCCC text also characterizes countries eligible for financing and insurance mechanisms. The Bali Action Plan goes further and explicitly states that the risk insurance mechanisms should be used in promoting adaptation (UNFCCC,

2007).

Various proposals have been submitted and made by the Parties to the Convention as well as by those outside the Convention for promoting the risk insurance under the Convention. The Alliance of Small Island States (AOSIS), the most rigorous promoter of such risk insurance scheme, has proposed for an International Insurance mechanism and Solidarity Funds to address catastrophic risk and collective loss sharing. Cook Islands proposed the International Insurance Scheme where it emphasized the collective burden sharing, subsidy elements to maintain fund as a compensation for unavoidable impacts, and funding risk reduction initiatives (Harmeling, 2008). Switzerland proposal includes prevention and insurance pillars with funds coming from global CO₂ levy with greater benefit to low income countries.

Munich Re Climate Change Initiative made a proposal consisting of two tracks or pillars, one for supporting risk reduction through mitigation activities and the other supporting the insurance (Bals et al., 2008). The insurance component was divided into two tiers with tier I consisting of climate insurance pool to cover the high level risks in non-Annex I countries and the tier II consisting of public safety nets and insurance systems through public-private partnerships covering medium level risks. Table 2 summarizes the insurance proposals submitted to the Convention.

Table 2. Summary of Selected Country/Consortium Proposals on Disaster Risk Insurance Mechanisms at UNFCCC Negotiations

Characteristics	Proposals			
	AOSIS	MCII	Cook Islands	Switzerland
Target group (governments/individuals)	National Governments of SIDS, LDCs and other developing countries	Governments and individuals	National governments of SIDS	Regional authorities, governments, and individuals
Geographical coverage (national/local/regional)	Regional/National	National	National	<ul style="list-style-type: none"> Regional and sub-regional (insurance pillar); National (prevention pillar)
Source of funding	<ul style="list-style-type: none"> Convention Adaptation Fund KP Adaptation Fund (existing) Other bilateral and multilateral sources 	Financial mechanism of the Convention channeled through CIP, CIAF, and CRMF	Internationally-sourced pool of funds (subsidy in establishing/maintaining fund)	<ul style="list-style-type: none"> Global Carbon Tax Insurance pillar funded through MAF
Promotion of re-insurance	Yes, through conventional risk sharing and transfer instruments	Yes, through CIP	No reference to re-insurance	Yes, through public-private partnership
Targets premium prices	No indication for premium prices	No indication for premium prices	No indication for premium prices	Provides funding for premiums
Inclusion of risk mitigation component	Yes, through technical and financial support for risk reduction efforts	Yes, through the prevention pillar	Yes, mechanism funds risk reduction initiatives	Yes, through the prevention pillar
Reference to guidelines for implementation	No reference to guideline	Yes, under the authority and guidance of COP	No reference to guideline	Yes, defines eligible extreme events and insured damage
Reference to awareness	No reference to awareness	No reference to awareness	No reference to awareness	Yes, awareness generation is financed by NCCF
Addressing the risk data gaps	Yes, through improved risk management tools, collection and analysis of data	No reference to addressing data gaps	No reference to addressing data gaps	Yes, through small budget under the insurance pillar
Sustainability issues if any	No reference to sustainability	No reference to sustainability	No reference to sustainability	No reference to sustainability

AOISS: Alliance of Small Island States; **MCII:** Munich Climate Insurance Initiative; **SIDS:** Small island developing states; **LDC:** Least developed countries; **CIP:** Climate Insurance Pool; **CIAF:** Climate Insurance Assistance Facility; **CRMF:** Chronic Risk Management Facility; **MAF:** Multilateral Adaptation Fund; **NCCF:** National Climate Change Fund.

Sources for the Table: AOSIS, 2008; Cook Islands on behalf of AOSIS, 2008; The Munich Climate Insurance Initiative, 2009; and Government of Switzerland, 2008.

5. Conclusions and Way Forward

This working paper identifies existing limitations in promoting risk insurance by drawing lessons both from within and outside of the Asia-Pacific region and looks into how the future climate regime could help overcome these limitations.

Numerous risk insurance experiences show that risk spreading is a way forward for dealing with a variety of climate and non-climate related risks. However, feasibility and sustainability of implementing a insurance facility at global, regional, national, and local level could face several barriers which include limited knowledge among stakeholders about the benefits of risk insurance systems, limited expertise to design and implement insurance policies, challenges in keeping the premium prices minimum, lack of good quality historical data on risks, and poor presence of reinsurers, as identified in this brief. Addressing these factors is essential in enhancing readiness to accept insurance as a risk reduction tool as well as ensuring effectiveness of risk insurance scheme in the future climate regime.

