Disaster Relief And Risk Transfer Through Insurance

Discussion Paper By IRDA – NDMA, July 2013*

*Assistance and Inputs from General Insurance Council

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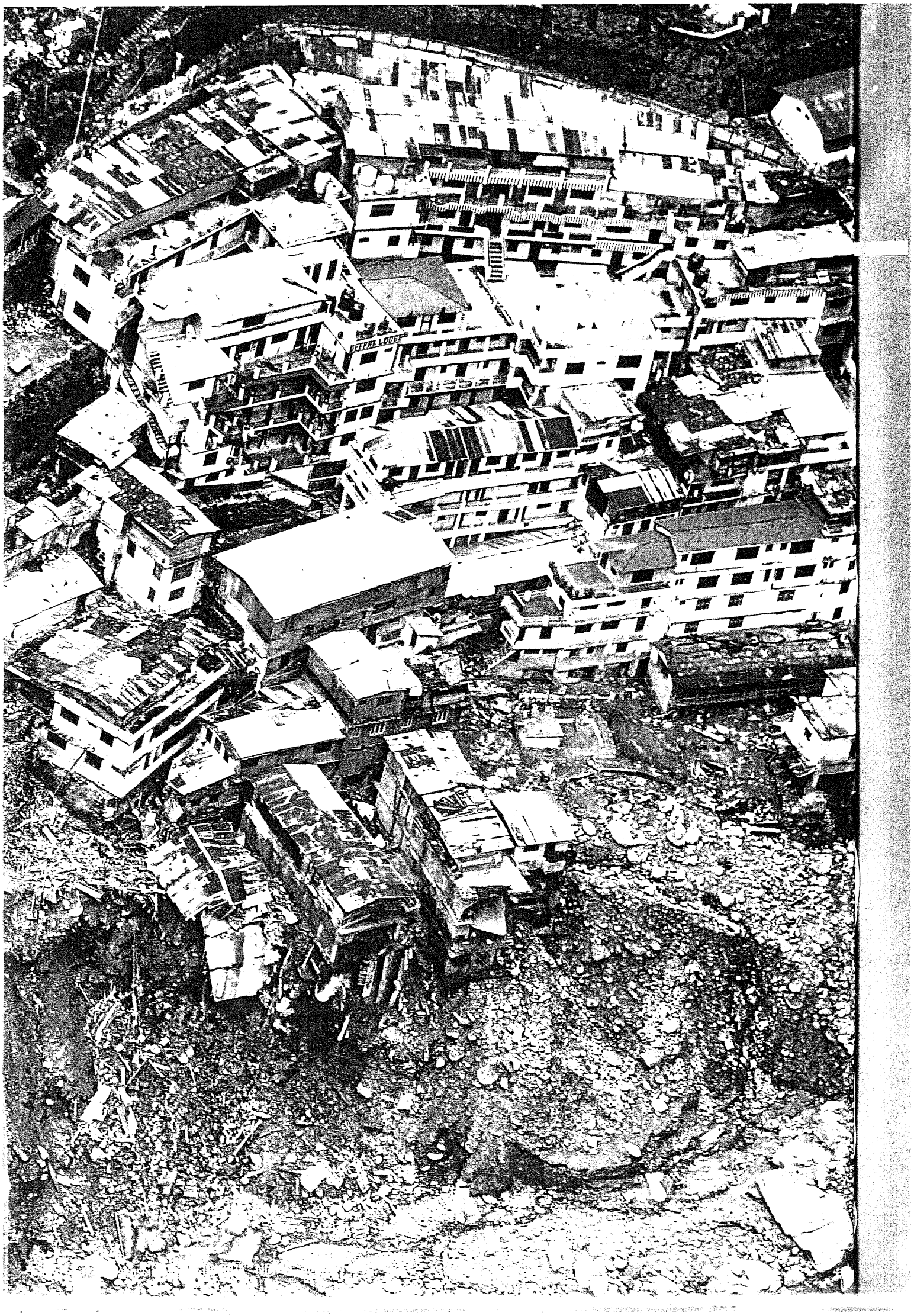

DEEPAK LODGE

Preface

India is extremely vulnerable to natural disasters. Floods, droughts, cyclones, landslides and earthquakes are a recurrent phenomenon in India. Disaster Risks are also increasing due to development processes exposing a larger number of people and assets to climate related hazards at a pace that outstrips our ability to reduce vulnerability and develop resilience. The situation is worsened by the frequent occurrence of manmade disasters.

In this context, evolving risk transfer mechanisms, also prioritised by the Hyogo Framework for Action, become crucial. Ex ante risk financing mechanisms like insurance form a critical part of a comprehensive disaster strategy.

NDMA has taken up the issue of development of effective risk transfer mechanisms and has accordingly held number of workshops/conferences on this subject. These events have facilitated interface among key stakeholders with a view to evolve a national consensus on the subject. Following a seminar held in April 2012, NDMA and IRDA's joint efforts led to the formulation of a concept note with concrete suggestions on the possible role of insurance. These were discussed with stakeholders in a National Seminar on Risk Transfer Mechanisms on 17th April 2013. This seminar was one of the pre-events of the First Session of the National Platform on Disaster Risk Reduction (NPDRR) held on May 13-14th, 2013 which also included a session dedicated to Risk Financing Mechanisms. This discussion paper provides a more detailed analysis explaining the above mentioned suggestions, which were largely endorsed by various stakeholders.

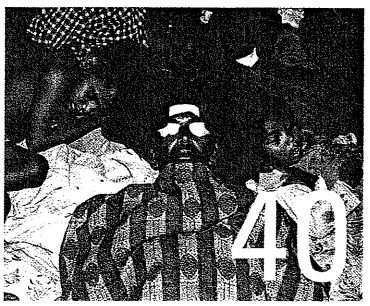
The discussion paper was made possible due to the guidance and leadership provided by the then Chairman IRDA, Shri. Hari Narayan and his successor Shri. T. S. Vijayan and Member NDMA, Shri T. Nandakumar. NDMA's inputs and analysis on financial resilience mechanisms for effective disaster management, requirements and gaps thereof were articulated by Smt. Archana G Gulati, Financial Advisor, NDMA. Expert inputs on the subject of disaster insurance were provided by Shri R. Chandrasekaran, Secretary General, General Insurance Council.

The suggestions and way forward have drawn upon valuable inputs from all stakeholders including office bearers of MHA, NDMA, IRDA, General Insurance Council and its members and international experts on the subject of disaster insurance and reinsurance.

Shri M. Ramaprasad,
Member (Non-life),
Insurance Regulatory and Development Authority

Place: Hyderabad
Date: 6th August, 2013

Contents



Executive Summary

As per the norms stipulated for SDRF and NDRF, funding is only provided for immediate relief & rehabilitation of affected persons and for immediate repairs/restoration of damaged infrastructure. In most cases the expenditure incurred by the State Government is far more than funds allocated from SDRF/NDRF. Funding for reconstruction by way of Plan funds or external assistance is neither immediate, nor necessarily adequate.

The present SDRF norms have limitations such that State Governments have to meet the relief expenses for disasters and calamities which are not covered by SDRF. In specific circumstances, State Governments enhance the relief amounts for certain items e.g. gratuitous relief/kutcha/pucca houses, but cannot utilize SDRF beyond the stipulated limits for each item.

A study pegs 85% of total loss following a major catastrophe as uninsured loss and puts the average uninsured loss per natural catastrophe at USD 1.96 Billion (Approximately Rs. 10,000 Crores per natural catastrophe event). In highly developed countries, insured proportion of losses caused by catastrophe events range between 40% and 66%.

As noted from best practices followed internationally, resorting to insurance mechanism has provided significant liquid funds to Governments for their immediate relief &rehabilitation expenses. Also, mandating disaster insurance products for residential properties and insuring assets of Government establishments has significantly reduced the gap between economic and uninsured losses.

INTRODUCTION

1.1 Inadequacy of funding from SDRF and NDRF

As per the recommendations of the Thirteenth Finance Commission and the Government of India's guidelines and norms stipulated for SDRF and NDRF, funding is only provided for immediate relief & rehabilitation of affected persons and for immediate repairs/restoration of damaged infrastructure. In most cases the expenditure incurred by the State Government is far more than funds allocated from SDRF/NDRF. This gap is met by the States from their own resources implying reallocation from developmental activities. The gap in funding is often significant in years when States have been struck by major disasters. Further, funding towards post-calamity reconstruction, which is needed to enable the affected region to recover economically, is not covered by SDRF/NDRF. This issue has in fact been highlighted by states in their submissions to the Thirteenth Finance Commission. Funding for reconstruction by way of Plan funds or external assistance is neither immediate, nor necessarily adequate. This has an adverse impact in terms of the economic growth of the affected region.

1.2 Insurance as a Possible Source of Funding

The Thirteenth Finance Commission had taken cognisance of insurance as a means of funding disaster related expenditures but had refrained from making any recommendations on account of prevailing low insurance penetration and operational issues other than commenting positively on the feasibility of insurance mechanisms for low frequency high impact disasters. This report re-examines the role of insurance in financing disaster management and puts forth certain suggestions for implementation in the near future.

FUNDING RELIEF & RECONSTRUCTION : INSURANCE OPTIONS

2.1 Existing Gaps

It is generally seen that memoranda of demands from State Governments affected by various disasters far exceeds the assistance provided by the Central Government. The following limitations have been noticed in the present SDRF norms.

A. State Governments have to meet the relief expenses for disasters / calamities which are not covered by SDRF

B. In specific circumstances, State Governments enhance the relief amounts for certain items e.g. gratuitous relief/kutcha/pucca houses, but cannot utilize SDRF beyond the stipulated limits for each item

C. Non-availability of immediate sources of funding for reconstruction of assets including Public Utilities : One of the major components that contribute to the huge gap between actual economic losses and the loss mitigation (through Government funding as well as insurance claim settlements) is the losses suffered by public utilities like electricity boards, dams, water and drainage systems, roads and bridges etc. For example, in the Cyclone "THANE" 2012 – Tamil Nadu Electricity Board estimated a requirement of Rs. 835 Crores for temporary or permanent relief of damaged public infrastructure but as per extant norms they received a grant of Rs. 300 Crores only. These assets are eventually restored or replaced but at present there is no specific means of funding such reconstruction. These organizations, if owned by the Government, do not insure their assets; thereby insurance relief is also not available.

