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ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
AOSIS	Alliance of Small Island States
AR	Assessment Report
AWG	Ad Hoc Working Group
BB	Bangladesh Bank
BFID	Bank and Financial Institutions Division
BMD	Bangladesh Meteorological Department
BRDB	Bangladesh Rural Development Board
CAT Bonds	Catastrophe Bonds
CCRIF	The Caribbean Catastrophe Risk Insurance Facility
CI	Crop Insurance
COP	Conference of the Parties
CRI	Climate Risk Insurance
CRM	Customer Relationship Management
CSOs	Civil Society Organizations
CSR	Corporate Social Responsibility
DRR	Disaster Risk Reduction
ExCom	Executive Committee
FGDs	Focus Group Discussions
FY	Fiscal Year
G20	Group of 20
G7	Group of 7
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GHGs	Green House Gases
HFA	The Hyogo Framework for Action
IPCC	Intergovernmental Panel on Climate Change
IBI	Index Based Insurance
IDRA	Insurance Development Regulatory Authority
IGA	Income Generation Activities
INC	Intergovernmental Negotiation Committee
IWFM	Institute of Water and Flood Management)
KII	Key Informant Interviews
KIs	Key Informants
KP	Kyoto Protocol
LCA	Long-Term Cooperative Action
L&D	Loss and Damage
LDCF	Least Developed Countries Fund
LDCs	Least Developed Countries
MCII	Munich Climate Insurance Initiative
MDTF	Multi-Donor Trust Fund
MF	Micro Finance
MFIs	Micro Finance Institutions
MMS	Manob Mukti Songstha
NAP	National Adaptation Plan
NBFI	Non Banking Financial Institution
NGOs	Non Government Organizations
PA	Paris Agreement
PKSF	Palli Karma-Sahayak Foundation
POs	Partner Organizations
PLCF	Participatory Livestock Compensation Fund
PPM	Parts Per Million
SBC	Sadharan Bima Corporation
SBI	Subsidiary Body for Implementation
SCCF	Special Climate Change Fund
SDC	Swiss Development Agency and Corporation
SFDRR	The Sendai Framework for Disaster Risk Reduction
SREX	Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation
SPSS	Statistical Package for the Social Sciences
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
WIBCI	Weather Index-Based Crop Insurance
WIM	Warsaw International Mechanism

Executive Summary

Globally, the weather related extreme events and associated loss and damages (L&D) have increased significantly. With of high confidence, the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5) published in 2014 stated that the risks associated with those extreme weather events will further increase, putting disproportionate burden of climate stress and associated losses to the most vulnerable poor countries and communities.

In the face of growing weather extremes and associated L&Ds, the global policy stakeholders at the UNFCCC negotiation have long been in discussion for agreeing a comprehensive 'multi-window mechanism' for addressing L&D, however the differentiated political position on the demand for 'loss compensation' from the historical liability context of the developed countries made the process considerably delayed.

It's only in 2007, the 13th Conference of the Parties (COP 13) of the UNFCCC included L&D as an agenda item, roughly 16 years later since the issue was first raised in 1991 at the 46th General Assembly of the United Nations. Over the years, the developed country group denied any discussion despite the L&D had started to manifest; they also had long been able to hinder any progress in L&D negotiations as they feared to be held liable for causing L&Ds and compensate those.

Despite strong opposition of the developed countries, the negotiation on L&D got significant momentum since COP 13; however, major progress achieved at COP 21 where the country Parties included a stand-alone article in the Paris Agreement (PA), with the provision of enhanced action and support, and approaches e.g. risk reduction, risk sharing and risk transfer, and rehabilitation for addressing L&DS.

Though, the pre-Paris COP negotiations emphasized for a comprehensive 'all inclusive' mechanism, the post-Paris COP negotiations provided utmost focus on a 'all alone' mechanism e.g. insurance for addressing L&D. For instance, among three different but interconnected approaches, climate risk sharing and risk transfer has become the priority concern with increased financial commitment and support primarily by the G7 and G20 country group who find 'insurance' apparently as an ultimate solution of addressing L&Ds. At COP 23 in 2017, the G20 countries launched their climate risk finance 'the InsuResilience Global Partnership for Climate and Disaster Risk Finance' also established a Multi-donor Trust Fund (MDTF) under the administering authority of the GFDRR/World Bank Group to implement the InsuResilience initiative.

Despite the opportunities the climate risk insurance (CRI) provide, they are not appropriate for addressing longer-term foreseeable risks like sea-level rise and desertification, also the CRI may not cover the predictable L&Ds that the poor share-croppers and marginalized smallholders in the developing countries face almost in every year. There are less evidences that poor smallholders pay insurance premiums; it's neither affordable by the smallholders, not justifiable to ask them to pay premiums.

In many countries misconception on the risk transfer mechanisms exists, many of them still lack an appropriate regulatory framework for introducing CRI. In many places, people consider insurance as a mechanism that would deceive them, they also consider insurance too expensive. Therefore, CRI should not be considered as an 'all alone' solution as it has many structural limitations and setbacks. For instance, CRI could not be applied in transferring

risks associated with the slow climate process (e.g. secondary and tertiary risks of climate change), also could not be applied on the loss of human lives. Insurance coverage on the loss of human life raises at least two moral concerns; a) human life is invaluable so it's not ethical to put a price tag on humal life b) every human life is unique and equally significant; be s/he either rich or poor or from rich or poor countries, so differentiatied valuation of human life is also unethical.

Given the stated scopes and limitations of CRI, this study report provides a theoretical analysis on the policy propositions and practices of insurance mechanism in transferring climate induced disaster losses, also summarizes a study findings on the readiness of Bangladesh's insurance sector in the context of introducing CRI to protect climate sensitive production systems e.g. agriculture.

This report includes 4 chapters;

Chapter 1 summarizes nearly three decades of UNFCCC negotiation on L&D and provides an analysis regarding how the political standpoint (as well as Prejudice) of some of the country Parties promoted CRI as an ultimate choice for addressing L&Ds.

Chapter 2 analyses insurance and other risk transfer mechanisms, summarizes benefits, challenges and limitations of the existing risk transfer mechanisms in the context of complicated risk scenario of climate change induced sudden, slow and unusual events;

Chapter 3 analyses Bangladesh's overall vulnerability to the impacts of climate change, briefly describes the L&Ds scenario and protection gaps, provides an overview on disaster risk financing and risk transfer practices; and,

Chapter 4 summarizes a study findings on the readiness of the Bangladesh's insurance sector for introducing CRI to transfer risk of disaster losses.

While the study recognizes significant role of CRI in compensating/offsetting climate-induced disaster losses, however most of the insurance industries are found neither prepared nor even motivated to develop a new insurance scheme for transferring climate induced disaster losses from the country's key sector e.g. agriculture. The study concludes with several recommendations in the context of introducing an effective and pro-poor CRI in Bangladesh.

CHAPTER 1

Climate Risk Insurance (CRI) in the Global Policy Discourse

Climate Risk Insurance: beaganing of the debate

The climate risk insurance (CRI) came into global policy discourse back in 1991 at the 46th Session of the United Nations General Assembly.

Vanuatu, on behalf of the Alliance of the Small Island States (AOSIS) that feared permanent and unavoidable losses of their territories by the predicted sea level rise, argued for an 'International Insurance Pool' as a collective loss sharing scheme, along with the provision of a global fund to compensate predicted losses. The proposal for establishing a 'Global Fund' warranted a mandatory contribution from the industrialized countries based on their ability to pay as well as their historical responsibility for amassing greenhouse gas in the atmosphere.

Recognizing climate change as a common concern of mankind, the 46th UN General Assembly by its decision 46/169 established a single intergovernmental negotiating committee (INC) with the mandate of starting a negotiation process for the preparation of a framework convention on climate change (UN, 1992a). The INC drafted the United Nation's Framework Convention on Climate Change(UNFCCC) in 1992. The Convention defined its overarching goal of limiting greenhouse gases (GHGs), but did neither consider the 'Insurance Pool' nor made the developed countries obliged to establish a 'Global Fund' to compensate the permanent losses that would be resulting from the predicted sea level rise.

However, the Convention called the country Parties to give full consideration on the actions, including insurance, which are necessary to address climate change. That specific paragraph reads;

> *…..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…* (UN, 1992b).

The Convention acknowledged 'insurance' as one of the measures for addressing adverse impacts of climate change, while side-stepped the basic argument of AOSIS e.g. establishing an obligatory 'Global Fund' for compensating unavoidable and irrecoverable L&D.

Given the urgency of limiting global average temperature, the Convention rather provided due emphasis on emission reduction, and the initial years of UNFCCC negotiation were found to be effective in mobilizing country parties to agree on a specific target of emission reduction. Those years of negotiations is marked by the adoption of Kyoto Protocol (KP) in 1997 that required the developed countries with its legally binding commitments to reduce GHG emissions by 5.2 % from the level of 1990 (Grubb, 2004). It was presumed that the effective implementation of the KP, associated with other timely measures for GHGs emission reduction, would reduce the extent and gravity of climate change impacts, including the sea level rise, hence discussion on climate risk insurance didn't get through in the initial years (mitigation era) of climate change negotiations.

Climate Risk Insurance in the Post-Mitigation Era (post Kyoto Regime)

The denial of emission reduction by the major GHG emitting parties under the Kyoto Protocol made KP implementation rather slack, and thereby undermined the collective sprit of emission reduction as enshrined in the Convention. Over the years, the distracted focus

on GHG emission reduction by the Parties under the KP and at the same time rise of emissions by the major developing countries caused consistent rise in global warming instead of its reversal.

Increased amount of GHG emission and consequent rise in global warming was confirmed by the IPCC's Third Assessment Report (IPCC TAR, 2002) that showed increase of atmospheric GHG (equivalent to CO_2) concentration from about 280 ppm in the pre-industrial era to about 368 ppm in 2000 with projected increase ranges from 540 to 970 ppm by 2100. The IPCC report also confirmed rising of socio-economic costs related to weather damage, especially to the population that inhabits small islands and/or low-lying coastal areas as they are being increasingly exposed to severe social and economic effects from the rise of sea-level and storm surges.

IPCC's TAR 2002 findings provoked the policy stakeholders to emphasize adaptation actions, and at COP7 held in Marrakesh in 2001 the developing country group raised their concern for adaptation actions along with required financial mechanism, including an 'insurance pool' to meet the specific needs and concerns of the small island developing states. While the COP 7 decided to establish three new special funds namely the Special Climate Change Fund (SCCF), the Least Developed Countries Fund (LDCF), and the Adaptation Fund, but the decision on the establishment of 'Insurance Pool' deferred to the next COP, COP 8, held in Delhi in 2002. The COP 8 also failed to agree on a decision on insurance pool, rather decided to develop a background paper and organize two workshops in the following year to explore scopes of the insurance as a climate risk transfer mechanism (Roberts& Zakieldeen, 2018).

While it was expected that the judicial implementation of KP would protect the climate vulnerable countries from unavoidable losses (e.g. loss of territories from the sea level rise), however, this didn't happen, rather impacts of climate change and associated L&D become obvious and certain with the consistent rise of global warming. The frightful apprehension the AOSIS and other climate vulnerable countries on the extent and gravity of irrevocable L&D impelled them to further raise their argument for loss compensation, along with an insurance pool , which actually was surfaced on the failure of KP implementation.

Collective Argument for L&D Compensation in the Adaptation Era

Over the years, inaction in KP implementation and the feeble mitigation commitment largely by the developed countries resulted to the increased prevalence of multi-category high impact disasters, leaving imitated space and feasibility to adapt and recover from the shocks and costs of economic, human, social and cultural losses. While, some of the L&D resulting from the extreme events, for instance, crop loss by early flash flood could be averted through enhanced adaptation actions (e.g. developing short maturing rice varieties, changing cropping pattern etc.), but the L&D resulting from the slow onset events such as sea-level rise, salinization of agricultural land, desertification, pest and disease outbreak etc. cannot be averted by the predictive adaptation actions. The situation is defined as the hard limits of adaptation (Klein, et al. 2014) as the adaptation options to those slow onset events do not exist yet. With the growing scientific evidences of the hard limits of adaptations (CPRD, 2015; Rabbani et.al. 2013, Traore and Owiyo, 2013) the developing countries (also the global CSOs) started demanding 'compensation' for the unavoidable and uninsurable L&D.

At COP 11, held in Montreal in 2005, Bangladesh, on behalf of the LDCs, asked for compensation for changing the climate and causing harm (Earth Negotiation Bulletin, 2005). Followed by the massive destruction of a Category 4 Cyclone (Cyclone Sidr) in November 2007, Bangladesh again raised its rightful demand for compensation at COP 13 held Bali in 2007 (Mukta & Khalid, 2008). Along with LDCs, the AOSIS further argued that;

> *'[w]here adaptation cannot fully address the impacts of climate change on countries and their communities, impacted countries are justified in seeking compensation from those countries most responsible for the greenhouse gas emissions that have led to those impacts'* (UNFCCC, 2007).