While current proposals to the Convention address some of the above listed barriers through proposed risk management by means of insurance and risk prevention pillars, further details in terms of how they aim to overcome the barriers identified in this paper are needed, especially on the issues of the lack of historical data on local risks, and how enabling environment in terms of guidelines and government policies would be instituted that are also crucial for scaling up the risk insurance initiatives in the region. The proposals have failed to address the question of sustainability of proposed risk insurance mechanisms comprehensively.

While divergent positions are observed between Annex 1 and non-Annex 1 parties on the fundamental need to support insurance mechanism, it is crucial for parties to consider and assess the opportunities that insurance mechanisms provide in reducing risks at different levels in line with the role of the UNFCCC as a catalyst to promote collective actions. It is important for the Annex I parties to

recognize the fact that any risk reduction promoted in Non-Annex I countries would benefit the Annex I countries as well due to the role these countries are playing in terms of production of goods and services.

We suggest the future climate regime to consider adopting a convergence approach through a combination of lessons derived from the regional model such as CCRIF and local models such as numerous micro insurance schemes that are known to work well in the developing country context. In this regard, further assessment is needed on identifying the best mix or combination of such tools for each region concerned, including Asia-Pacific. We also suggest that the proposals to the Convention should take into stock various regional limitations in implementing a risk insurance system and design the insurance system that combines efforts for public awareness generation, putting in place robust and transparent systems to collect, analyze, and disclose risk information, provisions for continuous evaluation of the performance of the risk insurance systems, encourage greater private sector participation, and most importantly, keeping the premium prices low. In addition, the proposals should make clear how the regional and local insurance mechanisms are to be governed and sustained. The real impact of these proposals should reflect on the ground in terms scaling up of insurance initiatives leading to substantial risk reduction.

6. References

- AOSIS. 2008. Multi-Window Mechanism to Address Loss and Damage from Climate Change Impacts: Submission to the AWG-LCA. Alliance of Small Island States, UN. Available at <http://unfccc.int/resource/docs/2008/awglca4/eng/misc05a02p01.pdf> [accessed on 12 November 2010].
- Arnold, M. 2008. The role of risk transfer and insurance in disaster risk reduction and climate change adaptation. Policy Brief, Commission on Climate Change and Development, Kräftriket, Stockholm, Sweden.
- Bals, C., I. Burton, S. Butzengeiger et al. 2008. Insurance-related options for adaptation to climate change. Presented at Expert Workshop on Risk Management and Insurance Solutions to Face Climate Change: A Way Forward. Germanwatch, Bonn. Available at <http://www.germanwatch.org/klima/en.htm> [accessed on