Non-availability of immediate sources of funding for reconstruction of assets including Public utilities

2.2 International Scenario

2.2.1 Natural disasters are often the cause of extensive damage to life and property. An independent study by the Centre for Economic and Business Research (CEBR) for Lloyds[1] has highlighted that many high growth countries are badly prepared for natural disasters. The cost of catastrophes has grown by USD 870 Billion since 1980. One of the recent study reports by Lloyds has identified seventeen countries as underinsured of which eight are in Asia (including India). These Asian countries have been found to be highly vulnerable to excessive uninsured losses. This study has analysed data relating to insured and uninsured losses following natural catastrophes from 2004 to 2011 (data taken from Swiss Re Sigma publications). For India this study had estimated 85% of total loss following a major catastrophe as uninsured loss and put the average uninsured loss per natural catastrophe at USD 1.96 Billion (Approximately Rs. 10,000 Crores per natural catastrophe event.)[2]

[1] Centre for Economics and Business Research(CEBR) for Lloyds – Lloyd's Global underinsurance report – October 2012
[2] Ibid.

2.2.2 Insured proportion of losses caused by catastrophe events range between 40% and 66% in highly developed countries (United Kingdom, New Zealand, Canada, Australia and United States). Recovery time from the date of disaster to normalcy is concomitantly low. While the basic recovery period following a major disaster could be a year,

these countries make a complete recovery (including reconstruction of lost assets and major infrastructure) within 3 to 5 years.

Insurance Gap

United Kingdom	66.8 %	2,391
New Zealand	63.5 %	19,432
Canada	55.3 %	1,323
Australia	49.9 %	9,982
United States	42.7 %	1,48,580
Spain	31.4 %	603
Turkey	18.6 %	2,300
Japan	16.6 %	2,01,676
India	15.7 %	7,856
Indonesia	8.7 %	5,785
Colombia	3.2 %	1,667
China	1.4 %	2,08,003

Source : "EM-DAT", World Bank, Sigma, CEBR analysis
**Only catastrophes for which data relating to insured and uninsured losses are included*

2.2.3 International Best Practices

An examination of insurance schemes from countries susceptible to such frequent and severe natural disasters (Turkey, Mexico, Caribbean Islands, New Zealand and Taiwan) indicates the following :-

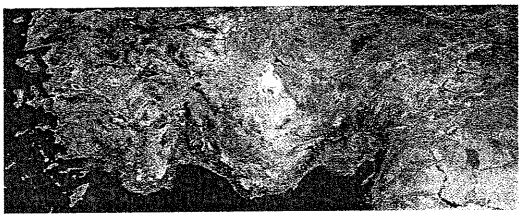
i. Resorting to insurance mechanism has provided significant liquid funds to Governments for their immediate relief & rehabilitation expenses.

ii. Mandating disaster insurance products for residential properties and insuring assets of Government establishments has significantly reduced the gap between economic and uninsured losses.

2.2.4 Brief details of some of the natural disaster insurance solutions in other countries are given below.

TURKEY :

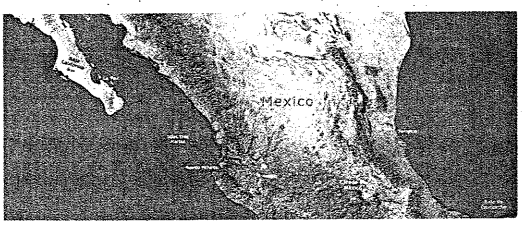
Compulsory earthquake insurance scheme for all residential buildings – The Turkish Catastrophe Insurance Pool (TCIP)



Earthquake insurance was made compulsory starting September 27, 2000 for all residential buildings that fall within municipal boundaries. Because of its low cost structure and well managed reinsurance costs the TCIP has been able to provide affordable catastrophe insurance for low income urban homeowners.

MEXICO :

Parametric insurance for relief and reconstruction costs for Governments - (FONDEN of Mexico)

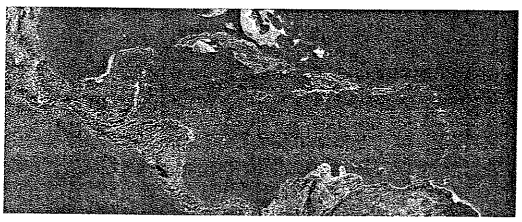


FONDEN invested funds as premium to insurance companies in return for payment of all costs and relief and reconstruction of all Mexican States and Federal buildings and Infrastructure, which by law are compulsorily insured.

Two earthquakes of magnitudes 8.0 and 7.5, respectively, killed more than 10,000 people and destroyed 100,000 housing units in the country. When such natural disasters occurred, the government had to shift budgetary resources away from planned public infrastructure expenses into reconstruction efforts. To overcome this problem, the Mexican Government created a fund for natural disasters in 1996 (FONDEN), to which it transferred budgetary funds for disaster relief and reconstruction efforts. FONDEN invested funds as premium to insurance companies in return for payment of all costs and relief and reconstruction of all Mexican States and Federal buildings and Infrastructure, which by law are compulsorily insured.

CARIBBEAN :

Parametric insurance provides immediate liquidity for the Government post disaster relief operations - Caribbean Catastrophe Risk Insurance Facility (CCRIF).



Parametric covers triggered by the intensity of an event, which provide countries automatic payments if the event intensity exceeds the agreed parameter

The main objective of the Caribbean Catastrophe Risk Insurance Facility (CCRIF) launched in 2007, on behalf of the Caribbean Community heads of government under the guidance of the World Bank with financial support from international donors, is to provide its members with access to affordable and effective coverage against natural disasters and provide immediate liquidity to participating governments.

These are parametric covers which will be triggered by the intensity of an event and countries get automatic payments if the event intensity exceeds the agreed parameter.

NEW ZEALAND :

Compulsory Residential Insurance for Earthquake – (Earthquake Commission Insurance Scheme)

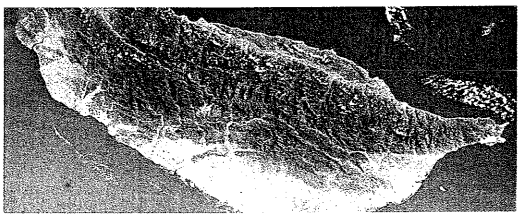
[illegible] covers [illegible] [illegible] and quite straightforward terms and conditions [illegible] in particular, there [illegible] flat rate of premium and the [illegible]

The scheme is compulsory for residential property owners. EQC insures about 90% of New Zealand homes. Coverage is for physical damage. Although there is a maximum sum insured (NZD 100,000 on each dwelling and NZD 20,000 on contents), over 95% of all damage to homes will be met by EQC because virtually all damage up to the sum insured is covered.

The insurance is simple. It covers the stated perils, for a specified sum, under quite straightforward terms and conditions. In particular, there is one flat rate of premium and the deductible is very low.

TAIWAN :

Compulsory Residential Earthquake Insurance Fund (TREIF)



Base earthquake cover is provided by TREIF. Clients can buy additional and expanded earthquake cover from Non-life Insurance Companies

Combined policy covering residential fire and earthquake issued by local non-life insurance companies.

- TREIF acting as pivotal organisation
- Administrating and coordinating with local non-life insurance companies
- Managing the fund, assuming and spreading risks
- Final risk taker

Only basic earthquake cover is provided by TREIF. Clients can buy additional and expanded earthquake cover from non-life insurance companies.

CONCLUSION

Given the existing funding gaps and international experience, the IRDA and NDMA have been in discussion for some time now to explore insurance solutions in the Indian context. The following suggestions have emerged for consideration :

A Purchase of insurance by States

As stated earlier, the current norms for SDRF do not provide for non-immediate repair and reconstruction of the damaged assets. Many a times, Central assistance towards such repair/reconstruction is inadequate. Further, certain disasters are not covered by the SDRF/NDRF scheme. In this context, it is suggested that States may be encouraged to purchase insurance for :

i. Compensation in respect of death/injury/loss of property due to calamities/disasters not included in the SDRF scheme

ii. Repair and reconstruction of the damaged infrastructure

To partly offset the expenditure on premiums, utilisation of SDRF of up to (say) 5% of annual allocation may be considered to be allowed for this purpose. With this provision, the need to reallocate funds from developmental activities could be avoided.

B Insurance for NDRF

Parametric trigger based insurance solution for NDRF for low frequency, high impact natural or man-made disasters to meet immediate relief & rehabilitation expences

This is a solution that can be structured to provide

lump sum supplement to the NDRF in the event of a disaster (which can be classified as very severe) based on a parameter such as wind speed (for a cyclone) or ground acceleration (for an earthquake) or rainfall (for floods) or as is appropriate for the peril. The trigger would be based on appropriate use of exposure data and model software. There could be an additional trigger amount for the loss caused. An independent agency specializing in this field could determine the trigger event for insurance. This would preclude reallocation of plan funds in the event of severe disasters which exceed the NDRF budget. A portion of NDRF would be used on insurance premium in this case.