The repeated arguments of AOSIS and other developing countries resulted to the inclusion of 'loss and damage' in the decision text of COP 13. The COP 13, by its decision1/CP.13 called the country Parties for enhanced action on adaptation including, inter alia, consideration

on the means to address loss and damage. The corresponding COP decision 1/CP.13, Para c (iii) reads;

> *Consideration of …c(iii) 'Disaster risk reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly adverse to the impacts of climate change (UNFCCC, 2008)'.*

Since COP 13 in 2007, the collective position of LDCs and AOSIS gradually culminated to a strengthened call for compensation with the solid argument of separating 'loss and damage' from adaptation, however, insurance still remains as one of the *'ex-ante'* measures for transferring part of L&D. For instance, the AOSIS proposal in 2008 (AOSIS, 2008) for a multi-window mechanism for addressing L&DS includes three inter-dependent components: a) Insurance; to address climate-related extreme weather events and risks to crop production, food security, and livelihoods; b) Rehabilitation and compensation; to address progressively negative impacts that result in loss and damages, and c) Risk management; to promote risk assessment and risk management mechanism and strategies at all levels.

In the face of consistent pressure of the AOSIS and LDCs, and with more certain scientific evidences of climate-induced L&D across the globe, the COP 16 in 2010 finally agreed to a decision to establish a 'Work Programme' on L&D under the Cancun Adaptation Framework (Decision1/ CP.16, Para 28) (Künzel, et al.2017). The corresponding COP decision reads; the Conference of the Parties;

> '*decides to hereby establish a work programme in order to consider, including through workshops and expert meetings, as appropriate, approaches to address loss and damage associated with climate change impacts in the developing countries that are particularly vulnerable to the adverse effects of climate change; (…)'*(UNFCCC, 2012a).

This decision also mandated COP's Subsidiary Body for Implementation (SBI) to further elaborate functions and role of the 'Work Programme' under three thematic areas; a) Assessing the risk of L&DS associated with the adverse effects of climate change, and the state of current knowledge; b) A range of approaches to address L&DS associated with the adverse effects of climate change, including impacts related to extreme weather events and slow onset events, taking into consideration of experience at all levels, and c) The role of the UNFCCC in enhancing the implementation of approaches to address L&D associated with the adverse effects of climate change (UNFCCC, 2011).

Establishment of L&D Work Programme at COP 16, in fact, established a justification of loss compensation that the AOSIS and LDCs started demanding even before the UNFCCC and COP process started. Henceforth, the inclusiveness around L&DS discourse within and outside of UNFCCC process delivered several tangible decisions in the subsequent COP negotiations.

Those COP decisions include; a) Agreement on the role of the Convention in promoting implementation of approaches to address L&D associated with the adverse effects of climate change at COP 18 in 2012 (Decision 3/CP.18, Para 5); b) Decision on the establishment of an institutional arrangement, such as an international mechanism, including its functions and modalities at COP 18 (Decision 3/CP.18; Para 9); c) Establishment of an institutional mechanism called 'the Warsaw International Mechanism (WIM)' for L&D at COP 19 in 2013 (Decision 2/CP.19/Para 1); d) Decision on the role of the WIM under the Convention with of WIM's major functions, such as enhance knowledge, strengthen dialogue and coordination, enhance action and support including financeat COP 19 (Decision 2/ CP.19/ Para 5), and finally e) Inclusion of a standalone Article (Article 8) for L&D in the Paris Agreement at COP 21 held in Paris in 2015 (Decision 1/CP 21/Paris Agreement/Art). **Figure-1** shows major COP decisions on L&D and insurance

Though, the UNFCCC acknowledged 'insurance' as one of the measures for addressing climate change, however the struggle was not just to have an 'Insurance Pool' to transfer certain economic losses, rather incorporate 'Loss and Damage' to the UNFCCC process, as an inclusive 'measure' along with mitigation and adaptation, for addressing climate change. The struggle was to include both economic and non-economic dimensions of L&D arising from slow and sudden onset events. And, the struggle was built on the argument for correcting 'manifest climate injustice' that the developed countries did, and continue doing through their historical legacy of injustice and unfair footprint to the global ecological space.

46th Session of the UN General Assembly, 1991	AOSIS tabled a proposal for an International Insurance Pool' along with a Global Fund to compensate unavoidable L&D	Mitigation Focused, Demand for Insurance Pool and a L&D Compensation Fund
UNFCCC, 1992	The UN Framework Convention on Climate Change acknowledged insurance to address adverse impacts of climate change	
COP 8 in 2002	Decided to develop background paper on insurance mechanism	Adaptation Focused. Growing demand for L&D compensation
COP 13 in 2007	Bali Action Plan decided to consider means to address L&D under the enhanced action of adaptation. Strengthened argument for L&D compensation	
COP in 2008	AOSIS tabled a proposal for a multi-window mechanism that includes three components, one of which was on insurance	
COP 16 in 2010	Established a SBI Work Programme on L&D; elaborated functions of the Work Programme under three thematic areas	Enhanced adaptation and L&D focused
COP 18 in 2012	Decided to establish an institutional arrangements under the UNFCCC to address L&D; the uncompromising position of the countries resulted to a compromised position of the developing countries and 'liability and compensation', was substituted by 'rehabilitation'. (Decision 3/CP.18; Para 7/ iv)	Intense discussion and debate on liability and L&D compensation
COP19 in 2013	Established Warsaw International Mechanism under the UNFCCC. COP 19 elaborated roles and function of the WIM such as enhancing action and support, including finance, technology and capacity building, to address L&D	
COP 20 in 2014	Approved initial two-year work-plan of WIM developed by the interim Executive Committee	
COP21 in 2015	The Paris Agreement included L&D as a separate article. The demand for L&D compensation has been excluded from the COP negotiations by a decision (decision 1/ CP21, Para 51). Established a Task Force on displacement and clearing house on risk transfer.	
COP22 in 2016	First review of the WIM held.	Mitigation Focused. Compromised text on L&D in the Paris Agreement. Insurance became the 'all alone' option for addressing L&D
COP23 in 2017	Approved the five-year rolling work-plan of the ExCom. Launched 'Fiji Clearing House for Risk Transfer'	
48th SBI Session in 2018	Expert dialogue on finance for loss and damage held in Bonn.	
COP 24 in 2018	Inclusion of L&D to the Transparency Framework of the Katowice Climate Package. Approved WIM's Five Year Work Program that also narrowed the measures and financial options to address L&D only with insurance solutions.	

Figure 1: *Major COP decisions on L&D and insurance*

Climate Risk Insurance in the Paris Agreement: revived on the lost battle over compensation

Progress in L&D negotiation, especially establishing role of the Convention on L&D and having a standalone Article in the Paris Agreement, were hailed by countries, including CSOs as they presumed those outcomes as the procedural win over the long-lasting impassive position of the developed countries on the issue. The agreed outcomes of L&D negotiation also salvaged the COP process as since 2007 L&D appeared as the most debated issue resulting to a clear rift between developed and developing country Parties. However, such procedural achievements (and salvage the COP process) costs the developing countries losing their core demand of e.g. 'liability and compensation', which was substituted by 'rehabilitation' by the corresponding COP decision (Decision 3/CP.18; Para 7/ iv) that reads;

'…..identify and develop appropriate approaches to address loss and damage …..including through risk reduction, risk sharing and risk transfer tools, and approaches to rehabilitate from loss and damage associated with the adverse effects of climate change'(UNFCCC, 2012b).

At COP 21, the developed country group explicitly confirmed that Article 8 of the Agreement does not involve or provide a basis for liability or compensation (Decision, 1/CP.21, para 52).

Climate Risk Insurance in the post-Paris Regime

Though the Paris Agreement acknowledged L&D as a standalone agenda item (Article 8), however, the negotiation at the post Paris COPs (COP 22, COP 23, COP 24 respectively in 2016, 2017 and 2018 indicated that the developed country group is yet to endorse 'L&D' as one of the key approaches, along with adaptation and mitigation. While, the Paris Agreement made a clear distinction between 'Adaptation' and "Loss and Damage' placing them under separate Articles; Article 7 for adaptation and Article 8 for loss and damage, still there are many developed countries found insistent keeping L&D under the mandate of Cancun Adaptation Framework and asked developing countries to include measures for addressing L&D to their National Adaptation Plans (NAPs) that the developing countries will be preparing during next few years. Merging L&D to the NAP is a misleading proposition and disregard to the theoretical understanding of L&D as all climate change impacts cannot be successfully adapted to, be it due to financial, technical or physical constraints (Künzel, et al.2017) or be it due to people's incompatibility to adapt (Warner et al., 2012).

The other point of disagreement was on 'L&D finance' that refers to the decisions of COP 19 and COP 21; those respectively read;

….. the Warsaw international mechanism shall fulfil the role under the Convention of promoting the implementation of approaches to address loss and damage associated with the adverse effects of climate change….. by undertaking, inter alia, the following functions:

*'Enhancing action and support, including finance, technology and capacity building, to address loss and damage associated with the adverse effects of climate change, so as to enable countries to undertake actions pursuant to decision 3/CP.18, paragraph 6; Decision 2/CP.19; Warsaw International Mechanism/Para 5/C' (*UNFCCC, 2014*).*

and,

'Parties should enhance understanding, action, and support, including through the Warsaw International Mechanism, as appropriate, on a cooperative and facilitative basis with respect to loss and damage associated with the adverse effects of climate change; Decision 1/ CP.21; Paris Agreement/ Article 8/Para 3' (UNFCCC, 2016).

Referring to the above decisions (Decision 2/ CP.19 and *Decision 1/ CP.21*) for mobilizing L&D finances, the developing country group in all the post-Paris COPs was demanding to open-up discussions on 'action and support' as a stand-alone and regular 'L&D' agenda item. In contrary to this, the developed country group was in a firm position of keeping L&D discussions aside, under the purview of the WIM and its Executive Committee, at least until the WIM review due at COP 25 in 2019. Instead, the developed countries argued that they are already supporting countries in need through humanitarian assistance, which is in another way of L&D financing.

Though the recent COP discussions ignored L&D compensation and the demand for L&D finances,

however, established 'Insurance Pool' as the key mechanism for addressing L&D.

In the earlier COP negotiations until 2007, insurance appeared intermittently under a comprehensive package/proposal, and since 2007 (COP 13) L&D became so widespread in the climate policy discourse that insurance stared to be considered as an 'inappropriate' solution especially addressing both economic and non-economic L&D associated with the slow onset events. However, insurance gets its life on the same ground (at COP 21) where the developing countries lost their core demand of 'loss compensation'. While one of the decisions of COP 21 nullified compensation demand, the other decision fervently justified, yet controversial, climate risk insurance measure. By the decision '1/CP.21, Para 48', the COP 21 requested the Executive Committee of the Warsaw International Mechanism (ExCom);

'to establish a clearing house for risk transfer to serve as a repository of information on insurance and risk transfer, in order to facilitate the efforts of Parties to develop and implement risk management strategies' (UNFCCC, 2016).

The said clearing house called 'Fiji Clearing House for Risk Transfer' launched at COP23 in Bonn in 2017. Aside with the COP process, the G20 summit in Hamburg in 2017 also emphasized climate risk finance and insurance solution as the key objective to increase resilience of the vulnerable countries. In the same year, in a side event of COP 23, the G20 initiative on climate risk finance 'the InsuResilience Global Partnership for Climate and Disaster Risk Finance and Insurance Solutions' was launched. Since then more than 40 partners signed the Joint Statement and become members of the Global Partnership. A Multi-donor Trust Fund (MDTF), under the administering authority of the GFDRR/ World Bank Group, was also established in 2017 to implement the InsuResilience initiative that will fund to expand existing insurance pool in Africa, Latin America and in the Caribbean, also will set up new insurance schemes in vulnerable regions to provide insurance access up to 400 million additional people by 2020.

Paradoxically, while the repeated efforts of the developing countries (especially the moral pleas of the small island developing states for their very survival) for incorporating discussion on L&D finance in COP agenda item were foiled by the developed countries, the latter group at the same time fervently putting resources to promote a new 'business model' enchasing this global crisis. As preferred by the developed country group, the WIM's five-year work program approved at COP 24 also narrowed the measures and financial options to address L&D only with insurance solutions, which was bluntly criticized at by small island states and the civil society advocates (Lehr & Schalatek, 2018).

Despite the narrowed scope of L&D negotiation in post Paris climate regime, the COP 24 held in Katowice in 2018 included L&D in the Transparency Framework of the Katowice Climate Package, also approved WIM's Executive Committee report. Such achievement, though might not so significant, however, retained an option for further discussionsin the following COPs.