- 12 November 2010].
- Barnett, B. J. and O. Mahul. 2007. Weather Index Insurance for Agriculture and Rural Areas in Lower Income Countries. *American Journal of Agricultural Economics*, 89 (5): 1241-1247.
- Cook Islands on behalf of AOSIS. 2008. Advancing adaptation through finance and technology, including National Adaptation Programmes of Action. Views of AOSIS. Presentation material at the Workshop on advancing adaptation through finance and technology, including National Adaptation Programmes of Action. Available at http://unfccc.int/files/adaptation/application/pdf/cookislands_awgla2_adaptation_workshop.pdf [accessed on 12 November 2010].
- GFDRR. 2009. Disaster risk management programs for priority countries: Summary. Global Facility for Disaster Risk Reduction and Recovery, International Strategy for Disaster Reduction, and The World Bank.
- Ghesquiere, F., O. Mahul, F. Marc and G. Ross. 2007. "Caribbean Catastrophe Risk Insurance Facility: A Solution to the Short-term Liquidity Needs of Small-Island States in the Aftermath of Natural Disasters." *Financing for Relief and Development*, International Aid and Trade.
- Giné, X. 2009. Innovations in insuring the poor: Experience with weather index-based insurance in India and Malawi. *2020 Vision for Food, Agriculture and the Environment*, 17 (7), pp. 2.
- Government of Switzerland. 2008. Funding Scheme for Bali Action Plan: A Swiss Proposal for global solidarity in financing adaptation. National Submission to the AWG-LCA. Available at http://unfccc.int/files/kyoto_protocol/application/pdf/switzerlandfinancebap091008.pdf [accessed on 12 November 2010].
- Harmeling, S. 2008. adaptation under the UNFCCC – the road from Bonn to Poznan 2008. Briefing paper, Germanwatch, Bonn. Available at <http://www.germanwatch.org/klima/bonnadapt08e.pdf> [accessed on 12 November 2010].
- Kunreuther H. C. and E. O. Michel-Kerjan. *University Of Pennsylvania Law Review*, 155: 1795-1842.
- Kunreuther, H. and E. Michel-Kerjan. 2007. Climate Change, Insurability of Large-Scale Disasters and the Emerging Liability Challenge. NBER Working Paper No. W12821, National Bureau of Economic Research, Cambridge, USA.
- Munich Re. 2010. Topics Geo. Natural catastrophes 2009: Analysis, assessments and positions. Munich Re, München, Germany.
- Njegomir, V. and M. Rado. 2009. Risk transfer solutions for the insurance industry. *Economic annals*, Volume LIV, No. 180, January – March 2009.
- O'Connor, P.M. 2005. Recent trends in the catastrophic risk insurance / Reinsurance Market. OECD Publishing, doi: 10.1787/9789264009950-20-en.
- O'Donnella, O., D. Eddy van, P. Ravi, et al. 2008. Who pays for health care in Asia? *Journal of Health Economics*, Volume 27, Issue 2, March 2008, Pages 460-475.
- Siamwalla, A. and A. Valdes. 1986. Should crop insurance be subsidized? In P. Hazell, C. Pomareda and A. Valdez, eds., *Crop insurance for agricultural development: Issues and experience*, John Hopkins University Press, Baltimore, MD, pp 322.
- Sompo Japan Insurance Inc. 2010. Weather Index Insurance Launched for Drought Risk in Northeast Thailand: Provision of adaptation measure for climate change utilizing insurance. Sompo Japan Insurance Inc., Tokyo, Japan.
- Swiss Re. 2010. Weathering climate change: Insurance solutions for more resilient communities. Swiss Reinsurance Company Ltd., Zurich, Switzerland, pp. 16.
- Swiss Re. 2010. World Insurance in 2009: Premiums dipped, but industry capital improved. Swiss Reinsurance Company Ltd., Zurich, Switzerland, pp. 42.
- The Munich Climate Insurance Initiative. 2009. Climate Risk Management Mechanism including Insurance, in the context of Adaptation to Climate Change: Submission to the thirtieth session of the UNFCCC Convention Subsidiary Bodies (SBSTA, SBI) and eighth session of the AWG-KP and sixth session of the AWG-LCA, 2009. Available at <http://unfccc.int/resource/docs/2009/smsn/ngo/132.pdf> [accessed on 12 November 2010].
- Toshichika Iizumi, Masayuki Yokozawa, Yousay Hayashi, and Fujio Kimura. 2008. Climate Change Impact on Rice Insurance Payouts in Japan. *Journal of Applied Meteorology and Climatology*, 47: 2265-2278.
- Tsuji, H. 1986. An economic analysis of rice insurance in Japan. In P. Hazell, C. Pomareda and A. Valdez, eds., *Crop insurance for agricultural development: Issues and experience*, John Hopkins University Press, Baltimore, MD, pp 322.
- UNFCCC. 1992. United Nations Framework Convention on Climate Change. United Nations Framework Convention on Climate Change. Available at <http://unfccc.int/resource/docs/convkp/conveng.pdf> [accessed on 28 October 2010]
- UNFCCC. 2007. Bali Action Plan. Conference of Parties 13, United Nations Framework Convention on Climate Change, Bali, Indonesia. Available at http://unfccc.int/files/meetings/cop_13/application/pdf/cop_bali_action.pdf [accessed on 10 October 2010].
- United Nations. 2007. Developing Index-Based Insurance for Agriculture in Developing Countries. Sustainable Development Innovation Briefs, 2. New York: United Nations.
- Yazici, S. 2007. The Turkish Catastrophe Insurance Pool (TCIP) and Compulsory Earthquake Insurance Scheme. In *Catastrophic Risks and Insurance*. OECD Publishing, doi: 10.1787/9789264009950-20-en.
- Yucemen, M. S. 2008. Turkish catastrophe risk insurance pool. Presented at International Conference on Financial Education, 7-8 May 2008, Washington D.C., USA.

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