C Insurance for Individuals

a. Simple Natural Catastrophe or Disaster Insurance policy for individuals / families

With a view to encouraging every non-BPL family to buy a product for disaster relief IRDA could request insurance companies to offer a simple Indian Natural Catastrophe Insurance Policy or Disaster Relief Insurance Policy (which would include man-made disasters) covering loss of life, injury and loss of property/contents. The choice of sum insured for these three categories could be left to the individuals and the insurance company could offer competitive prices for such products. While insurance companies can offer simple language standard EQ/Cyclone insurance policies for all non-BPL citizens, the Government could consider buying this insurance for BPL families with/without a marginal contribution from the BPL family and a major part of the premium being paid by the Government (similar model to RSBY) for providing immediate health insurance cover for BPL families. Alternately, the Government could continue to provide compensation to BPL families as per extant / revised norms.

b. Compulsory insurance of private homes

Mandating every household to take compulsory catastrophe peril insurance cover has been one of the salient features of successful international disaster insurance solutions used to popularize insurance as a risk transfer solution, mitigating the impact of losses for highly disaster prone areas. Taking a cue from these experiences, it is suggested that Government may make it mandatory for every property tax paying individual in urban areas to compulsorily purchase catastrophe peril insurance for property. To begin with, this mandatory insurance provision may apply to Earthquake Seismic Zone IV and V as well as areas susceptible to Severe Cyclonic Storms with specified wind speeds.

D Man-made disasters, Public places and Public Liability Insurance Policies

a. At present, Public Liability Insurance Act 1991 (enacted post Bhopal Gas Tragedy) has made it mandatory for all establishments handling hazardous chemicals/substances to provide compensation/relief to third party victims of industrial accidents caused by such substances. The present compensation mandated for fatal accidents is up to Rs. 25,000 per person and medical expenses up to Rs. 12,500 per person. For permanent or total disability or injury or sickness, reimbursement of medical expenses up to Rs. 12,500 is provided. The relief for total permanent disability is Rs. 25,000. This Act was passed in 1991. As SDRF norms provide for a higher amount of relief, it may be considered whether compensation under the PLI Act could be suitably revised and further inflation indexed. The latter has been recommended by the Thirteenth Finance Commission.

b. Compulsory Insurance coverage for Individuals visiting public places

The Public Liability Insurance Act was passed following the Bhopal Gas Tragedy. With the growth of various cities and urban agglomerations it has become necessary to look beyond hazardous chemicals/substances to provide mandatory insurance for third party injury/death caused by accidents/disasters in public places such as malls, theatres, hospitals, hotels, exhibition sites and other places of congregation. Here again, the minimum compensation amounts can be as prescribed for public liability insurance or synchronized with SDRF norms. The owners/operators of such public places can also offer higher voluntary limits of compensation and opt for appropriate insurance solutions.

E Insurance of Critical Infrastructure

a. Insurance of Public Utilities

Public Utilities such as water, energy, transportation, or even those like tele-communications (that have their own sources of revenue for the services rendered), suffer extensive damage due to natural catastrophe / disasters. Some of these may be in PPP mode or even privately owned (as in case of telecommunications). Expeditious restoration of these facilities is essential for effective relief, rehabilitation and long term economic recovery. Hence, a regulation to make these institutions mandatorily purchase insurance as a solution for generating funds for repairs and restoration of their assets may be beneficial.

b. Insurance of other Government owned assets such as school buildings, hospitals, roads, bridges, etc.

These assets get damaged during a disaster. Suitable instruments may be made available to provide the option of purchasing insurance cover for their repair and reconstruction.

WAY FORWARD

To summarize, the following are the major action points for consideration :

NDMA, IRDA and General Insurance Council would work out further details and schemes in consultation with non-life insurance companies.

01

Introduction

INTRODUCTION

This concept paper examines risk transfer and financing of disaster relief and reconstruction through insurance as a means of supplementing the existing Government of India mechanism of disaster relief funding by way of NDRF and SDRF.

It is common knowledge that the financial impact of a disaster is debilitating to the persons and the place where it has occurred and has a cascading effect on the entire region and consequently the State, affecting individuals businesses and economy. Disaster management activities aim to ensure availability of resources for quick response, speedy recovery and effective reconstruction following a disaster. Achieving financial resilience is a critical component of effective disaster management.

In the event of a major disaster, State Government, Central Government, World Bank, ADB and charitable organisations contribute to immediate post-disaster relief funding. However, funds from these sources often fall short of funds required for restoration of normalcy (i.e., to bring the public and infrastructural facilities in the affected area to the state before the damage). In most calamities / disasters, there is a huge gap between economic loss and the loss mitigation available through existing funding mechanisms.

This gap can be addressed by using a combination of strategies for disaster risk reduction through risk financing and risk transfer.

To the extent lives/assets are insured, insurance companies attempt to settle the insured losses expeditiously. At present insurance companies compensate insured person's commercial entities and corporate houses and individuals, who have taken an insurance policy, covering their property against insured perils which are extended to include natural catastrophes. There is no doubt that insurance can serve as an important source of loss mitigation for disaster related losses. There are many international examples wherein compulsory / mandated property insurance as well as insurance funding schemes to Governments have been successfully implemented.

NIDM in its report to the Thirteenth Finance Commission on Risk Transfer, Insurance and Reinsurance had suggested that a non-lapsable catastrophic fund of Rs. 1,500 Crores be created from out of the National Disaster Relief Fund (NDRF) under the following tracks :

i. Track I - An amount of Rs. 500 Crores be invested annually for a period of 5 years to provide reinsurance facilities to domestic insurance companies

ii. Track II - An amount of Rs. 1,000 Crores be invested annually to cover parametric disasters of very severe magnitude

The report had also advised the Ministry of Finance, the IRDA, the NDMA and the NEC to develop a scheme for providing reinsurance facilities.

The IRDA and the NDMA have attempted to examine the utilization of insurance as an ex ante funding mechanism.

This concept paper examines risk transfer and financing of disaster relief and reconstruction through insurance as a means of supplementing the existing Government of India mechanism of disaster relief funding by way of NDRF and SDRF.

02

Calamities and Disaster Trends in India

CALAMITIES AND DISASTER TRENDS IN INDIA

Some part of India is affected almost every year by natural disaster events largely in the form of earthquake, cyclone and floods. There have also been man-made disasters, which has resulted in both human and property losses.

India is vulnerable to both natural and manmade calamities. These disasters can be further grouped under the following 5 broad categories.

2.1 Natural Disasters

A. Water and climate related disasters
B. Geologically related disasters

2.2 Man Made Disasters

A. Chemical, industrial & nuclear related disasters
B. Accident related disasters
C. Biologically related disasters

Some of the past natural and man-made disaster events/occurrences in India are listed in **Annexure 1**.

Chronological list of natural and man-made disasters in the year 2005 is shown in **Annexure 2**.

2.1 Natural Disasters

Some part of India is affected almost every year by natural disaster events largely in the form of earthquake, cyclone and floods. The five highest natural disasters in terms of loss of lives / property have been the Gujarat cyclone in 1998, Orissa cyclone in 1999, Gujarat earthquake in 2001, tsunami in Indian Ocean in 2004 and the Mumbai floods in 2005.

2.2 Man-Made Disasters

2.2.1 Industrial and hazardous chemical industries :

There have been man-made disasters, which has resulted in both human and property losses. The worst case is the Bhopal gas tragedy (1984), a gas leak incident in India, considered one of the world's worst industrial disasters. A government affidavit in 2006 stated the leak caused 558,125 injuries including 38,478 temporary partial injuries and approximately 3,900 severely and permanently disabling injuries.

Post the Bhopal gas tragedy, The Public Liability Insurance Act 1991, introduced legal liability to arrest such situations to a large extent and mandated the public liability policy to be taken by owners, users or transporters of hazardous substance as defined under Environment (Protection) Act 1986, in excess of the minimum quantity specified under The Public Liability Insurance Act 1991.

There is a need for stricter enforcement of these Act provisions and enhancing penal provisions for non-compliance.

2.2.2 Disasters in public places and public events

In Uphaar Cinema fire in Delhi, 59 people were killed (1997) and in the Stephen Court fire in Kolkata, 43 people were killed (2010).

More recently, eighty nine people choked to death, at Kolkata's posh AMRI Hospital (2011) early Friday

Other disaster prone areas are Religious places where people gather, Hospitals, Schools, Educational Institutes, Exhibition Sites, Trade Fairs, Malls, Theatres, Sports and other entertainment events, etc.

morning, when thick smoke from a fire in the basement of the hospital spread through the central AC ducting and engulfed the seven floors.

Stampedes in religious places like Kumbh Mela and Sabarimala have also caused loss of lives.

Terrorism related events are the latest forms of manmade disasters which results in mainly loss of lives, Government assets, public utility services and assets.

UTTARAKHAND DISASTER

India witnessed one of the worst disasters of recent times in the Uttarakhand floods where the climatic conditions combined with haphazard human intervention in the hills caused the disaster.

The water not only filled up the lakes and rivers that overflowed but also may have caused breaching of moraine-dammed lakes in the upper reaches of the valley, particularly during the late evening on June 16 and on June 17, killing about several hundred persons; thousands went missing and about 100,000 pilgrims were trapped. Here, unfortunately most deaths are associated with illegal constructions along the banks of rivers. Two tributaries started flowing along their old courses where habitations were illegally constructed over a period of time. The rivers destroyed the buildings and other infrastructure that came in its way.

The hazard intensified into a disaster on account of the following:

1. Human interventions, often not properly planned such as road construction, and other activities such as building construction, mining and hydro power projects. It has also resulted in increased surface flow and rise of river bed due to disposal of debris in the rivers.
2. The hazard turned into a major disaster when people along with their properties and infrastructure occupied such areas without adequate information, knowledge, awareness and preparedness against the potential disaster.
3. Though in recent years tourism has increased multi-fold to this fragile zone there was no short or long-term strategies to control and safeguard the pilgrims.

Source: NIDM

It can be considered whether entry fees towards places of pilgrimage should include a component of disaster insurance coverage for loss of life, injury and hospitalisation. The insurance would be the responsibility of the religious trusts/state/local authorities as the case may be.

03

Present Status of Government Funding of Disaster Relief

PRESENT STATUS OF GOVERNMENT FUNDING OF DISASTER RELIEF

Assistance from SDRF and NDRF is only for immediate relief and rehabilitation of affected persons and for immediate repairs / restoration of damaged infrastructure in eligible sectors and not for reconstruction of damaged infrastructure.