Conclusion

The analysis of the nearly three decades of UNFCCC negotiations, clearly showed the negotiation on L&D took diverse features, as befitted with the interest of the developed countries; they not only had long been able to hinder any progress in L&DS negotiations on the ground of 'liability and compensation' but also became successful introducing 'insurance' as the key measure for addressing L&D.The impasses of the L&D negotiations in the post Paris COPs symbolizes that the inclusion of L&D in the Paris Agreement was not to correct the 'manifest climate injustice', rather appease collective argument of the developing country group-supported by the global CSOs.

However, the procedural progress in the COP process-most importantly inclusion of L&D to the Katowice Climate Package should not be undermined as these could be referenced from now on in the future rounds of negotiations.

CHAPTER 2

Climate Risk Insurance and other Risk Transfer Mechanisms

Role of Insurance in Climate/ Disaster Risk Transfer: a theoretical understanding

Insurance is considered as one of the potential means for transferring risk of uncertain financial loss through establishing a pooled fund from many insured entities (who are exposed to the risk of life and property losses) to pay for the losses that some may incur. By nature, insurance is an *'ex-ante'* risk financing, through which an at-risk party cedes all or some of its risk exposure to a third party in return for a premium payment (Le Quesne, 2017). Theoretically, an insured entity or a person is not protected from the likely risk that may cause L&D, rather it's a mechanism of buying 'L&D cost compensation' from a self-contributory pooled fund.

According to the World Bank (2009), insurance (and other disaster risk financing mechanisms) can only reduce country's economic and fiscal burden of natural disasters by mobilizing resources immediate aftermath of a disaster, while buffering the long-term fiscal impact of disasters.

However, insurance and other risk transfer mechanisms cannot help to shelter populations and protect assets from the destruction of extreme weather events unless a functional comprehensive disaster risk reduction (DRR) strategy is in use. Insurance as a standalone measure is neither helpful for reducing disaster risk not supportive to advance adaptation actions (Warner et.al. 2009). Only when insurance is embedded in a well-designed comprehensive DRR strategy then this could be accessible, affordable and viable in the long run (UNISDR, 2015b).

Though many of the global strategy documents (deatils in **Box 1**) like the Hyogo Framework

BOX 1: Insurance in the global policy strategy documents

The Bali Action Plan identified risk transfer mechanisms as risk management and risk reduction strategies, which is part of enhanced adaptation actions for the country (UNFCCC, 2008).

The Hyogo Framework for Action (HFA, 2005-2015) for Disaster Risk Reduction highlighted the importance of promoting the development of financial and risk-sharing mechanisms, particularly insurance and reinsurance against disasters (UNISDR, 2007).

IPCC SREX emphasized that risk sharing and transfer mechanisms at local, national, regional, and global scales can increase resilience to climate extremes (IPCC, 2012).

The Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) highlighted the importance of mechanisms for disaster risk transfer and insurance at all levels – global, regional, national and local (UNISDR, 2015a).

The Paris Agreement, in its Article 8, explicitly mentioned risk insurance facilities, climate risk pooling and other insurance solutions as the measures for addressing climate induced loss and damages (UNFCCC, 2015).

(2005-2015) and the Sendai Framework (2015-2030) on Disaster Risk Reduction, IPCC SREX (2012), Paris Agreement 2015 etc. emphasized an effective complementary link between disaster risk transfer and disaster risk reduction, however, there is scarce empirical evidence that could justify the argument (MCII, 2016 and Surminski & Oramas-Dorta, 2014), also it is not clear under what conditions insurance will contribute to risk reduction at different levels.

Risk Transfer Mechanisms: Typology, Benefits and Challenges

There are numerous risk transfer mechanisms in practice. Munich Climate Insurance Initiative (MCII) identified five risk transfer mechanisms in its submission to the UNFCCC's 6th session of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention

BOX 2. Type of Risk Transfer Mechanisms

(Traditional) Insurance

Insurance is a contractual transaction that guarantees financial protection against potentially large loss in return for a premium; if the insured experiences a loss, then the insurer pays out a previously agreed amount. Insurance is common across the developed countries and covers many types of 'peril', like fire and theft and to protect properties.

Micro-insurance

Micro-insurance is characterized by low premiums or coverage and is typically targeted at lower income individuals who are unable to afford or access more traditional insurance. Micro-insurance tends to be provided by local insurance companies with some external insurance backstop (e.g. reinsurance). Micro-insurance can cover a broad range of risks, including health and weather risks (e.g. crop and livestock insurance). Weather insurance typically takes in the form of a parametric (or index-based) transaction, where payment is made if a chosen weather-index, such as 5-day rainfall amounts, exceeds some threshold. One of the largest micro-insurance schemes, the Weather-based Crop Insurance Scheme, was established by the Government of India and currently protects more than 700,000 farmers against drought.

Reserve fund

Catastrophe reserve funds are typically set up by the governments, or may be donated, to cover the costs of unexpected losses.

Risk pooling

Risks pools aggregate risks regionally (or nationally) allowing individual risk holders to spread their risk geographically. Through spreading risks, pooling allows participants to gain catastrophe insurance on better terms and provides access to the collective reserves in the event of a disaster. The Caribbean Catastrophe Risk Insurance Facility (CCRIF) could be a good example of risk pooling that secured USD 110 million of reinsurance capacity in addition to its own reserves.

Insurance-linked securities

Insurance-linked securities, most commonly catastrophe (cat) bonds, offer an avenue to share risk more broadly with the capital markets. Cat-bonds are issued by the risk holder (usually a government or insurance company) and trigger payments on the occurrence of a specified event. This event may be a specified loss or may be a parametric trigger, such as the wind speed at a location. In 2006, the Government of Mexico issued a cat bond (the Cat-Mex bond) that transfers earthquake risk to investors by allowing the government not to repay the bond principal if a major earthquake were to hit Mexico.

Source: UNFCCC (2009)

(AWG-LCA 6) held in Bonn in 2009. They include a) Traditional Insurance; b) Micro-Insurance; c) Reserve fund; d) Risk pooling, ande) Insurance link securities **(Box 2)**.

MCII submission to the UNFCCC further elaborated that, by design, the stated risk transfer mechanisms (e.g. insurance) can play a role in addressing some of the risks associated with weather extreme events, however, they are not appropriate for addressing longer-term foreseeable risks like sea-level rise and desertification. Besides, an effective risk transfer mechanism should fulfil certain prerequisites, for instance, ideally a risk transfer mechanism should be built-on a comprehensive risk assessment, informed by hazard potential, exposure and vulnerability (Warner et al. 2012), otherwise benefits from the risk transfer mechanisms cannot be achieved in full. They should be an integral part of national risk reduction strategy, embedded with country's overarching development priorities and sustainable development goals. Hence, decisions on investing any risk transfer mechanism should be based on a clear understanding of its generic prerequisite, benefits and challenges to harness the desired benefit. **Figure 2** illustrates the overall prerequisite, benefits and challenges those need to be considered.

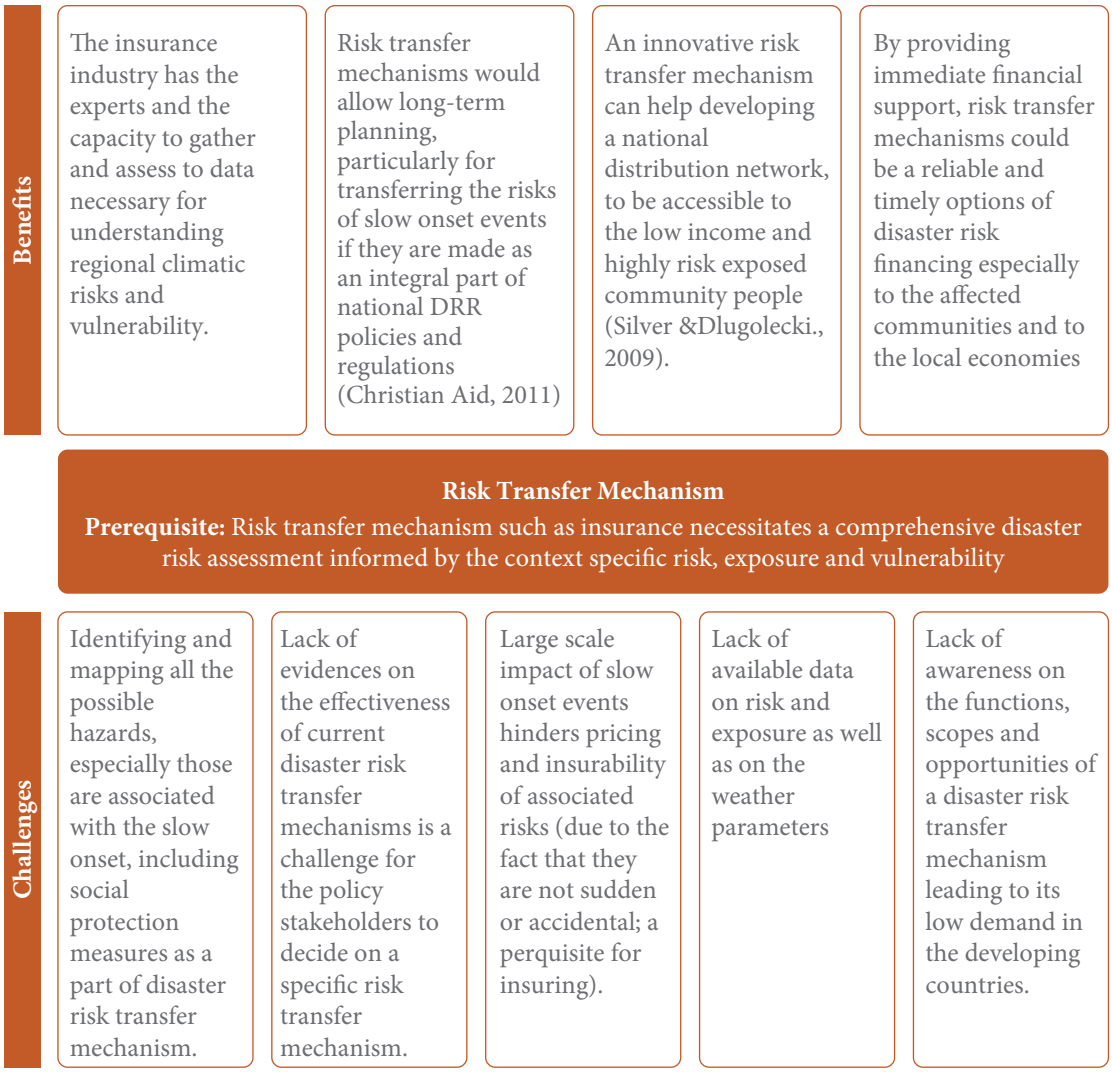

Figure 2: *Benefits and challenges of disaster risk transfer mechanism*

Insurance in Trasferring Disaster Losses: context and existing practices

Globally countries, irrespective of poor and rich, are facing more frequent and intense weather events and associated L&D, which would further increase with the rise of world's average temperature (IPCC, 2014a).

Already, the direct consequences of more than 11,000 extreme weather events between 1997 and 2016 globally caused death of 524,000 people with USD 3.16 trillion economic loss in terms of Purchasing Power Parities (German Watch, 2017). According to Swiss Re Institute (2018), the L&D from the climate related disasters are becoming significantly higher than other type of disasters. Analysis on the globally reported disasters from 1998 to 2017 calculated that out of USD 2,916 billion disaster losses, 2,245 billion were from the climate-related disasters, which comprises 77 % of the total disaster losses; roughly rose by 151% during this 20-year period (ibid). Studies indicate that by mid-century, the global L&D cost may exceed USD 1 trillion annually, with developing countries shouldering the majority of the burden. In 2017, alone natural disaster-related economic losses were around USD 330 billion, 0.44% of global gross domestic product (GDP), which was significantly above the previous 10-year average of 0.25% global GDP loss (ibid). **Table 1** presents region-specific disaster events and associated L&D.

With the unprecedented rise of climate-related economic losses, countries across the globe are adopting multifaceted activities, also proactively engaging in the global negotiations to agree on a comprehensive risk reduction mechanism, along with adequate and predictable disaster risk financing. Among various disaster risk financing measures, commonly categorised as *ex-ante* and *ex-post*, the *ex-ante* measures, especially the insurance is widely used by individuals and organizations across most of the industrialized countries (Le Quesne, 2017) and the *ex-post* measures e.g. budget re-allocation, borrowing etc. are widely used in the disaster-prone developing countries to respond the post-disaster emergencies.