3.1 National / State Disaster Response Funds (NDRF/SDRF)

Financial Assistance in the wake of natural calamities is provided to States through the schemes of State Disaster Response Fund (SDRF) and National Disaster Response Fund (NDRF). The scheme of constitution and administration of the SDRF and NDRF have been formulated by Ministry of Home Affairs based on the recommendations of Thirteenth Finance Commission for the five year period 2010-15..

The Thirteenth Finance Commission as per its Terms of Reference was required to review the arrangement as regards financing of disaster management with reference to National Calamity Contingency Fund (NCCF) and Calamity Relief Fund (CRF) and the funds envisaged in the Disaster Management Act 2005 (Act 53 of 2005) and make appropriate recommendations thereon. In the light of the provision of the new Act, Thirteenth Finance Commission has recommended merger of the erstwhile NCCF into NDRF as provided under Section 46 of the Act and merger of the erstwhile CRF into SDRF of the States as provided under Section 48 of the Act with effect from 1 April 2010, with the balances in the existing funds being transferred to the new funds.

The Thirteen Finance Commission for 2010-15 has recommended a total State Disaster Response Fund (SDRF) of Rs. 33,580.93 Crores comprising of Centre's share of Rs. 25,847.93 Crores and State's share of Rs. 7,733.00 Crores. The contribution to the SDRFs is to be shared between the Centre and the States in the ratio 75:25 for general category States and 90:10 for special category States[4,5]. The State wise allocation of State Disaster Response Fund (Centre plus State share) is depicted in **Annexure 3.**

However, assistance from SDRF and NDRF is only for immediate relief and rehabilitation of affected persons and for immediate repairs/restoration of damaged infrastructure in eligible sectors and not for reconstruction of damaged infrastructure.

3.1.1 Notified Natural Calamities - under SDRF/NDRF

At present not all disasters are funded by the SDRF/NDRF. Only the disasters as notified in the Disaster Management Act from time to time are covered.

SDRF may thus be used only for meeting the expenditure towards immediate relief to the victims of cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloud burst, pest attack and cold-wave/frost.

3.1.2 Present Norms /Guidelines for SDRF

The Tenth Finance Commission had recommended that a Committee of experts shall be set up to draw a list of items, the expenditure on which alone will be chargeable to the CRF. The Committee was further asked to fix the norms on each approved items of expenditure. The norms initially developed in 1995 have been revised from time to time, the latest being the revised norms effective March 2013 as further revised vide Ministry of Home Affairs (MHA) Disaster Management Division document number 32-3/2013-NDM-1 dated 21-06-2013. A copy of the revised items and norms of assistance under SDRF/NDRF is at **Annexure 4.**

MHA is responsible for overseeing the operations of SDRF. The share of the Central Government in SDRF is to be remitted to the State Government in two instalments - in June and December – in each financial year, provided that if MHA upon being

[4] The special category States are Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura and Uttarakhand

[5] During the current period of Twelfth Finance Commission the Contribution to CRF by Central and State Governments was in the ratio of 75:25

SDRF may be used only for meeting the expenditure towards immediate relief to the victims of cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloud burst, pest attack and cold-wave/frost

satisfied that exigencies of a particular calamity so warrant, may recommend an earlier release of the Central Share up-to 25% of the funds due to the State in the following year. This release will be adjusted against the instalment of the subsequent year. Likewise, the State Governments shall also transfer their contribution to the SDRF in two instalments in June and December of the same year. The first instalment of central contribution to SDRF for 2010-2011 was released unconditionally. Grants from 2011-2012 and subsequent instalments are to be released on receipt of confirmation of accounting procedures and other laid down conditions. The detailed SDRF guidelines are available at **Annexure 5** and the conditionality for release of instalments is given at **Annexure 6**.

3.1.3 National Disaster Response Fund (NDRF)

In the event of a calamity of a severe nature, where the requirement of funds for relief operations is beyond the funds available in the State's SDRF account, additional Central assistance is provided from NDRF, after following the laid down procedure. Natural calamities of cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloud burst, pest attack and cold-wave / frost being of a severe nature and requiring expenditure by a State Government in excess of the balances available in its own SDRF, will thus qualify for immediate relief assistance from NDRF. As per this procedure, the State Government is required to submit a memorandum indicating the sector wise damage and requirement of funds. On receipt of the memorandum from the State, an inter-Ministerial Central Team is constituted and deputed for an on the spot assessment of damage and requirement of funds for relief operations, as per the extant items and norms of SDRF and NDRF. The report of Central Team is considered by an Inter-Ministerial Group headed by the Home Secretary. Thereafter, the High Level Committee, comprising of the Agriculture Minister, Home Minister, the Finance Minister and Deputy Chairman, Planning Commission considers the request of the State Government based on the report of the Central Team, recommendations of the IMG thereon and extant norms of assistance and approves the quantum of assistance from NDRF for the instant calamity, subject to the adjustment of 75% of the balance available in the State's SDRF.

As far as financing of NDRF is concerned, as per the Act it should be credited with amounts that the Central Government may provide, after due appropriations made by the Parliament. The Eleventh Finance Commission had recommended a corpus of Rs. 500 Crores for the NCCF. In this regard, the Thirteenth Finance Commission has observed that experience shows that the appropriation from the budget to the fund have consistently been of a much higher order. Hence, it has recommended that while making the appropriation, past trends of outflows from the NCCF/NDRF is taken into account to ensure availability of adequate funds for calamities of a severe nature. The Thirteenth Finance Commission has further observed that since with introduction of Goods and services Tax (GST), all cesses are expected to be subsumed in the tax structure, alternative sources of financing shall have to be identified and necessary budgetary provisions made, linked to the expenditure from the NDRF in the previous year. Based on the recommendations of the Thirteenth Finance Commission, the earlier practice of having a corpus fund of Rs. 500 Crores in NCCF is no longer in practice. The Budget provision for NDRF is now made on the basis of past trends of outflows from NDRF. It is at present financed through National Calamity Contingent Duty (NCCD) imposed on Cigarettes, Pan Masala, beedies, other tobacco products and cellular phones, etc.

04

Inadequacy or Gaps in Disaster Loss Mitigation

INADEQUACY OR GAPS IN DISASTER LOSS MITIGATION

The funding of assistance from SDRF/NDRF is towards relief and not for compensation of loss. Relief entails assistance towards reducing the level of suffering and mitigating distress so as to alleviate shock and trauma suffered by the affected people who may have suddenly lost their means of livelihood.

The main objective of the relief fund is to assist the affected persons to start their economic activities again. On the other hand, compensation is basically replacement of the damage in financial terms. Compensation is expected to be part of a contractual agreement whereby unnatural dispossession of wealth and property is required to be compensated. Insurance is one such instrument. It is a legal obligation. On the other hand, relief is by way of gratuitous assistance as an immediate means to overcome stress. In this context it would also be interesting to look into the pattern of allocations under NCCF. Between 2000-01 and 2008-09, the total demand (gratuitous relief and long term rehabilitation and reconstruction) projected by the States in their

Actual Values of Relief Expenditure versus Total Receipts

		2002-03		2003-04		2004-05		2005-06	
S.No.	State	EXP	REC.	EXP	REC.	EXP	REC.	EXP	REC.
01	Andhra Pradesh	461	183	377	289	509	268	553	358
02	Arunachal Pradesh	16	23	52	40	24	20	97	90
03	Assam	153	84	117	44	428	348	1	72
04	Bihar	112	82	95	29	266	489	449	56
05	Chattisgarh	87	123	71	39	7	90	113	42
06	Goa	3	2	2	2	2	1	2	1
07	Gujarat	319	157	350	173	255	202	558	489
08	Haryana	93	67	96	73	102	74	154	84
09	Himachal Pradesh	63	50	50	38	53	40	214	188
10	Jammu & Kashmir	39	56	41	30	43	82	646	375
11	Jharkhand	160	0	86	71	138	50	80	95
12	Karnataka	192	259	364	381	240	132	475	445
13	Kerala	74	56	78	58	288	267	102	82
14	Madhya Pradesh	374	235	253	91	101	59	421	191
15	Maharasthra	186	150	497	250	411	281	1525	824
16	Manipur	1	11	5	0	7	0	0	0
17	Meghalaya	4	3	5	3	11	10	11	4
18	Mizoram	4	5	3	3	12	15	4	2
19	Nagaland	4	1	0	2	1	4	5	1
20	Orissa	207	112	346	199	304	153	397	226
21	Punjab	11	101	135	107	291	112	73	55
22	Rajasthan	465	650	955	648	471	406	423	312
23	Sikkim	8	6	11	9	18	16	15	13
24	Tamilnadu	377	301	409	379	1007	877	1575	1210
25	Tripura	12	4	5	0	14	9	13	0
26	Uttarakhand	65	26	35	41	46	30	56	71
27	Uttar Pradesh	498	489	103	169	392	325	373	222
28	West Bengal	165	123	117	88	127	92	235	176
	TOTAL	**4,169**	**3,359**	**4,658**	**3,255**	**5,568**	**4,451**	**8,572**	**5,684**

[1]Source : NIDM's Report to Thirteenth Finance Commission

Notwithstanding inflows from NDRF during major disasters, the gap in funding is often significant in years where states have been struck by major disasters.