Among the *ex-ante* measures, though the 'disaster preparedness' get mainstreamed to local, national as well as to the sectoral planning primarily in the developing countries, however insurance didn't get much policy attention. Disaster response and risk financing in the developing countries are still considered as the 'state reasonability' from the ground of humanitarian cause as well as from the peoples' welfare centric political perspective. For instance, Bangladesh, one of the highly disaster-prone countries in the world, has consistently been providing efforts in disaster preparedness through required policies embedded with institutional strengthening and long-term, decentralized program intervention on awareness building, dissemination of early warnings, ensuring timely evacuation and construction of safe shelters etc. However, policy

Table1: Number of events, victims, economic and insured losses by region, 2017

Region	Events	Victims	In %	Economic Losses		Insured Losses		
				USD bn	In %	USD bn	In %	
North America	66	466	4.1%	244.2	72.4%	119.1		82.5%
Latin America & Caribbean	19	1375	12.1%	31.6	9.4%	5.1		3.5%
Europe	46	536	4.7%	23.7	7.0%	12.0		8.3%
Africa	40	2919	25.6%	2.9	0.9%	0.8		0.5%
Asia	112	5546	48.6%	31.2	9.2%	5.0		3.5%
Oceania/Australia	5	100	0.9%	3.3	1.0%	2.1		1.4%
Seas / Space	13	462	4.1%	0.3	0.1%	0.3		0.2%
World	301	11404	100.0%	337	100.0%	144		100.0%

Source: Swiss Re Institute, 2018.

and institutional support for integrating risk transfer mechanisms e.g. insurance to the DRR has not been strengthened yet.

Such differentiated policy focus between developed and developing countries is probably due to varying degree of exposure between 'people' and 'property'; or the monetary value of property that puts it first than people.

A Comparative analysis of the reported disasters in North America and in the Asian-African countries in 2017 justifies this analogy. In 2017, 66 disaster events in North America affected 466 people, 4% of the world's total affected, and caused economic losses around USD 244.2 billion, 72.4% of world's total loss (Swiss Re Institute, 2018). On the other hand, 252 disasters in Africa and Asia affected 8465 people, around 75.5% of the world's total affected, and caused economic losses of USD 34.1 billion, 10.1% of world's total loss (ibid). Table 1 presents region specific disaster events and associated L&D in 2007.

The above estimation on L&D suggests that the disaster-related primary losses e.g. assets and properties are comparatively less in Asia, Africa and in Caribbean countries, however, they face recurrent risks of losing common property resources like natural systems, terrestrial, coastal and ocean ecosystems and the services they provide. While the primary economic losses resulting from the extreme events, for instance, the loss of businesses and private infrastructures could partially be transferred by risk transfer mechanisms such as insurance, but the secondary risks of L&D resulting from slow climate processes such as sea-level rise, salinization of agricultural land, desertification, pest and disease outbreak etc. cannot be transferred by insurance, even cannot be averted by the adaptation actions. The long term impacts of those primary and secondary risks not only will cause economic losses, but also will cause regression in growth and development, widen inequality, competition, and conflict in resource use, domestic and international tensions on displacement and migration etc. The wide-ranging and multi-dimensional aspects of losses and their complex socio-economic implications are the major challenges of expanding insurance coverage, especially in the developing countries.

Compared to the developed countries, the private business and industries as well as the major livelihoods sectors with conclusive monetary valuation are also remained out of insurance protection in most of the developing countries. For instance, in North America around 50.6% of total losses (USD 125.1 billion out of USD 244.2 billion losses) in 2017 were out of insurance coverage; the figure is around 88% (USD 28.3 billion out of 34.1billion) in Asia and Africa together (Swiss Re Institute, 2018). Hence, the protection gap of catastrophe-related economic losses is 4 times higher in the Asian and African countries than the countries in North America. The substantial protection gap of in the most

Box 3: Types of Insurance Schemes

Sovereign disaster risk financing: Financial strategies to increase the financial response capacity of governments in the aftermath of natural disasters, while protecting their long-term fiscal balances.

Property catastrophe risk insurance: Develop catastrophe insurance markets and increase property catastrophe insurance penetration among home owners, small and medium enterprises, and public entities.

Agricultural insurance: Develop programs for farmers, herders and agricultural financing institutions (e.g., rural banks, microfinance institutions) to increase their financial resilience to adverse natural hazards.

Disaster micro-insurance: Facilitate access to disaster insurance products to protect the livelihood of the poor against extreme weather events and promote disaster risk reduction in conjunction with social programs such as conditional cash transfer programmes.

Source: The World Bank (2012).

populous Asian and African countries means that many businesses and households don't have other means to recover from disaster-induced loss and damages, they mostly rely on the *ex-post* relief and rehabilitation support from the government and humanitarian agencies. This also does mean that, the insurance industry prefers non-life sector e.g. commercial and industrial sectors in the developed countries as they could offer more economic return than the life- based sectors like agriculture, poultry livestock on which economy and livelihoods of the risk exposed low and middle-income countries/communities largely depend.

The differentiated preference insurance in the developed and developing countries justify that the market and the monetary interest of the insurers determine the types of the insurance packages. **Box 3** presents the types of the catastrophe risk transfer mechanisms currently in practice.

As far as profit maximization is concerned, neither the externalities e.g. climate change impacts nor the choice of the marginalized communities could influence the market. While the value of commercial and industrial sectors in the developed countries make insurance inevitable, the increased risk exposure of the agriculture and related life sectors in the low and middle-income countries make insurance business rather vulnerable.

An analysis of 123 risk transfer schemes available in the low and middle-income countries in 2011 reveals that 85 (69%) schemes were on

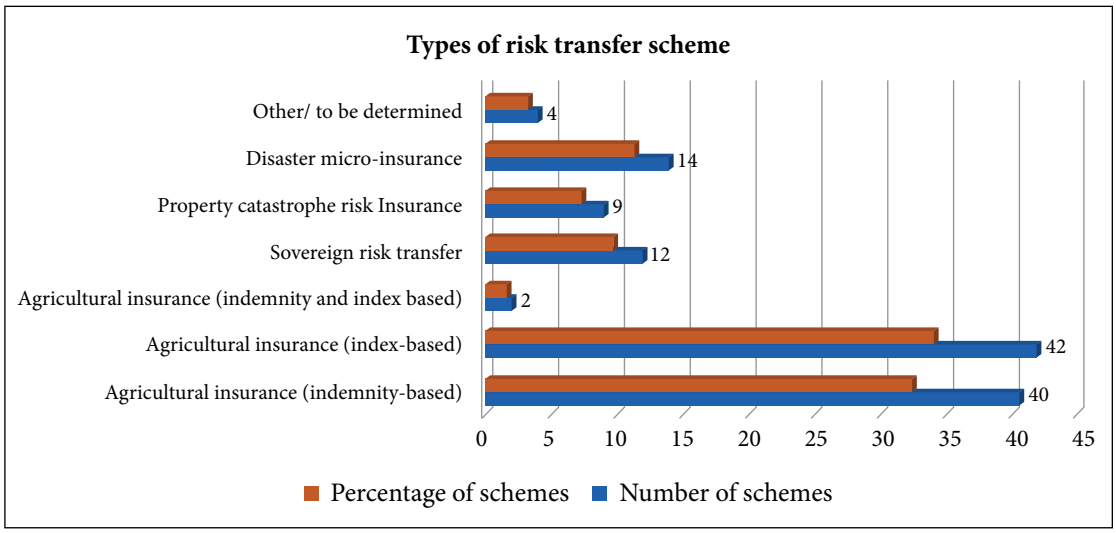

Fig. 3: *Categories of risk transfer scheme; Climate Wise (2011)*

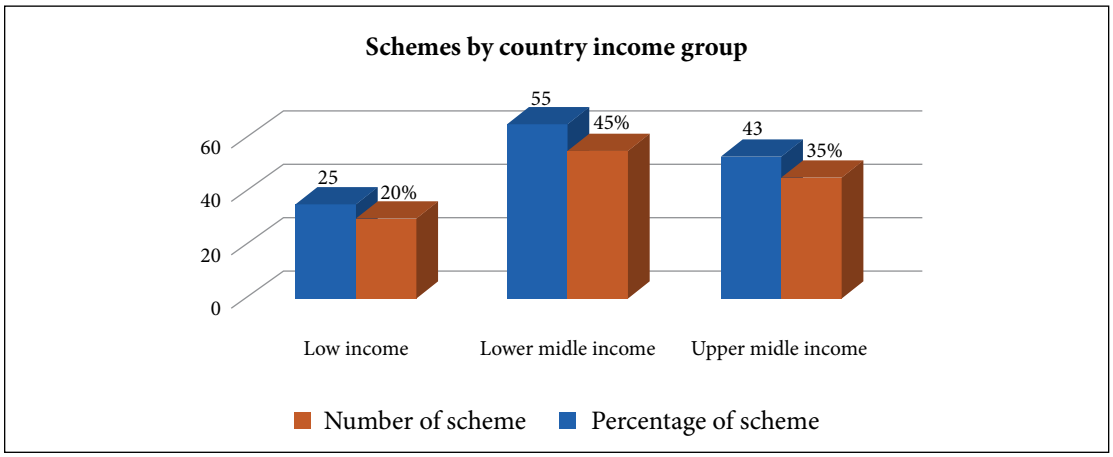

Fig. 4: *Risk transfer schemes by country income group*

Box-4 Caribbean Catastrophe Risk Insurance Facilities (CCRIF)

The Caribbean Catastrophe Risk Insurance Facility (CCRIF) is a not-for-profit risk pooling facility that offers parametric insurance against tropical cyclones, earthquakes and excess rainfall in the Caribbean and in the Central America. The CCRIF allows its member countries to purchase natural catastrophe coverage at a price substantially lower than what they would be able to obtain through a non-pooled arrangement.

Similar to a mutual insurance company, CCRIF is operated on behalf of 17 currently participating states in the Caribbean and Central America, each of which pays an annual premium directly to CCRIF and insurance coverage up to a limit of approximately USD100 million for each insured hazard (tropical cyclones, earthquakes or excess rainfall events). By pooling these catastrophe risks into a single diversified portfolio, the capital needs for paying claims become significantly lower. This, in turn, led to a pricing reduction of about half of what it would cost if countries were to purchase identical coverage individually compared with buying the coverage from CCRIF.

CCRIF established a cost-effective way to pre-finance short-term liquidity to begin recovery efforts for an individual government after a catastrophic event, thereby filling the gap between immediate response aid and long-term re-development.

Source: CCRIF SPC (2015)

agriculture (indemnity and index-based) followed by Disaster Micro-insurance and Sovereign Risk Transfer schemes respectively 14 (11%) and 12 (10%). Property Catastrophe Risk Insurance schemes were only 7% of the total **(Figure 3)**.

Out of 123 schemes, only a regional pool of sovereign risk transfer schemes e.g. Caribbean Catastrophe Risk Insurance Facilities (CCRIF) considers there construction of damaged public infrastructure after an events that trigger a payment. A brief on CCRIF is presented in **Box-4**.

Again, distribution of the schemes showed that approximately 20% schemes were in the low-income countries, and 35% and 45% were in the upper middle income and lower middle-income countries respectively.

Conclusion:

Though, in theory, insurance is being considered as a complementary mechanism embedded within the comprehensive risk management strategy, however, the above analysis suggests that all the risks cannot be covered by the insurance. Insurance can be applicable for certain extreme weather events (of low frequency) as one of the means of providing timely finance against the losses of insured property, but seemingly this mechanism is not appropriate for the gradually manifesting climate process. Insurance also may not be benefiting the highly vulnerable communities who are exposed to frequent disaster events and whose livelihoods are depended on the highly weather-sensitive sectors e.g. agriculture.

CHAPTER 3

Disaster Risk Financing in Bangladesh: Past and on-going initiatives

Climate Risks and Associated L&D Scenario: Bangladesh context

Being the tenth most densely populated countries in the world with 1,115.62 people per square kilometer and 1.03% annual growth rate (World Population Review, 2018), Bangladesh is highly exposed to, and is being affected by all types of weather-related disasters. The rivers swell in summer with monsoon and upstream river discharges, submerging up to two-thirds of the deltaic floodplains that covers 80% of the country's geographical area (Rahman & Islam, 2016). The velocity of river run-off down towards the Bay of Bengal recurrently erodes homestead and agricultural land leaving thousands of people homeless annually. Tropical cyclones with strong tidal current tear the coastal belt, while drowning people in storm surges and ripping up trees and homes. A trend analysis on the prevalence of the Tropical Cyclones in the Bay of Bengal confirmed rise of rough weather events in the Bay, an annual average from 5.48 to 7.94 resulting from the rise of sea surface temperature by 0.30-0.48°C during the period from 1958 to 2009 (CPRD, 2012). Such rise of the rough weather events, which was unlikely even a few years ago, are directly affecting the only means of livings of 3.5 million coastal fishers (ibid). Less sudden calamities-droughts in the country's highland areas, erosion of the river banks and coastlines — also rob peoples 'productive assets and other means of survival.

In the coming years, Bangladesh is going to face (with of high confidence) increasingly adverse impacts (IPCC, 2014c), which include, inter alia, too much precipitation during monsoon and too little water during dry season (MoEF, 2012), more intense and more frequent cyclones and the move of the saline front further up-stream, massive coastal erosion (Practical Action, 2008); and secondary impacts such as food and health insecurity, loss of lives and livelihoods, loss of ecosystem services, forced displacement and migration, damage of infrastructures causing substantial impact to the national/local economy (MoEF, 2012).

Since 1998, five major disasters (sudden onsets) altogether caused an estimated 15% Gross Domestic Product (GDP) loss. The 100-year loss (a loss expected to happen once in every 100 years) for flood is equivalent to 8%–9% of GDP, and for tropical cyclone it's around 5% of GDP. In addition to this, the increasing trend of climate change effects would cause estimated annual 2% GDP loss by 2050 (MoEF, 2015) and 9% by the end of this century (ADB, 2014). However, the L&D associated with the climate processes (slow onset events) and with the frequently occurred unusual disasters are supposed to be even higher (ibid). Given this L&D scenario and with the proliferation of pre-dominant vulnerability to the weather-related disasters, Bangladesh has been repeatedly cited as one of the most vulnerable countries, also consecutively ranked as highly vulnerable ones, to the climate-induced disasters around the globe (MapleCroft, 2016; IPCC, 2014d).

Extent of Climate Induced Disaster Losses in Bangladesh

Usually, disaster losses are high in Bangladesh, estimated to an annual average between USD 594 and USD 1,187 million, and human loss adds another USD 1,921million in severe events (UK AID, 2013).According to ADB (2016), during 2000-2013 the sudden-onset natural disasters

in Bangladesh affected 99.7 million people and caused death of 8,351 lives and USD 10.8 billion economic impacts. Bangladesh Bureau of Statistics in 2015 estimated that 25.51% of households were affected by cyclone and tornado during the period from 2009 to 2014 (Dhaka Tribune, 2017a). Along with the above estimation of disaster losses, several recent examples are;

- In 2017, early Flash Flood in the Haor areas destroyed around 1.58 million tons of nearly-ready-for-harvesting Boro rice, which was 8.3% of the national average of Boro production equivalent to 3.7% of agriculture sector's gross domestic product-GDP. In monetary term, this loss accounted to USD 662.5 million. The flash flood also caused loss of 214.57 metric tonnes of fish, 1.1 million cows and buffaloes, 270,000 goats and sheep and 3.2 million ducks and hens (Nirapad, 2017). Such massive loss of standing crops and productive assets forced estimated 50000 people to migrate to the nearby district towns for survival (ibid).

- The late monsoon flood in 2017 affected around 8.2 million people living in 32 districts in the North of Bangladesh. This unusual monsoon flood damaged estimated rice production worth of USD 87.5 million to USD 225 million (taking into account the possible replantation costs of the next rice crop), the figure likely about 0.35%-0.44% of the GDP of FY 2017-18. The sudden and complete loss of rice crop forced Bangladesh to import rice in 2017 though Bangladesh has become a net rice exporting country for several years (Sadique & Bari 2017).

- Landslides caused by the torrential rainfall claimed lives of at least 300 people in 2017 (Dhaka Tribune, 2017b) while also affected livelihoods of millions of people.

Usually, the disaster loss calculation only counts the post-disaster economic losses caused by high-impact sudden onset events, while often ignores the L&D caused by unusual and localized extremes, also ignore the continuing economic and non-economic losses resulting from climate processes e.g. sea level rise, salinization, etc. which are on rise and causing unavoidable L&D.

Even the economic losses (and impacts) caused by a few high-impact disasters like floods, tropical cyclones etc. face substantial funding gap to support post-disaster recovery and rehabilitation support, For instance, with an annual average of 10 million disaster-affected people, Bangladesh requires estimated USD 720 million to recover from losses, however, annually receives approximately USD 82 million as humanitarian aid, which is far below from the estimated annual requirements (Department of International Development, 2013).

During 2000–2013 Bangladesh faced USD 10.8 billion economic impacts by floods. In contrary to this, the estimated available fund was USD 2.7 billion; USD 897 million for recovery and rehabilitation projects, USD 679 million for humanitarian response, and USD 1,093 million from foreign aid for disaster-related emergency response (ADB, 2016). Along with the externally sourced fund, the government of Bangladesh also provides disaster supports from its own budgetary system, they include - i) Disaster Risk Reduction Fund; (ii) Emergency Fund for Disaster Management and, iii) Fund for Unforeseen Incidents.

Disaster Financing in Bangladesh: past and on-going initiatives

Like many other developing countries the disaster risk financing in Bangladesh are usually '*ex-post*' measures. Though, there had been several pilot or event-based initiatives of 'ex-ante' measures e.g. micro-insurance and weather index-based insurance etc. but most of them were unsuccessful and couldn't sustain for long. Moreover, they were implemented as a standalone traditional mechanism to compensate losses of human lives and productive assets e.g. crops and livestock. They were designed based on the aspirations of humanitarian support, without providing due emphasis on institutional strengthening and human resource capacity building to allow the risk transfer mechanism to grow progressively. **Figure 5** shows the commonly employed DRR measures in Bangladesh, most of which are *ex-post* measures.

Though, some of the disaster risk transfer initiatives were also practiced by the microfinance institutions (MFIs) e.g. Brac, Grameen Bank and Proshika but they were standlone initiatives, primarily to protect their investments on livestock and other productive

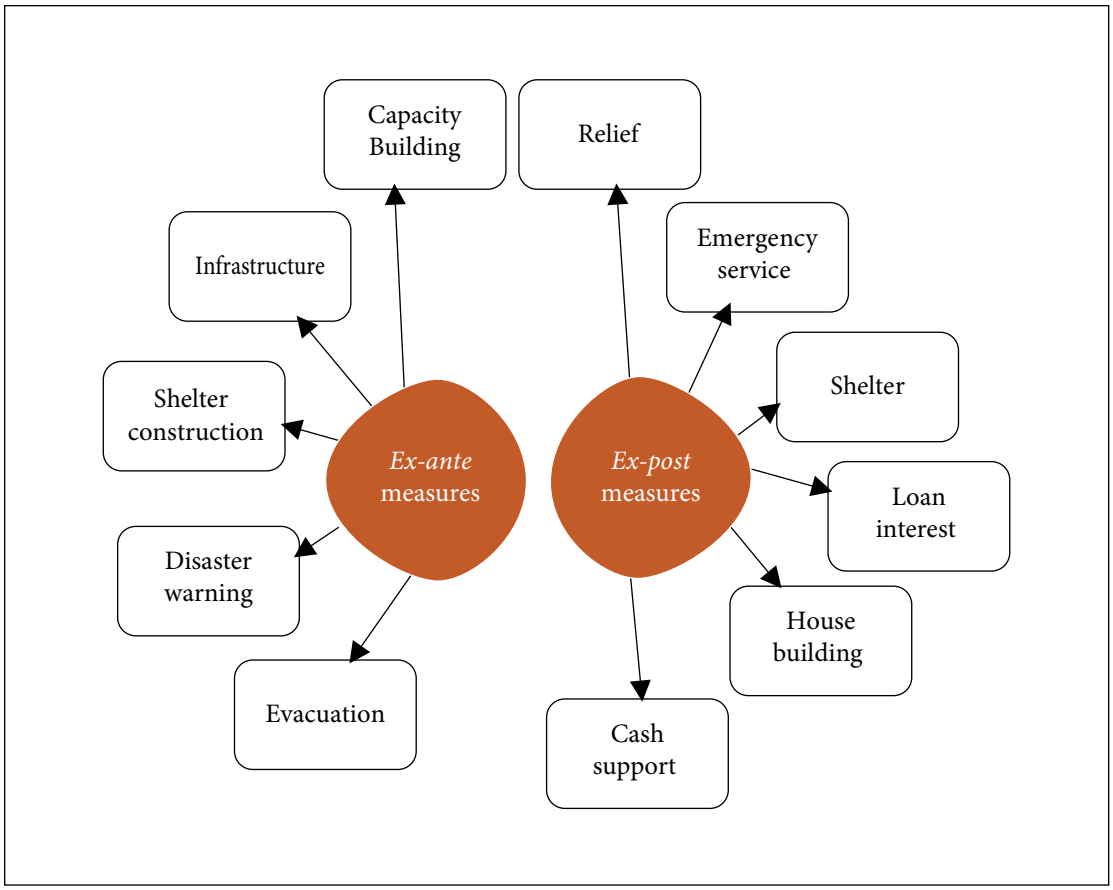

Fig. 5: *Type of DRR measures commonly practiced in Bangladesh*

assets. Usually, the MFIs in Bangladesh operates their own internal indemnity funds on the productive assets without any form of catastrophe reinsurance protection (FAO, 2011). Other than MFIs, Sadharan Bima Corporation (SBC)-a state owned company for general insurance, introduced a pilot project on Crop Insurance (CI) in 1977. The project faced an unfotunate end in 1992. SBC, again in 2014, launched another pilot project on Weather Index-Based Crop Insurance (WIBCI) with the support of Asian Development Bank (ADB) and partnering with several privately owned insurance companies in Bangladesh.

Given the context of huge protection gap and with the growing need for climate/disaster risk transfer mechanism, this chapter describes the past and recent initiatives of disaster risk financing and risk transfer mechanisms to provide a common understanding for the relevant stakeholders.

Bangladesh Bank's Disaster Management and Corporate Social Responsibility Fund

As part of corporate social responsibility, the Central Bank of Bangladesh (Bangladesh Bank-BB) introduced post-disaster humanitarian relief activities through establishing 'Bangladesh Bank Disaster Management and Corporate Social Responsibility Fund' in 2003. Started with USD 0.59 million from Bank's annual profit, the CSR fund was increased to USD 1.19 million for the FY 2015-2017, of which USD 0.90 million was sanctioned in different sectors, e.g. disaster relief, health, education, environment, women empowerment, capacity building etc.(Bangladesh Bank, 2018). However, distribution of Bangladesh Bank's own CSR fund fell down from USD 0.64 million in FY 2016-2017 to USD 0.54 million in FY 2017-2018 (ibid).

Aside with the contributions from BB, the other commercial banks and non-banking financial institutions (NBFI) also have their own CSR fund that supports post-disaster humanitarian activities. According to Bangladesh Bank's Annual Report 2018, Banks and NBFIs of Bangladesh spent USD125.33 million on CSR projects during FY 2017-2018, while a significant amount e.g. 46.1 % of CSR fund spent on humanitarian and disaster relief. The total volume of CSR fund doubled in a year (from USD 65.05 million in FY 2016-2017 to USD 125.33 million in FY 2017-2018). **Table 2** presents CSR Expenditure of Banks and NBFIs in FY 2018 (ibid).

However, investments of PKSF and other MFIs are potentially exposed to the disaster risks due to extent of the program to the comparatively less prepared segment of the population living in the most vulnerable areas. While disaster losses are considered to be a potential risk to the MFIs in Bangladesh, but this also offers an opportunity for them to significantly contribute in DRR through building resilience of the MF borrowers, along with helping them with the provisions of context-specific credit support like term-loans, loan waiver, soft loan for house building/reconstruction and income generation etc. Considering country's typical exposure to the weather-related disasters and their increased

Table2: CSR Expenditure of Banks and NBFIs in FY18 (in million USD)

	Banks		NBFIs	
Sectors	Amount (Million USD)	Sectoral Share (%)	Amount (Million USD)	Sectoral Share (%)
Education	41.95	33.33	8.3	19.6
Health	5.33	4.24	6.0	14.2
Humanitarian & Disaster Relief	58.09	46.15	9.3	22.0
Environment	0.94	0.75	2.9	6.9
Cultural Welfare	3.55	2.82	6.3	14.9
Infrastructural Development	0.22	0.17	2.2	5.2
Income Generating Activities	0.10	0.08	0.7	1.7
Others	15.68	12.46	6.6	15.6
Total	**125.86**	**100**	**42.3**	**100**

Source: Bangladesh Bank, 2018; Note: BDT 83 is calculated equivalent to USD1.