Memoranda to the Government of India for assistance under NCCF was of the order of Rs. 209,993 Crores against which the amount approved by the High Level Committee was Rs. 21,228.70 Crores, and the actual releases after taking into account the norms and adjustment on account of unspent balance of SDRF were only 13,998.40 Crores. This represents just 6.6% of the total demand.[6]

Adequacy Analysis of CRF/SDRF Allocation

RBI figures of actual expenditure on disaster relief and Finance Ministry (MoF) figures on releases from SDRF and NDRF have been used to conduct an adequacy analysis of these two funds vis-à-vis requirements of the states. It may be seen from the table placed below that in most cases relief expenditure is more than funding available from SDRF and NDRF. This indicates a gap that has been met from states' own resources. Notwithstanding inflows from NDRF during major disasters, the gap in funding is often significant in years where states have been struck by major disasters. This would suggest a regular diversion of states' funds from developmental activities to disaster relief, which can become substantial in the wake of major disasters. The actual values of relief expenditure and releases from SDRF and NDRF are available below :-

Actual Values of Relief Expenditure versus Total Receipts

2006-07		2007-08		2008-09		2009-10		TOTAL	
EXP	REC.	EXP	REC.	EXP	REC.	EXP	REC.	EXP	REC.
710	539	316	258	421	329	1303	999	4,652	3,221
73	66	30	22	55	50	62	56	408	367
193	221	301	153	208	458	622	163	2,022	1,544
51	56	1,202	233	1,146	1,122	15	393	3,337	2,460
203	150	41	67	120	46	197	140	839	696
4	2	3	2	2	2	3	6	20	17
1155	793	294	49	432	315	310	224	3,674	2,401
217	107	264	103	113	54	209	167	1,249	730
129	103	132	105	172	144	138	78	950	746
374	67	105	82	95	35	145	108	1,487	836
228	49	288	149	209	52	601	158	1,790	623
612	499	172	140	322	289	1,863	1,699	4,239	3,843
90	67	197	122	108	84	104	78	1,041	814
344	278	219	151	279	208	344	255	2,335	1,468
1641	810	785	217	1,099	0	549	671	6,693	3,202
1	0	15	11	12	10	11	8	52	40
12	13	12	9	12	9	13	10	80	61
14	5	16	17	57	50	7	11	117	106
6	1	6	7	8	3	4	12	33	31
458	316	246	181	532	423	235	177	2,724	1,788
150	112	249	178	331	127	192	133	1,432	925
725	514	392	258	502	361	631	494	4,563	3,641
10	5	34	27	28	23	20	15	144	114
-22	243	427	173	1380	752	66	143	5,218	4,077
22	15	11	10	12	10	17	16	106	65
93	43	98	73	82	112	149	76	624	473
128	228	553	235	334	242	336	399	2,718	2,309
242	181	249	186	255	192	264	365	1,653	1,404
7,859	**5,483**	**6,657**	**3,217**	**8,326**	**5,500**	**8,409**	**7,053**	**54,219**	**38,003**

Source:- NDMA

** Rs. In Crores*

#NOTE:

(i) Total Receipt constitutes Actual release of CRF & NCCF sourced from MoF
(ii) Expenditure figures sourced from RBI Bulletin on State finances

Adequacy of NCCD as a Source of Disaster Relief Funding

The Table below shows the National Calamity Contingent Duty collected from the year 2002-03 to 2010-11 and assistance released to States from NCCF/NDRF during these years.

National Calamity Contingent Duty collected from the year 2002-03 to 2010-11

2002-03	1,648.45	1,600.00
2003-04	1,740.13	1,587.42
2004-05	1,484.44	2,583.12
2005-06	1,274.67	3,061.44
2007-07	1,727.88	1,962.05
2007-08	2,268.36	373.38
2008-09	2,319.73	2,279.92
2009-10	2,619.56	3,261.52
2010-11	2,966.51	4,179.25
TOTAL	**18,049.73**	**20,888.10**

Source : Finance Accounts of Government of India

During the years 2002-03 to 2010-11 the National Calamity Contingent Duty (NCCD) collected amounted to Rs. 18,049.73 Crores against which the assistance released to States from NCCF/NDRF towards calamities of severe nature amounted to Rs. 20,888.10 Crores. Thus, there was an additional outgo of Rs. 2,838.37 Crores from Central resources.

Gaps in Long Term reconstruction funding

As mentioned earlier, SDRF/NDRF is mainly meant for immediate relief and also for immediate repairs of damaged infrastructure and not for long term reconstruction of damaged infrastructure. No assistance has been recommended from SDRF/NDRF for long term reconstruction of damaged infrastructure which remains a gap area.

As per NDMA reports the nine major disasters in the past decade are listed below :

Major Disasters as per NDMA reports

2001	Gujarat Earthquake
2004	Indian Ocean Tsunami
2005	Maharashtra Floods
2005	Kashmir Earthquake
2008	Kosi Floods, Bihar
2008	Cyclone Nisha, Tamil Nadu
2009	Drought (10 states)
2009	Leh Cloudburst, J&K
2011	Sikkim Earthquake

Based on the data with insurance companies, the four major losses are indexed and given below :

Relief expenditure by State (original as well as Indexed at Jan 2013)

Gujarat Cyclone	June 1998	302.43	852	351	734.10	235
Orissa Cyclone	October 1999	827.64	852	389	1,812.72	219
Gujarat Earthquake	January 2001	1,476.08	852	426	2,952.16	200
Mumbai Floods	July 2005	1,524.97	852	497	2,614.23	171

Source : NDMA ** Rs. In Crores*

If the four major natural catastrophes were to happen today, the relief expenditure by the State, other things being same, would have increased between 170% and 235% on pure indexation. If we take the increased exposure causing higher fatalities or damages, the funding gap would increase further.

05

Disaster Insurance and Insurance Products in India

DISASTER INSURANCE AND INSURANCE PRODUCTS IN INDIA

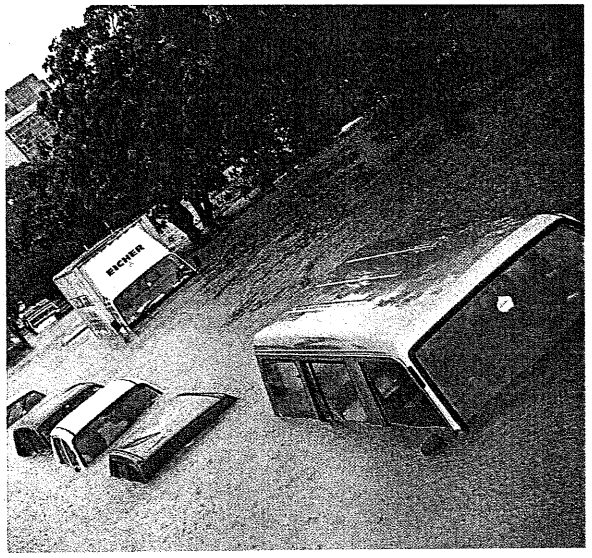
Insurance products that are available in the Indian market in personal as well as commercial insurance business segments, inter alia, cover perils of natural disasters as well as man-made disasters.

India is the fourth largest economy in the world today with a GDP of USD 3 Trillion measured on purchasing power parity (PPP) basis, growing at the second highest rate after China. India is also the third most disaster prone country of the world after China and USA.

As per World Bank Policy Paper, the availability of insurance offers the best mitigation approach against real and fiscal consequences of disasters. However, the insurance penetration (Insurance as a percentage of GDP) in India is very low. It is only 0.7%, which is lower than many least developed countries.

Ironically India was probably the first among the developed countries to have an insurance legislation.

Insurance products that are available in the Indian market in personal as well as commercial insurance business segments, inter alia, cover perils of natural disasters as well as man-made disasters. These 'traditional insurance products' offer indemnity to policy holders. In the event of the insured property being lost or damaged due to insured perils, the policy holder (insured) gets indemnified for the loss. Traditional insurance is effective in case of frequent non-correlated low-consequence events, such as motor accidents, fires, and routine flood, cyclone, storm damage to residential and commercial property.



5.1 Property, Marine and Motor (Traditional) Insurance policies

At present the industry offers coverage against natural catastrophe perils under 'Fire Policy' which also has provision to cover earthquake and all Act of God perils. Terrorism can be covered as an extension under the same policy by paying additional premium. Coverage like this can also be availed under other package polices called 'Home Insurance' which is essentially meant to cater to the needs of Individuals.

Marine policies cover marine hull and cargo whilst in transit by sea, air or road. These policies also cover loss or damage to the hull or the cargo by natural perils.

Motor Insurance Policies cover damage caused to the vehicle by natural perils if the policy has been extended for comprehensive coverage.

5.2 Loss of Life

Under general insurance, loss of life is covered only under Personal Accident (PA) policies which also covers physical disability for an agreed amount which is related to the annual income of the proposer. Permanent disability resulting in loss of earning capacity of an individual is also covered under this policy for payment of compensation which is pre-decided in the form of percentage of the sum insured. In the event of unfortunate death the entire sum insured is paid to the nominee/legal heir of the insured.

Loss of life is covered by life insurance companies under various covers.

5.3 Policies for Rural population

The industry also offers coverage of property and loss of life in a limited manner through various rural policies. Such policies are also provided by Government for citizens under special schemes with subsidized premium.

There are also weather policies which cover the losses that a farmer may suffer due to shortage of rainfall or floods caused by excess rainfall as against a pre decided trigger point. A brief snapshot of insurance products and disaster perils coverage available is given in Annexure 7.

To illustrate how Policies pertaining to various classes of Insurance have contributed in alleviating the loss or damage following a disaster we give below a table giving details of claims received in Mumbai floods 2005.

Mumbai Floods 2005 - Initial estimate of losses

1	Fire	14,782	2,449.46
2	Engineering	235	91.24
3	Miscellaneous	8,218	184.18
4	Motor	24,461	115.16
5	Marine	430	130.69
6	PA	16	0.45
	TOTAL	**48,142**	**2,971.18**

Source: GIC Re *Rs. In Crores (Provisional)*

Subsequently the claims were settled for total amount of Rs. 2,214 Crores. All the above products indemnify the actual loss or damage to the property or the person who is insured under the policy.

5.4 Public Liability Insurance

Industrial/commercial accidents causing death / injury to a third party is covered under Public Liability insurance.

The Public Liability insurance products offered by insurance companies cover the following :

1. As per Public Liability Insurance Act 1991
2. Wider cover for Third Party liability over and above the Act provisions
3. Comprehensive General Liability

For the purpose of this concept paper on disaster relief, Public Liability insurance as per the Act would be relevant.

As per The Public Liability Insurance Act 1991, all establishments handling hazardous substances have to necessarily obtain a mandatory insurance cover called Public Liability Act Policy which has fixed compensation being provided to citizens who are affected by any calamity resulting from the handling of Hazardous substances like explosion/gas leak/environmental damages resulting in pollution of water bodies/soil.