PKSF's Disaster Management Fund (now Sahos Programme)

Established as a non-profit organization in 1990, Palli Karma-Sahayak Foundation (PKSF) has been working as an apex organization of the MFIs (what it termed as Partner Organizations - POs) of Bangladesh to make them organized and efficient in managing financial portfolios in a harmonized way. As of June 2017, PKSF reached 12.71 million (90.91 % are women) people, provided credit to 9.16 million (91.85%) clients through its 277 partner organizations (PKSF, 2017). During FY 2016-17, PKSF managed the disbursement of USD 375.18 million (BDT 31.14 billion) credit with USD 536.38 million (BDT 44.52 billion) loan outstanding to its partner organizations (PKSF, 2017).

frequency and intensity by climate change, PKSF in 1998 established a Disaster Management Fund to provide first-track financial support to the disaster-affected households to help them to recover from economic shocks, while also protecting them from selling valuable assets and falling into debt-trap of the local non-institutional money lending systems. In the context of massive economic loss caused by Cyclone Sidr in 2007, this funding initiative turned to a regular programme called SAHOS (*"Courage" in Bangla*), resourced by PKSF's own and its POs. This fund is generally distributed for the restoration of livelihood and ensuring/ reinstalling other services e.g. water, sanitation, houses, emergency medical services. PKSF's Sahos Program fulfils at least two objectives; i) Contributing to the comprehensive disaster risk reduction, and ii) Reviving the grounds for MFI's

investment (through supporting ex-post disaster measures).

According to PKSF's 2017 Annual Report, PKSF and its POs disbursed USD 2.61million and USD 57.34 million respectively under the Sahos program during FY 2016-17 (PKSF, 2017). **Table-3** presents the contribution of Sahos program in disaster risk financing.

Apart from the PKSF initiative, many of the MFIs working in the disaster-prone areas have their own disaster fund that enables the MFIs to respond to the emergencies until any long-term humanitarian support is mobilized. MFIs in Bangladesh, in general, undertake several common strategies and readjustment in their micro-finance operation to assist their clients to bounce back from disaster lossses; the strategies are; (i) Suspension of scheduled loan re-payment for few weeks; ii) Allowing clients for savings withdrawal up to a specific amount; (iii) Re-scheduling loan re-payment tenure; iv) New loan with lower interest rate and flexible repayment schedule for IGAs, and (iv) Distribution of seeds, animals, and other in-kind materials etc.

Table 3: Summary of Sahos disbursement as of June 2017

Number of POs	162
Number of Current Borrowers	57849
Loan Disbursement (PKSF – POs) in FY 2016-17	USD 2.64 million (BDT 2190.0 million)
Cumulative Loan Disbursement (PKSF-POs)	USD 57.90 million (BDT 4080.58 million)
Loan Disbursement (POs- Borrowers) in FY 2016-17	USD 1.70 million (BDT 1415.64 million)
Cumulative Loan Disbursement (POs -borrowers)	USD 67.24 million (BDT 5881.64 million)
Recovery Rate (PKSF-POs)	99.34%
Recovery Rate (POs -Borrowers)	95.17%

Source: PKSF (2017); Note: BDT 83 is calculated equivalent to USD1.

Start Fund Bangladesh

The Start Fund Bangladesh (2017-2020), GBP 10 million rapid emergency response fund, has been established with support from the UK Aid to respond small and medium scale emergencies within 72 hours of a crisis alert (Start Network, 2015). The fund operates through establishing collective ownership of the local actors on funding decision and fund management. While the fund is independently managed by the recipient national and international member NGOs, however, this also ensures engagement of local administration and other relevant stakeholders to mobilize diverse resources and leverage the Government's efforts for timely and effective humanitarian response (ibid)

As of September 2018, Start Fund Bangladesh responded to seven small/medium emergencies, reaching around 0.2 million people with cash, hygiene materials, hygiene promotion, and other supports through awarding more than USD 0.02 million to 14 of its member organizations (ibid).

Participatory Livestock Compensation Fund (PLCF)

Proshika-one of the leading NGOs in Bangladesh- established Participatory Livestock Compensation Fund (PLCF) in 1991. By 2005, the PLCF reached to two million clients in 20,000 villages and 2000 slums in 57 districts (Proshika, 2005). This fund made compensatory payment of USD 0.24 million to 14,525 households (clients) for their losses caused by cyclones, river erosion, tornadoes etc.

Index Based Crop Insurance (IBI)

There were several small-scale donor supported index based insurance projects in Bangladesh but none of them succeed and sustained for long. One of such initiatives e.g. a "meso-level" index-based flood insurance was introduced in Sirajganj in 2013 and continued until 2015. This project was aimed to protect trasfer risk of crop

loss during a peak flood period from16 August to 30 September each year. There were four levels of payout depending on the flood level and the number of days the flood level remains high. Under this scheme, if flood level crosses a certain locally-determined threshold and remain for 11 days, each household will get 2,800 taka (USD 36); if floods remain for 21 days, the household receives 4,400 taka (USD 56); and for 26 days, 8,000 taka (USD 103) (Oxfam GB, 2013).

This scheme covered 1661 households from 17 flood affected villages in 2013. On the first year, there was no claim as the flood level didn't reach to the trigger point. In 2014 the 'trigger point of the flood level' was reset at relatively lower scale and every household claimed insurance benefit.

Though this project established an unique collaboration of number of national and international organizations with differentiated roles and responsibilities- e.g. Oxfam Bangladesh in planning, SDC (Swiss Development Agency and Corporation) in financing, MMS (Manob Mukti Songstha a local NGO) in implementation, CRM India and IWFM (Institute of Water and Flood Management) respectively in technical support and data collection and Swiss Re as the reinsurer- but this initiative didn't sustain for long. In 2015, the insurance scheme was extended to other villages and then suddenly phased out, presumably due to end of the project supported by SDC.

This initiative, however, was a periodic attempt, not eventually conceptualized as a 'business product' also didn't consider its operational sustainability. As informed by the key informants, the insured households/people were relieved from paying premium, the funding agency paid premium on their behalf.

Traditional Crop Insurance

Based on a directive from the government of Bangladesh (Miah, 1992), Sadharan Bima Corporation (SBC) introduced a crop insurance (CI) in 1977 with an aim to promote country's agricultural growth by protecting smallholders' crop from multiple perils, including natural disasters, and thereby stabilizing farm income. This scheme insured production of country's key cereal and cash crops like aus, aman and boro rice, wheat, jute and sugarcane against a premium ranging from 3%-5% of the market value of the insured crop (ibid). Though scheme affixed a premium rate, however as the political directive was concerned the scheme adopted a full service model of the public general insurer, SBC.

Over the period from 1977 to 1992, this crop insurance reached to 15,420 farmers, however, faced significant losses as the 'loss claims' consistently exceeded the premiums– in ten of the seventeen years that the plan was in operation, the loss ratio exceeded 400% (French & Silver, 2007). The scheme resulted to an end in 1992 identifying several constraints and challenges to continue, they were -i) Lack of understanding on the modalities of CI implementation; ii) Lack of well trained personnel, proper institutional arrangement, clear and well-defined policy and structure to guide implementation of crop insurance; iii) Top-down monitoring, while ignoring involvement of the grass-root level organizations level organizations; iv) Coordination gap with other relevant institutions, and stakeholders like Krishi Bank, Bangladesh Rural Development Board (BRDB), other insurance companies, local government authorities, local administration, MFIs etc.; v) Traditional method of 'claim loss' assessment as opposed to an index-based method; vi) Speedy expansion of the scheme, without evaluating the pros and cons of its pilot phase, and vii) Expanding schemes in the politically preferred areas etc.

Moreover, an equal premium value for all types of agricultural land in diverse and differentiated risk exposed agro-ecological zones made the scheme even riskier.

Figure 6 illustrates the causes of failure of the SBC'scrop insurance, introduced in 1977.

Weather Index-Based Crop Insurance (WIBCI)

With USD 2 million grant support from the Asian Development Bank, the SBC piloted another Weather Index-Based Crop Insurance project from March 2014 to June 2018 in three districts: drought-prone Rajshahi, flood-prone Sirajgonj and cyclone-prone Noakhali. The primary beneficiaries of the project were the small and marginal farmers having very limited access to climate risk-adaptation tools.

Causes of failure

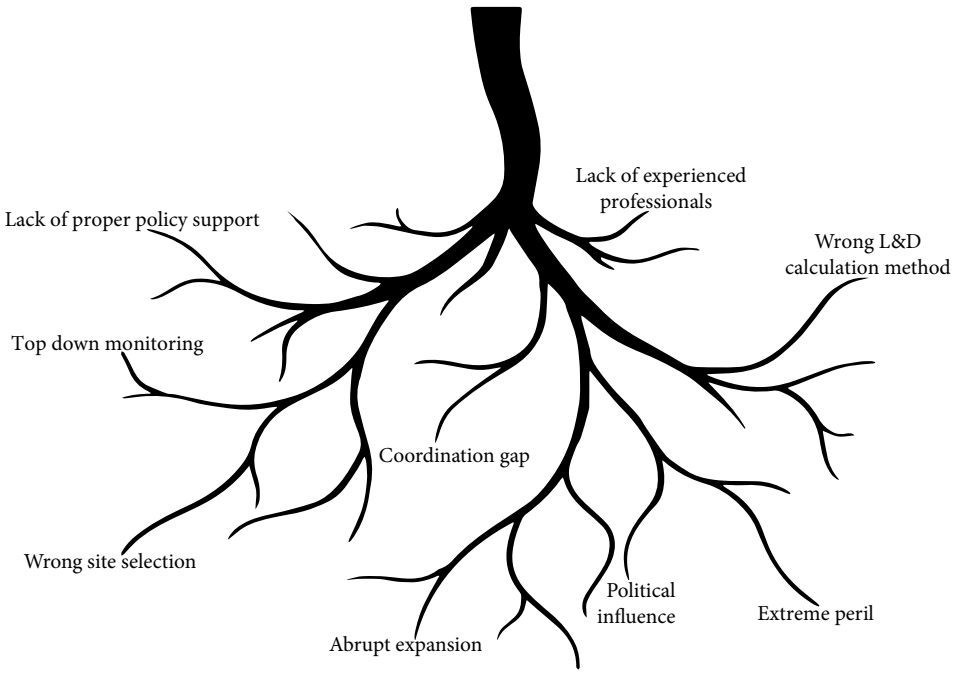

Fig. 6: *Causes of the failure of SBC's crop insurance*

Box 5: Development Objectives

The objective of the project is to increase resilience of farm households to climate and natural disaster risks. It is expected that through weather index-based crop insurance (WIBCI) farm income losses caused by climate and natural disaster risk will be reduced.

Expected Key Performance Indicators:

i. At least 20 weather stations are upgraded.

ii. At least 12,000 farm households are enrolled for WIBCI products.

iii. At least 6,000 farmers, particularly small and marginal farmers who are directly dependent on agriculture, are sensitized through awareness seminars on climatic risks and agricultural risk management techniques, and about the features of WIBCI.

iv. At least 400 officials/staff from the Insurance Development Regulatory Authority (IDRA), insurance companies, meteorological and weather data agencies, agriculture research institutions, microfinance institutions (MFIs) or nongovernment organizations (NGOs), and concerned government agencies are trained or educated about WIBCI.

v. Regulations for WIBCI are drafted and are awaiting approval by IDRA and the Bank and Financial Institutions Division (BFID), along with standards related to weather data quality, product design, and underwriting and claim settlement.

According to ADB's Grant Assistance Report (ADB, 2012), the project included four major components - i) Pilot testing of viable WIBCI products; ii) Formulating and strengthening policy and regulatory framework; iii) Capacity building, awareness raising, and upgrading of selected weather infrastructure, and iv) Project management, monitoring, and audit.

The project components targeted to build capacity of the local regulator; insurance companies; distribution partners such as MFIs, NGOs, farmer cooperatives, and agricultural banks; and small and marginal farmers etc., which, in turn, would develop a solid institutional and regulatory framework for developing WIBCI over the long term. **Box 5** summarizes the development objective and key performance indicator of the project.

This project allowed insured farmer to claim compensation when certain weather events such as cyclone or tropical storm in a given area hits a specified magnitude or when rainfall rises above or drops a certain level. As of May 2018 Sadharan Bima collected a total of BDT 51.36 lakh (USD 61,880) as premium from farmers and paid loss claim of BDT 53.46 lakh (USD 64410) (The Daily Star, 2018).

Against the key performance indicators, the project so far, i) Drafted a regulation on WIBCI; ii) Installed and upgraded 20 automated weather stations with required operational facilities; iii) Trained some 916 officials from IDRA, SBC, Bangladesh Meteorological Department (BMD), private insurance companies, non-government organizations (NGOs) and microfinance institutions (MFIs), and iv) Sensitized 14,000 farmers on climate risk, WIBCI and Agri-risk management.

Conclusion:

The frequency and intensity of weather extreme and slow onsets and associated L&D have been increasing over the recent decades. The situation will be further be aggravated by the unprecedented impacts of climate change, leading to widened protection and financing gap to be required for up-scaling DRR, adaptation action and adequately address the humanitarian crises.

Though there are many pilot initiatives of the insurance protection for the smallholders e.g. micro-insurance, agricultural insurance, etc. but they require consistent innovation in product development tailored to the needs of the poorest and most vulnerable populations because they bear the highest levels of relative risk. They also require public policy attention and support to make the products affordable and accessible. Especially in the developing countries, unless having a clear and pro-poor insurance regulation policy and subsidized premium support, a privately owned market-based solution might not work.

While, historically, Bangladesh and its people showed their sovereign responsibility in undertaking diverse ex-post measures for DRR, however, the widening gaps in financing have become a major challenge. Given the context, Bangladesh could think about alternative financial mechanisms e.g.ex-ante disaster risk financing solutions to minimize economic impacts of disaster losses. Building on the previous and ongoing practices of disaster risk financing and risk transfer mechanisms, it is desirable that the government of Bangladesh will explore feasible and affordable risk transfer mechanisms that would enhance the economic security of the vulnerable communities, while also not undermining country's sovereign responsibility of combating disaster risks and climate change impacts.

CHAPTER 4

Readiness of Bangladesh's Insurance Sector: An overview on the study findings

Study Background

It is well understood that over the decades Bangladesh has established an effective institutional structure down-to-the-ground for disaster risk management, especially to save human lives from the extreme weather events e.g. tropical cyclones and to respond post-disaster humanitarian crises. Such approach of risk management, centering only several weather extreme events and largely focusing ex-post measures, substantially reduced human causalities, however, have not been proved to be adequate/effective in minimizing L&D of productive assets, means of livelihoods, infrastructures etc. In the context of climate-induced disaster events, while the developed countries are experiencing much higher absolute monetary losses, for instance, USD 306.2 billion losses in the USA by 16 multi-category high-impact disasters in 2017 (NCEI, 2018), an annual average loss of USD 12.8 billion by the climate related extremes in Europe (EEA, 2017) etc. however, those countries are in comparatively advantageous position in addressing post-disaster economic impacts provided with their sound technical capacity and financial resources. Hence, the economic impacts of disaster losses are disproportionally higher in the developing countries, although they experiences comparatively lesser amount of disaster damages.

Moreover, the capability to recover from disaster losses is significantly lower in the developing countries as they are yet to be ready to introduce, implement and mainstream risk transfer measures (e.g. risk insurance) in their DRR strategies. For instance, Bangladesh currently with a total of 77 insurance companies (46 non-life related and 31 life related) is ranked 76th in the world (0.02 % share of the world insurance market) with per capita USD 2.6 spending on insurance (The Independent, 2017; REINSURANCE, 2018). With of around 10 % stable growth rate, the insurance penetration was reported only 0.9 % in 2016, which is still inadequate.

While several of the national plans and strategies e.g. Bangladesh Climate Change Strategy and Action Plan 2008, National Insurance Policy 2014, National Plan for Disaster Management (2016-2020), National Food Policy Plan of Action (2008-2015) etc. underscored the importance of insurance (e.g. micro insurance, crop insurance etc.) for transferring risks of natural disasters but the disaster risk insurance in Bangladesh is still in its infancy stage.

Aligning to the national policy directives and considering the importance of insurance for addressing climate- induced L&D, this chapter presents a study findings on the readiness of insurance industries of Bangladesh.

Study Objective and Methodology

The key objective of this study is to assess institutional capacity and motivation of the insurance sector of Bangladesh for introducing climate risk insurance (CRI) especially in the agriculture and its subsectors. Also; a) to assess understanding and knowledge base of the insurance industries on crop insurance/weather index based insurance; b) to identify potential sectors where insurance could be introduced, and c) to identify challenges and requirements to make crop insurance feasible and accessible by the smallholders.

Considering the above objectives and scope, the study employs both qualitative and

quantitative research methodologies, which include a questionnaire survey, one-on-one key informant interview, and in-depth discussion with the targeted stakeholders, primarily from the insurance professional and relevant policy stakeholders. A structured survey questionnaire and semi-structured checklist for KII and FGDs are developed and followed. Considering a small number of insurance industries in operation, the study undertakes a purposive sampling method for conducting questionnaire survey, 30 from the insurance industries and other 10 from the relevant policy stakeholders, NGOs etc. Besides, 30 one-on-one discussions and 10 in-depth KIIs are conducted with the insurance professionals who believed to have some level of understandings on disaster risk insurance. Survey and KIIs are conducted between October and November 2018. Statistical software e.g. SPSS, Infogram (online) and Microsoft Excel are used to analyze data and generate graphical presentations. **Table 4** presents an overview of the study methodologies.

A number of relevant documents (e.g. relevant strategies and plans, annual reports of the insurance companies etc.) are reviewed to have an overview on the policy directive as well as to understand the focus of the insurance industries currently in operation in Bangladesh.

Table 4: An overview on the study methodologies

Data collection methods	Instruments	Stakeholders	Total unit
Questionnaire Survey	Structured Questionnaire	Insurance professional	40
One-on-One Key Informant Interview	Semi-structured checklist	Insurance professional, relevant policy stakeholders and NGOs	30
In depth Discussion	Semi-structured checklist	Insurance professional	10

Study Findings

Knowledge on disaster/climate risk insurance

Only 15 % of the surveyed insurers stated to have a good level of understanding on the climate-induced risk transfer measures, while 40 % are completely unaware on this, 30% are with partial knowledge and 15% are not sure whether they have heard about CRI or not. Only 35% of the insurance professionals asserted to have knowledge on international fund and 20% are aware on the UNFCCC negotiation process on the risk financing.

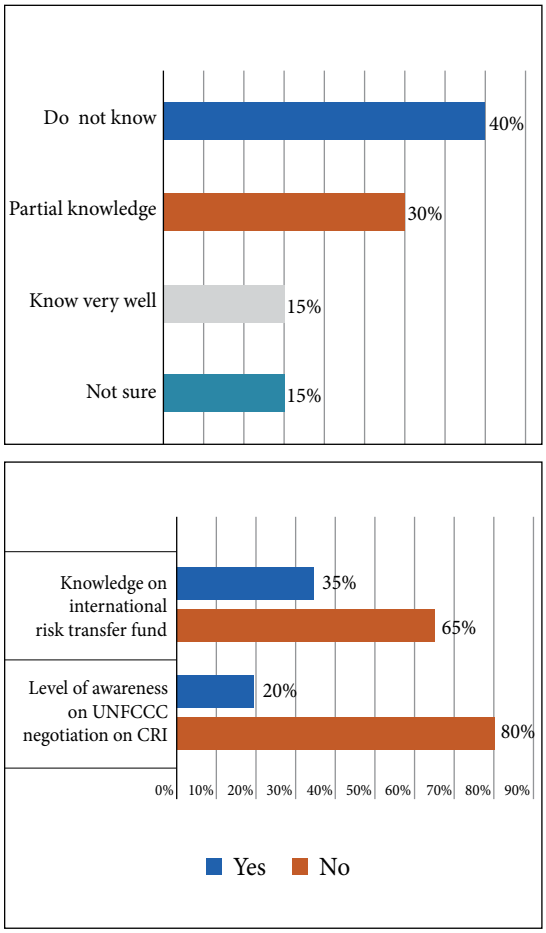

Fig. 7: *Knowledge on climate risk transfer mechanism*

Types of insurance

Only 12.5% insurer featured in their website to have (traditional) risk transfer insurance, but KIIs confirmed that the featured schemes are not in operation. The 12 % of the insures who claimed to have disaster risk transfer instrument,

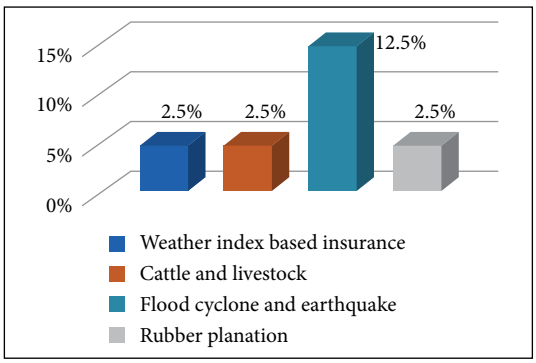

Fig. 8: *Types of insurance currently in practice in Bangladesh*

but they (products) are not intended to compensate L&D resulting from climate-induced disasters like cyclone, flood etc. While only 2.5% insurers affirmed to have traditional insurance for livestock and rubber plantation but they are not functional; however, 2.5 % of the insurers are at the initial planning stages of developing weather index based insurance schemes.

Reasons for not having disaster/ climate risk insurance

Interviewed stakeholders stated several causes that hindrance introduction of climate risk insurance, they are - a) Lack of definite directives

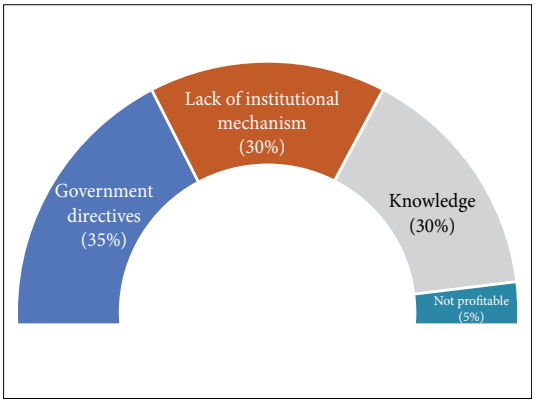

Fig. 9: *Reasons for not having climate risk insurance*

from the government; 35% of the respondents claimed so; b) Lack of appropriate institutional mechanism, as stated by 30% of the respondents; c) Lack of adequate knowledge on the risk transfer insurance and measures, as stated by 30% respondents, and d) only 5% of the respondents denied to introduce crop insurance as they consider that the disaster risk insurance may not generate business/profit.

Level of Motivation for introducing climate risk insurance

A good number of the respondents (70% respondents) consider that being one of the most climate affected countries Bangladesh needs to introduce climate risk transfer mechanisms to offset climate-induced L&D, and they either planning to introduce CRI to their companies or will consider to introduce in near future. However, 30% of the insurers don't see any business significance out of this and are not motivated to.

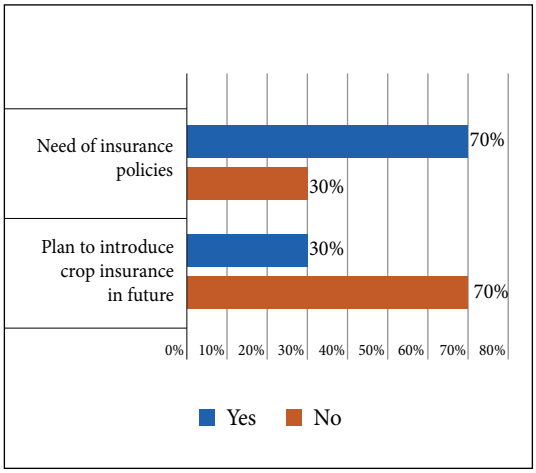

Fig. 10: *Level of motivation for introducing of climatic risk insurance*

Perceived risks of introducing disaster/climate risk insurance

Half of the respondents consider the absence of an 'institutional mechanism' as a major risk of introducing climate risk insurance. They cited the failure of SBC's crop insurance which was developed on a poor institutional mechanism.

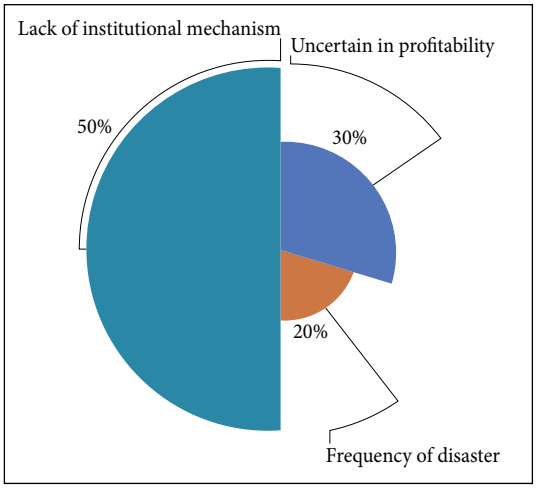

Fig: 11: *Perceived risks of introducing climate risk insurance*

About 30% of the respondents consider this type of insurance too risky as this would require more pay-outs than the accumulated premiums in case of extensive disaster losses. However, 20% of the respondants consider that the increased number of high-intensity disasters as one of the major risks that would discourage insurers to introduce climate risk insurance.