In addition to above there are other commercial establishments (not required to take mandatory Public Liability Act Liability Insurance) like malls/theatres/ hospitals/exhibition sites that are also exposed to liability in the form of injury/loss of life to public who would be visiting their premises. The liability would arise in the event of a visitor suffering an Injury or damage due to alleged negligence on the part of the owner/operators of the mall/theatre/hotel or exhibition site.

Both commercial establishments who are handling hazardous substances and non-industrial establishments like theatres/malls/hotels etc. can also opt for policies which offer higher limits as per the risk exposure of the insured. Such limits depend on various factors like turnover of the company/type of clients/visitors who would be coming to the premises. For example a large five star hotel will have high net worth individuals checking in who would claim for damages which can be very high.

06

Economic Loss vs. Insured Loss ("Insurance Gap")

ECONOMIC LOSS VS. INSURED LOSS ("INSURANCE GAP")

Natural catastrophic disaster events like tsunami, cyclones, floods and earthquake cause immense damage, with thousands of casualties and millions rendered homeless, without shelter, medical aid, food and work. It is difficult to comprehend the task facing the countries affected in putting their communities back together. It is the poorest of our communities that are most affected and as such insurance is not purchased and therefore serves little purpose. Worldwide statistics show that on average, only 16% of a catastrophic loss is insured. That is, 84% of the loss falls back to the government.

An independent study by the Centre for Economic and Business Research (CEBR) for Lloyds[7] has highlighted how badly prepared many high growth countries are for natural disasters. The cost of catastrophes has grown by USD 870 Billion since 1980. In five of the seventeen severely underinsured countries, the average loss for major catastrophes is at least 80%.

Insurance Gap

United Kingdom	66.8 %	2,391
New Zealand	63.5 %	19,432
Canada	55.3 %	1,323
Australia	49.9 %	9,982
United States	42.7 %	1,48,580
Spain	31.4 %	603
Turkey	18.6 %	2,300
Japan	16.6 %	2,01,676
India	15.7 %	7,856
Indonesia	8.7 %	5,785
Colombia	3.2 %	1,667
China	1.4 %	2,08,003

Source : "EM-DAT", World Bank, Sigma, CEBR analysis
**Only catastrophes for which data relating to insured and uninsured losses are included*

Under Insurance for Catastrophes

One of the recent study reports by Lloyds[8] looked at ten most costly natural catastrophe events by economic loss between 1900 and 2012. This study has attempted to study under insurance in forty two countries, the cumulative premium income of whom, constituted 90% of Global non-life insurance premium in 2011. Of the seventeen countries identified as under insured, eight are in Asia (India included). These Asian countries in the region are highly vulnerable to excessive uninsured losses.

India has an under insurance of over Rs. 1,00,000 Crores (USD 19.72 Billion) in 2011. A natural catastrophe would cost on average an uninsured loss of over Rs. 10,000 Crores (USD 1.96 Billion)

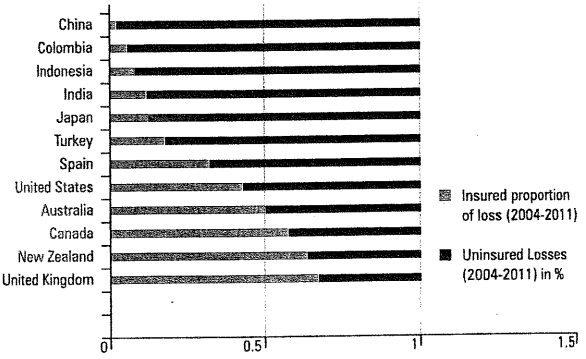
Insurance penetration and per capita GDP has a direct relationship. As a country's per capita GDP increases, it is expected that insurance penetration would also increase. Using insurance penetration levels from low risk countries with low per capita income as benchmark, this report has estimated that India has an under insurance of over Rs. 1,00,000 Crores (USD 19.72 Billion) in 2011.

This study further estimates that for India, a natural catastrophe would cost (on average) an uninsured loss of over Rs. 10,000 Crores (USD 1.96 Billion). This report establishes that as countries become better insured, the proportion of uninsured losses decreases (based on benchmarked insurance coverage).

[7] Centre for Economics and Business Research(CEBR) for Lloyd's – Lloyd's Global underinsurance report – October 2012

[8] Centre for Economics and Business Research(CEBR) for Lloyd's – Lloyd's Global underinsurance report – October 2012

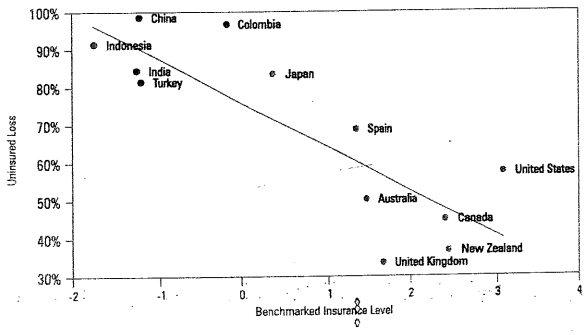
Proportion of Insured losses vs. Uninsured losses



"Specifically, the correlation between the two demonstrates that a 1 percentage point increase in bench marked insurance coverage is equivalent to an 11 percentage point reduction in the estimated average uninsured loss. To put in context, this represents a fall from uninsured loss of roughly that of Japan at 83% to Spain at 69%".

As per this study, 85% of losses are uninsured in India in terms of insurance penetration and Insurance gap.

Uninsured loss 2004-2011 (% of total loss) and bench-marked insurance coverage (average for 2004-2011)



Failure to quickly and efficiently deal with these issues after a major catastrophe can literally cause substantial strain to an economy. A good example of this is seen from Turkish earthquake in 1999. The Turkish Government was totally unprepared for the economic aftermath of such an event and acted slowly. As a result, the Turkish economy went into a severe recession and has not to this day fully recovered.

Comparison of 3 major Asian Natural Catastrophes

A comparison of three major Asian natural catastrophes between 2008 and 2011 has been made to understand the insured and uninsured loss as well as time required for recovery and complete reconstruction.

Comparison of 3 major Asian natural catastrophes (figures in USD Billion)

Total damage (USD Billion)	125	210	30
Total damage as a percentage of GDP	2.77	3.58	8.68
Insured loss (USD Billion)	0.4	35	12
Insured loss as a percentage of GDP	0.01	0.06	3.47
Insurance gap (USD Billion)	124.6	175	18
Gap as a percentage of GDP	2.76	2.98	5.21
Economic recovery (months)	12	12	12
Time for total reconstruction (months)	36	60[9]	36

"The insurance gap has a strong effect on the economic cost which ultimately falls on the tax payers. Where the insurance penetration is high (Japan), the monthly cost to tax payer is less. Increased insurance penetration is likely to lead to better insurance coverage and subsequently a reduction in the level of damages and recovery cost, which fall upon the government and therefore upon the tax payer".[10]

[9] In view of magnitude of the event and the resultant quantum of loss it is estimated that the time taken for total recovery would be 60 months

[10] Centre for Economics and Business Research(CEBR) for Lloyds – Lloyd's Global underinsurance report – October 2012

[11] Ibid

"The ability of an economy to recover following a natural catastrophe must depend upon the damage caused, which is best measured as a proportion of GDP. Insurance can play a key role in reconstruction efforts through release of funds. In the absence of this immediate funding, recovery must be funded through government and relief agencies. The recovery of sectors to activity is usually faster than the completion of reconstruction efforts."

"As non-life insurance penetration increases, other things being constant, the proportion of income which is saved would be expected to decrease, as individuals and business transfer their risk, the need to hold assets as a contingency decreases. The ability of the economy to consume more of the income which it produces can be a key driver of improvements in living standards, as relatively higher consumption is facilitated, for a given level of income, due to the mitigation of risk."[11]

Loss suffered by Public Utility Organisations (such as State Electricity Boards, etc.)

One of the major components that contribute to the huge gap between the Economic loss following a Disaster and the loss mitigation (through Government relief funding as well as insurance claim settlements to policy holders) is the loss suffered to assets of the Government, public utility organisations like Electricity Boards, Dams, Water and Drainage systems, Roads and Bridges etc. These assets are to be replaced or replenished; but there is no planned Government relief fund allocation now for such reconstruction. These organisations do not insure their assets; thereby insurance relief is also not available.

For example, in the recent Cyclone Thane 2012 which affected the coastal areas of Tamil Nadu, high wind speeds caused extensive damage to the electricity distribution network. Coastal districts of Cuddalore and Villupuram were extensively damaged. Certain interior districts which lay on the path of the Cyclone were also affected. The basic power infrastructure in these two districts which were created over a period of 40 to 50 years was affected.

An estimate by the Government of Tamil Nadu showed a requirement of Rs. 835 Crores for all districts for the temporary and permanent restoration of the damaged electricity distribution infrastructure. Cuddalore district alone required approximately Rs. 500 Crores, while the Government granted grants-in-aid of Rs. 300 Crores for immediate restoration exercise. The complete restoration of all damaged infrastructure necessitates diversion of funds from other critical activities.[12]

A comparison has been done on the expenditure of the states on the relief measures of two major disasters where in the actual figures have been indexed to January 2013.

The gap between economic loss and the rehabilitation figure has been worked out below.

Statement showing Relief insurance gap (Economic loss vs. relief to insured loss)

Economic Loss	Swiss	20,250	15,000	35,250
State Memorandum	NDMA	13,136	8,741	
Assessed by GOI team	NDMA	1,467	697	
Central assistance	NDMA	1,467	697	
Amount released to state	NDMA	500	554	1,054
Expenditure Incurred by	NDMA	2,504	1,525	4,029
Insured Loss	GIC Re	419	2,214	2,664
Gaps		**19,831**	**12,786**	**32,586**

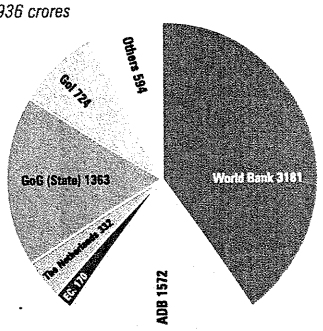
Rs. In Crores (Provisional)

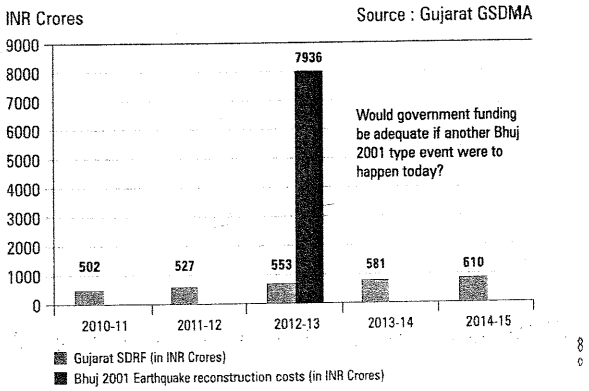
[11] There have been international examples of insurance solutions to provide funds for reconstruction of such infrastructure. These examples are discussed in the subsequent section.

Public Utility/Infrastructure companies owning assets and providing utility service such as electricity, water, etc. can go for appropriate insurance solutions to cover the assets as well as expenses they may incur to restore normalcy after disaster.

A study by Swiss Re on Gujarat Earthquake (2001), clearly demonstrated the extent of funding that was required for rehabilitation and the sources from where this was received. The magnitude of loss was so high that it would have constituted a huge economic burden on the government had aid not poured in from sources like World Bank / Asian Development Bank etc.

Major funding Agencies for Reconstruction following Bhuj 2001 Earthquake
Total Cost : INR 7936 crores





Natural disasters and Insurance claims

Natural disaster events often tend to impact large areas, thus affecting large portions of the population or risk pool at the same time.

The following table gives an idea of claims paid by Indian non-life insurance companies for the four largest natural disasters that have occurred in the last decade and the indexed loss amount expected if the same were to occur today.

Insurance Claims relating to Natural Disasters

Gujarat Cyclone	June 1998	244.81	852	351	594.25
Orissa Cyclone	Oct 1999	164.71	852	389	360.75
Gujarat Earthquake	Jan 2001	419.13	852	426	838.27
Mumbai Floods	July 2005	2,213.96	852	497	3,795.36

Rs. In Crores (Provisional)

The impact of any natural disaster of low-frequency and high-severity challenges the resources of the insurance industry to meet the claims. Insurance companies face following limitations :

1. Lack of adequate actuarial data which make the task of risk assessment difficult
2. Difficulties in assessment of a large number of claims within a short period of time
3. 'Adverse selection' – people in locations with a high probability of the disaster occurring choose to buy insurance, etc.

Despite the traditional insurance products offered by the insurance companies and payment of insured losses arising out of disaster events, insurance solution has not contributed to disaster relief and post disaster recovery significantly.

07

International Case Studies of Insurance Solutions

INTERNATIONAL CASE STUDIES OF INSURANCE SOLUTIONS

Brief details of some of the Natural disaster insurance solutions in other countries are given below.

7.1 Turkey

Compulsory Earthquake Insurance Scheme for all residential buildings – The Turkish Catastrophe Insurance Pool (TCIP)

Earthquake insurance was made compulsory starting September 27, 2000 for all residential buildings that fall within municipal boundaries. The objective was to ensure that all property tax-paying dwellings have affordable earthquake insurance cover and reduce government's fiscal exposure to earthquakes by transferring excess catastrophe risk to the international reinsurance markets.

Because of its low cost structure and well managed reinsurance costs the TCIP has been able to provide affordable catastrophe insurance for low income urban homeowners.

Low-cost structure and well managed reinsurance costs help the TCIP to provide affordable catastrophe insurance for low income urban homeowners

7.2 New Zealand

Compulsory Residential Insurance for Earthquake – (Earthquake Commission Insurance Scheme)

The scheme is compulsory for residential property owners. If a home is insured, then the insurance company is compelled to pay the EQC premium and EQC is bound to insure. Thus EQC insures about 90% of New Zealand homes.

Coverage is for physical damage. Although there is a maximum sum insured (NZD 100,000 on each dwelling and NZD 20,000 on contents), over 95% of all damage to homes will be met by EQC because virtually all damage up to the sum insured is covered.

The insurance is simple. It covers the stated perils, for a specified sum, under quite straightforward terms and conditions. In particular, there is one flat rate of premium and the deductible is very low.

EQC concentrates the need of a small country for reinsurance protection and thus becomes a powerful buyer. The size of its programme and its ability to provide quality analysis make it a prestigious client in the world-wide reinsurance market

EQC concentrates the need of a small country for reinsurance protection, and thus becomes a powerful buyer. The size of its programme and its ability to provide quality analysis (because it can utilise national statistics) make it a prestigious client in the world-wide reinsurance market.

7.3 Taiwan

Compulsory Residential Earthquake Insurance Fund (CEIF)

Combined policy covering residential fire and earthquake issued by local Non-Life Insurance Companies.

Basic earthquake cover is provided by TREIF. Clients can buy additional and expanded earthquake cover from Non-life Insurance Companies

TREIF acting as pivotal organisation :

- Administrating and coordinating U/W, ceding, and claims with local Non-Life Insurance Companies
- Managing the fund, assuming and spreading risks
- Final risk taker

Only basic earthquake cover provided by TREIF. Clients can buy additional and expanded earthquake cover from Non-life Insurance Companies.

FONDEN invested funds as premium to insurance companies in return for payment of all costs and relief and reconstruction

14 Mexico

Relief and reconstruction costs for Government- (FONDEN of Mexico)

Two earthquakes of magnitudes 8.0 and 7.5, respectively, killed more than 10,000 people and destroyed 100,000 housing units in the country. When such natural disasters occurred, the government had to shift budgetary resources away from planned public infrastructure expenses into reconstruction efforts. To avoid this problem, in 1996 the government created a fund for natural disasters, FONDEN, to which it transfers budgetary funds for disaster relief and reconstruction efforts.

It invested funds as premium to insurance companies in return for payment of all costs and relief and reconstruction of all Mexican States and Federal buildings and Infrastructure which by law are compulsorily insured.

The insurer/reinsurer releases payment for losses to be verified by an event verification agent after the conditions of parametric triggers have been met.

15 Caribbean

Access to Immediate liquidity for the Government post disaster relief operations - Caribbean Catastrophe Risk Insurance Facility (CCRIF)

The CCRIF was launched in 2007 on behalf of the Caribbean Community heads of government under the guidance of the World Bank with financial support from International donors. The main objective of the Caribbean Catastrophe Risk Insurance Facility (CCRIF) is to provide its members with access to affordable and effective coverage against natural disasters.

The Policies provide immediate liquidity to participating governments when affected by events of 1 in 15 years or over. These are parametric covers which will be triggered by the intensity of an event and countries get automatic payments if the event intensity exceeds the agreed parameter.

The CCRIF addresses one disaster risk financing need of small island states' access to immediate liquidity in the aftermath of a disaster.

CCRIF helps provide small island states access to immediate liquidity in the aftermath of a disaster

KEY POINTS

The key theme emerging from these overseas schemes is the utilization of insurance (risk transfer) solutions towards funding the disaster relief operations as well as loss mitigation.

The above examples from various countries bring forth that

1. Mandating disaster insurance protection for residential property and
2. Resorting to insurance mechanism

   This has provided significant funds to Government for their relief operations and rehabilitation expenses, while reducing the gap between economic and uninsured losses.

08

Disaster Relief Risk Transfer through Insurance Mechanism

DISASTER RELIEF RISK TRANSFER THROUGH INSURANCE MECHANISM

This section examines some insurance solutions in the Indian context yielded by discussions between the IRDA and NDMA.

In Section 4, the gaps in current disaster relief / reconstruction funding have been established. In Section 6, the huge gap between economic loss and insured loss has been illustrated using global and Indian data. International examples of compulsory catastrophe insurance for all residential property, compulsory insurance for properties owned/occupied by Government organisations and parametric insurance for States for immediate liquidity to meet relief and rehabilitation expenses were discussed.

The need to utilize Insurance mechanism as an effective risk transfer alternative to supplement Government resources was identified by NIDM in its submission to Thirteenth Finance Commission. NDMA has been exploring the Insurance alternatives to bridge the increasing resource gap. Given the existing funding gaps and international experience, the IRDA and NDMA have been in discussion for some time now to explore insurance solutions in the Indian context. The following suggestions have emerged for consideration :

8.1 Purchase of insurance by States

As stated earlier, the current norms for SDRF do not provide for non-immediate repair and reconstruction of the damaged assets. Many a times, Central assistance towards such repair/reconstruction is inadequate. Further, certain disasters are not covered by the SDRF/NDRF scheme. In this context, it is suggested that States may be encouraged to purchase insurance for :

a. Compensation in respect of death / injury / loss of property due to calamities / disasters not included in the SDRF scheme;

b. Repair and reconstruction of the damaged infrastructure.

To partly offset the expenditure on premiums, utilisation of SDRF of up to (say) 5% of annual allocation may be considered to be allowed for this purpose. With this provision, the need to reallocate funds from developmental activities could be avoided. Hence :

A Disaster relief insurance policy for SDRF can be designed with broad terms as given below for disasters not covered by the SDRF scheme

This policy is a comprehensive cover for the Ex Gratia relief amounts to be paid by the SDRF to the members of the BPL families following a disaster which is not included in the SDRF scheme. Payments for the following will be covered under various sections :

1. Gratuitous relief for death / injury
2. Loss of Dwelling and Contents

Sample Disaster insurance cover details to SDRF :

Disaster Relief Insurance Cover for Disasters not Covered by SDRF

1.	Insured	State Disaster Response Fund (SDRF)
2.	Cover	Disaster Insurance Policy below Poverty Line Population for gratuitous relief to be paid following a disaster not covered by the SDRF norms.
3.	Events	Natural Disasters not covered by Disaster Management Act 2005 amended 2010
4.	Limits	Gratuitous relief for amounts as provided in SDRF norms for : i. Death and Injury ii. Loss of Dwellings and Contents (Per person and per dwelling as per the norms)

Note: - Details to be worked out

An Insurance Policy for covering repair and reconstruction of damaged infrastructure

The state itself can purchase such a cover. In addition, the revenue generating utilities can also be advised to buy insurance against natural perils.