Challenges of introducing disaster/ climate risk insurance

Aside with the perceived risks, there are number of challenges identified by the respondents, they include - a) Policy gap; b) Coordination gap in relevant agencies/departments; c) Lack of skilled manpower; d) Lack of awareness, and e) Data unavailability. Higher percentage of respondents respectively 35% and 30% stated lack of skilled manpower and awareness as the major challenges of introducing climate risk insurance. On the other hand, 20%,10% and 5% of the respondents respectively considered coordination gap, policy gap as well as data gap as other challenges of introducing climate risk insurance.

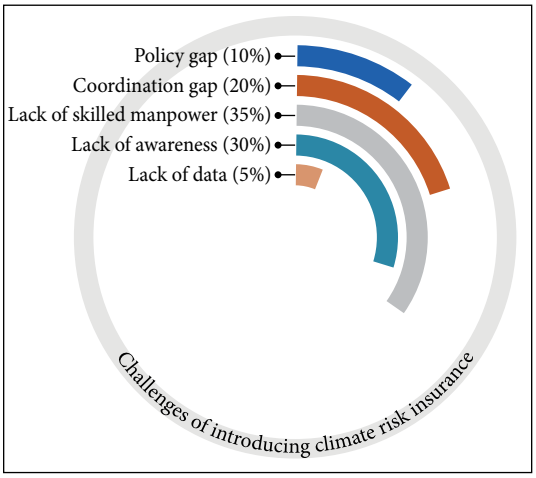

Fig. 12: *Challenges of introducing climate risk insurance*

Potential sectors for introducing climaterisk insurance

Four sectors e.g. crop, poultry, fisheries, and livestock are preferred by the insurers to bring them under climate risk insurance. Half of the

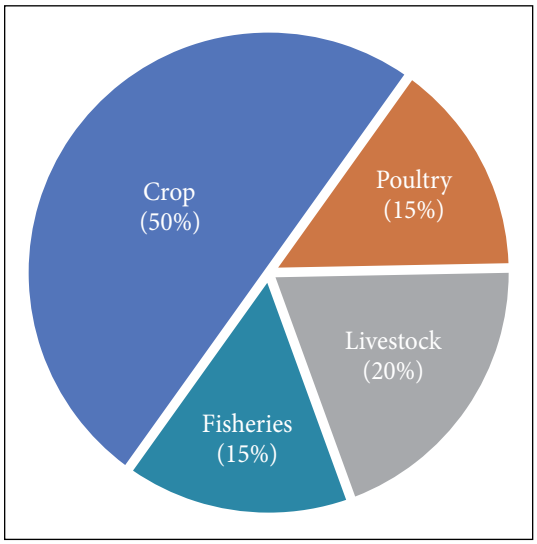

Fig. 13: *Potential sectors for introducing climate risk insurance*

respondents prefer crop, 20% prefer livestock, and equal number (15%) prefer poultry & fisheries sector.

Requirements for making climate risk insurance viable

Making climate risk insurance viable is understood as the common concern of all the interviewed insurance professional. As high as 45% of the respondents emphasized for direct financial support from the government; respectively 25 % and 20% consider technical

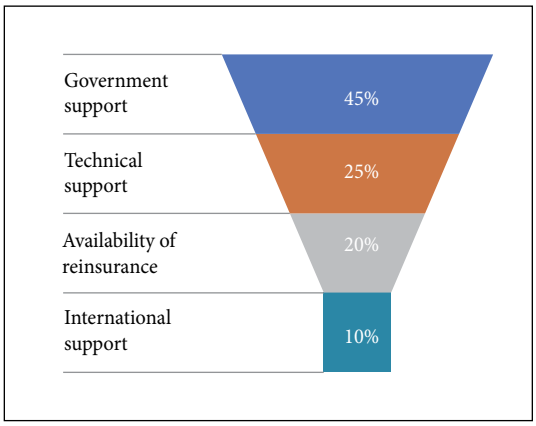

Fig. 14: *Requirements for making climate risk insurance viable*

and reinsurance support for making climate risk insurance viable. Only 10% consider that climate risk insurance will not be viable unless having technical and financial support from the international level.

Besides, 45% of the respondents are in favor of having an enable policy environment, 20% deserve proper regulatory body and 35% consider capacity building support (through education and training) for making climate risk insurance success and sustainable, not just piloting for few years and then come to an unfortunate end.

Concerns for benefitting smallholders from the climate risk insurance

While the climate risk insurance is considered as one of the mechanisms of transferring some

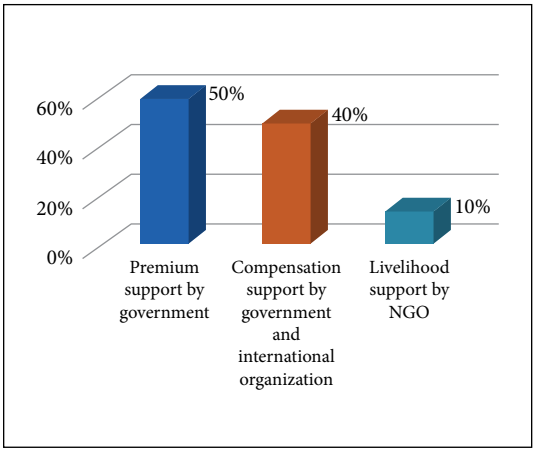

Fig. 15: *Views on the measures (other than the insurance) to support smallholders*

of the incurred L&D, however, in the highly exposed disaster/climate risk areas, the insurance mechanism itself may face the risk of sustaining for long, for instance, if disasters are extensive and frequent, resulting to the substantial amount of loss-claim then the risk transfer mechanism itself will be at risk. Given the context, more that 50% of the respondents favor third-party to pay premium (either by the government or from an international mechanism) to reduce pressure on the smallholders and earn their confidence. In addition with the premium support, 40% of the respondents favor establishment of a 'climate/ disaster compensation fund' to compensate climate-induced disaster losses; 10% of the respondents emphasizes to support smallholders with alternative/off-farm (climate resilient) generating activities so that they can bounce back with the multiple options of loss recovery.

Discussion:

The analysis on the readiness of the insurance sector in Bangladesh suggests that the climate risk transfer mechanism (e.g. insurance) has a significant role in compensating/ offsetting losses of climate-induced disasters, however, currently, many of the insurance industries are neither prepared nor even motivated for introducing climate risk insurance.

The key challenges identified through this assessment are; a) Inadequate knowledge and understanding of the disaster risk insurance; b) Low level of insurance literacy; c) Lack of coordination among the insurers and the relevant government agencies and the CSOs; d) Lack of institutional and human capacities to design and implement climate risk transfer mechanisms; d) Lack of supportive legislative framework e.g. policies and incentives, and e) Apprehension on the widespread risk scenario and extent of losses that would lead 'risk insurance scheme' to a losing concern.

Given the context, the insurer and other stakeholders asked for several measures that could enable insurance industries to get into the business, they are - a) Human resource and institutional capacity building through formal and non-formal education; b) Specific directives and legislative support from the government; c) Incentives and required premium support from the government or from international funding agencies to reduce burden of the smallholders, and d) Required technical and re-insurance support etc.

All the interviewed stakeholders acknowledged that the agriculture-dependent smallholders are most vulnerable to climate-induced disaster losses as this sector is highly sensitive to any changes in weather parameters and the smallholders often are unable to mobilize financial resources and unable to make access to institutional and social capitals to recover from the disaster damages. The stakeholders identified four sectors e.g. crop, livestock, poultry and fisheries that could be covered by the risk transfer facilities e.g. insurance.

Considering the country's agrarian economy, rural employment and strive for attaining food self-sufficiency, it is critical to undertake appropriate measures to support smallholders' to recover and offset any loss and damages of standing crops caused by climate change impacts and variability. Hence with the increased exposure to weather-related disasters like flood, flash flood, river erosion, salinity ingress, cyclone etc. the agriculture sector should be the first choice of introducing risk transfer mechanisms, as most of the KIs stated. Such insurance scheme is also important to help farmers to keep practicing agriculture not only as the 'way of livings', rather as an ancestral occupation that symbolizes their well-being and cultural affiliation to the agrarian system.

Along with the standing crops, weather-related extreme events kill or wash away hundred thousands of livestock every year putting farmers deeper to economic shock and debt trap. This critical household asset not only support in farming, also produce organic manure and most importantly they are the last resort of recovering economic crisis aftermath of a severe natural disaster. Hence, insurance facilities against those productive assets would support farmers recovering from financial loss and avoiding debt-trap of the local money lenders.

Interviewed stakeholders also emphasized to protect shrimp farm from the weather anomalies e.g. changes in temperature and precipitation as they are very diligently linked to farm production and outputs. Delayed precipitation and prolonged dryness (short of rainfall), as being observed in recent years, and increased water salinity ultimately results in poor growth, even death of shrimp, making farmers economically vulnerable. Insurance facilities also could target estimated 150,000 poultry farms in Bangladesh (The Daily Star, 2017) that recurrently suffered from a fatal outbreak of bird flu, leading to substantial economic losses to the farm owner. Widespread cold wave and sudden temperature fall in the recent years are also causing the death of chicks.

However, currently, there is no well-organized disaster risk insurance scheme in place to transfer disaster losses of crop, poultry, livestock, and fisheries sectors. Though there were some donor-funded pilot initiatives in the past but they couldn't sustain as the donor support ends by the end of project tenure. Given the context, the stakeholders emphasized for a state led initiative with proper policy support and financial incentives (e.g. premium payment) to enable/ motivate private sectors to introduce climate risk insurance in the near future.

On institutional mechanism and governance, the stakeholders asked for strengthening coordination among public-private insurers, key government institutions like Agriculture, Fisheries, Livestock, and Meteorology etc. and the MFIs as some of them have built-in mechanisms of disaster risk transfer and they have wider access down to the community level. Besides, the stakeholders also emphasized for establishing a transparent and accountable governance mechanism to erase peoples 'negative impression' what was developed due to ill-motivated practice and non-accountability of some insurers. Rebuilding a positive image of the insurance sector is undoubtedly a big challenge in Bangladesh.

Conclusion and Recommendations

Currently, 45 private and 1 state-own nonlife insurance companies are in operation in Bangladesh. Most of them are concentered in the urban areas, serves a certain group of people with a few traditional products/schemes like car insurance, industrial property insurance etc. The insures, in general, lack adequate policy directives, capacity building support, and incentives that would motivate them for introducing climate risk insurance aligning with other the elements of comprehensive DRR strategy. Hence, overcoming institutional and regulatory shortcomings become the major concerns of all the stakeholders, so to establish a transparent and accountable governance mechanism.

Given the context of barrier and opportunities as discussed above, the study comes ups with following recommendations for introducing an effective climate risk insurance in Bangladesh;

First: There should have a disaster/climate risk insurance policy with applicable guiding principles to be regulated by the relevant ministry of the government of Bangladesh. Government could subsidize partial or full premium based on the exposure and sensitivity to the climate-induced disasters. The crop insurance could be made obligatory with every agricultural loan, and the coverage could be paid directly to the insurer agency at the time of loan disbursement. Reinsurer support could be made available in the country and also from abroad with easy terms and conditions.

Second: A central, regional, as well as a local level technical team could be established to select geographical area, types of crop, premium rate, duration, and other support mechanisms. This team may be comprised of relevant experts from the government agencies, meteorological department, insurance company, MFIs, local NGOs representative etc. A coordination mechanism among the key sectors like agriculture, fisheries, livestock, cooperatives, and local government also could be established to collaborate with the insurance companies, to build community trust and to establish an accountable governance mechanism.

Third: A small pooling mechanism could be established with the participation of 4/5 insurance companies having offices in the remote areas. Insurance companies also should undertake awareness-raising activities at the community level so that people could understand potential risk of loses caused by climate change induced disasters and be motivated by the benefits of risk transfer schemes.

Fourth: Government could invest in formal and nor-formal education on the risk transfer measures e.g. crop insurance, weather-index based insurance etc. to make qualified and motivated human resources available. Information communication technology like the smartphone, internet etc. could be incorporated to disseminate weather forecasts, premium deposit, and insurance claim process.

Fifth: Government should consider developing a regional risk pooling mechanism like CCRIF and could negotiate bilateral and multilateral agencies to secure investment and reinsurance support.

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AUTHOR'S PICK

CRI in the Context of Climate Justice

The role of climate risk insurance (CRI) has been widely acknowledged in DRR and climate change policy discourses as one of the key options for addressing L&D, however, by nature, CRI has many limitations. Not all loss and damages e.g. cultural loss, non-economic losses, and loss and damages caused by slow onset events etc. can be transferred. They are neither insurable nor adaptable.

Climate risk insurance is a market based approach, which would require poor and already marginalized climate victims in the developing countries to pay premium for accessing to the insurance benefits.

If climate risk insurance is really to protect the poorest and most vulnerable populations, then the risk insurance should make affordable by the people who are liable for the losses, to the people who will suffer most from it.

together for

CLIMATE JUSTICE