Standard property policies are available for repairs and re-construction of roads, bridges, buildings, factories and plants.

All the costs of reconstruction would be payable provided the assets are adequately insured. Standard deductibles, terms and conditions would apply.

Insurance for NDRF:

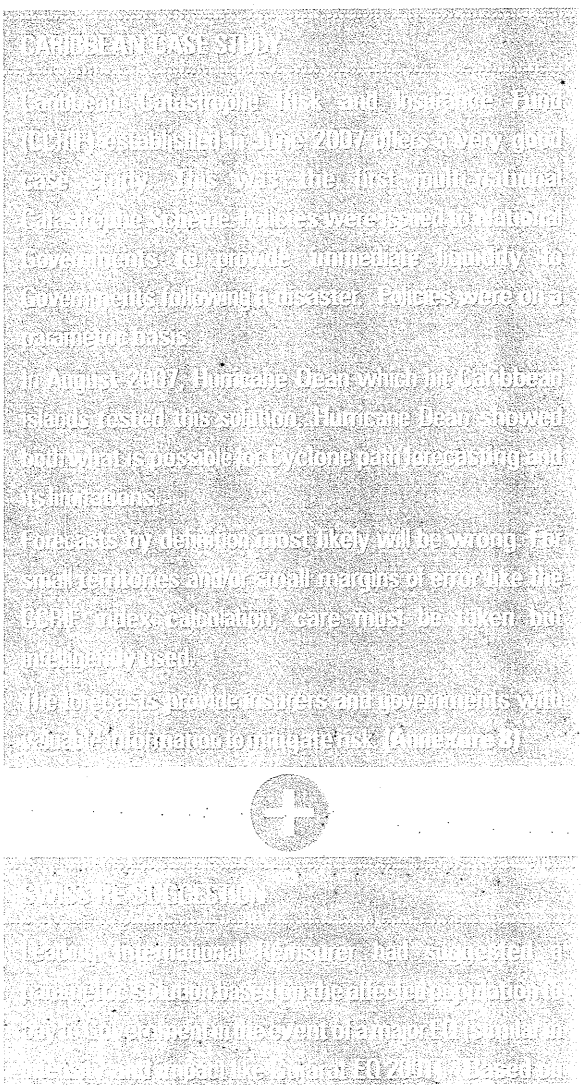
Parametric trigger based insurance solution for NDRF for low frequency, high impact natural or man-made disasters to meet immediate Relief & Rehabilitation expenses

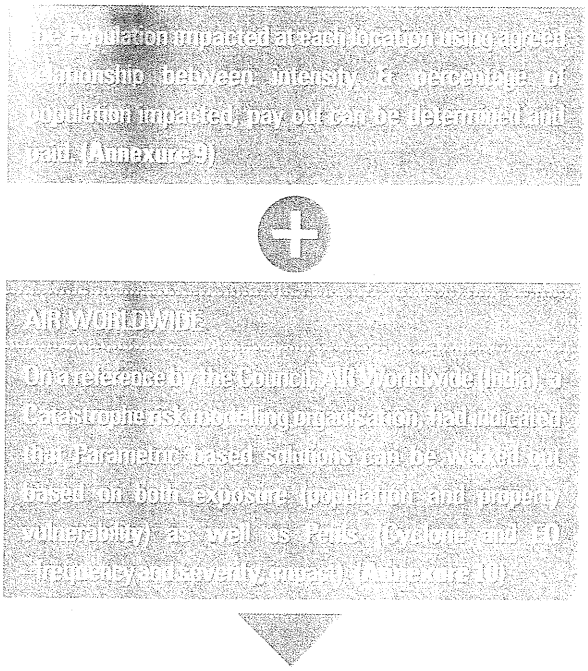
This would preclude reallocation of plan funds in the event of severe disasters which exceed the NDRF budget. A portion of NDRF would be used as insurance premium in this case.

The solutions can be structured to cover losses wherein the trigger is indexed to the natural hazard caused by nature. The parameter could be wind speed (for a cyclone risk), the ground acceleration (for an earthquake risk), rain-fall (for flood risks) or as is appropriate for the peril. Data for this parameter is collected at multiple reporting stations and then entered into a specified formula. For example, if a cyclone generates wind speeds greater than X meters per second at 50 of the 150 weather observatory stations of the Indian Metrological agency the program recovery would be triggered.

It can also be structured using the modelled loss method. Instead of dealing with the company's actual claims, an exposure portfolio is constructed for the use with catastrophe modelling software and then when there is a large event, the event parameters are run against the exposure database in the cat model. If the modelled losses are above a specified threshold, the program recovery is triggered.

While discussing parametric solutions – it would be essential to understand that choosing the correct trigger level for the pay-out is necessary, supported by catastrophe loss models. Data from various sources are required and the appropriate statistical modelling techniques are to be used to simulate / forecast the expected loss scenario. For extreme natural disaster events, these solutions can be worked out. Each SDRF or NDRF could choose the trigger level and the reimbursement limits to suit their State needs.





Brief Details of the Cover Are Given Below

1	Insured	NDRF (as the case may be)
2	Cover	Index based Parametric Cover based for the defined multi hazard events. All states and Union Territories in India
3	Pay-out Events (100% of Sum Insured on Trigger)	Earthquake : more than 7 Richter Scale or intensity VIII (MSK) Wind Speed : More than 72 miles per hour (More than 63 knots) Cyclone : greater than category 5 Rainfall : > ____mm (Flood) Rainfall : < _____ mm (Drought)
4	Sum Insured (not more than two events in a year)	Rs. 250 Crores for each and every loss event (to meet immediate expenses towards relief and rehabilitation, restoration of normalcy in the affected areas); In the annual aggregate not exceeding Rs.500 Crores
5	Deductible	Amount of Rs. 10 Crores and Trigger parameter as agreed
6	Premium per annum	Rs. 25 Crores (this would be based on modelled loss estimates)

Note: This cover needs detailed study by catastrophe model experts and insurers / reinsurers.

8.3 Insurance for Individuals

A. Simple natural catastrophe or disaster Insurance policy for individuals/families

B. Compulsory insurance of private homes.

Simple Natural Catastrophe or Disaster Insurance Policy for Individuals/Families

With a view to encouraging every non-BPL family to buy a product for disaster relief IRDA could request insurance companies to offer a simple Indian Natural Catastrophe Insurance Policy or Disaster Relief Insurance Policy (which would include man-made disasters) covering loss of life, injury and loss of property/contents. The choice of sum insured for these three categories could be left to the individuals and the insurance company could offer competitive prices for such products. While insurance companies can offer simple language standard earthquake/cyclone insurance policies for all non-BPL citizens, the Government could consider buying this insurance for BPL families with/without a marginal contribution from the BPL family and a major part of the premium being paid by the Government (similar model to RSBY) for providing immediate Disaster relief insurance cover for BPL families. Alternately, the Government could continue to provide compensation to BPL families as per extant/revised norms.

Compulsory Insurance of private homes

Mandating every household to take compulsory catastrophe peril insurance cover has been one of the salient features of successful international disaster insurance solutions used to popularize insurance as a risk transfer solution, mitigating the impact of losses for highly disaster prone areas. Taking a cue from these experiences, it is suggested that Government may make it mandatory for every property tax paying individual in urban areas to compulsorily purchase catastrophe peril insurance for owned property. To begin with, this

mandatory insurance provision may apply to Earthquake Seismic Zone IV and V as well as areas susceptible to Severe Cyclonic Storms with specified wind speeds.

INDIAN NATURAL CATASTROPHE INSURANCE POLICY (INCIP)

The General Insurance Council has drafted a simple Indian Natural Catastrophe Insurance Policy covering the loss of property and contents, death or injury (Personal Accident). This policy could be offered to individuals and family/households through the offices of the insurance companies at an affordable premium.

This policy would provide some relief to the families affected by natural calamities; in the process create awareness about insurance protection leading to enhanced penetration of insurance in rural and semi urban areas.

The primary aim of designing an Indian Natural Catastrophe Insurance Policy is

a. To provide relief to the families affected and

b. To enhance the awareness of insurance against natural disasters to which the country is exposed to, besides providing mitigation through insurance to all the citizens of the country.

This simple policy will provide relief for a basic minimum sum insured to all the families for a fixed premium. For any one requiring protection beyond the minimum sum insured commercial insurance coverage with suitable additional premium can be provided by the insurance industry.

A sample wording of Indian Natural Catastrophe Insurance Policy is attached as **Annexure 11**.

a. It is better to limit this Indian Natural Catastrophe Insurance Program to retail customers (i.e.) all citizens of the country (including small shop keepers). Corporate customers any way take commercial insurance policies which provide NAT CAT peril coverage.

b. To start with, INCIP can cover all perils other than localised flood & inundation not caused due to heavy rains.

c. Adequacy of Pricing and payment of Premium will be critical for creating and sustaining insurer's interest in this product.

d. Reinsurance pool arrangements can be worked out for protecting the insurance companies against major catastrophes impacting them.

8.4 Man-Made disasters

8.4.1 Public Liability Insurance policies

The Public Liability Insurance Act was passed following the Bhopal Gas Tragedy. With the growth of various cities and urban agglomerations it has become necessary to look beyond hazardous chemicals/substances to provide mandatory insurance for third party injury/death caused by accidents/disasters in public places such as malls, theatres, hospitals, hotels, exhibition sites and other places of congregation. Here again, the minimum compensation amounts can be as prescribed for public liability insurance or synchronized with SDRF norms. The owners / operators of such public places can also offer higher voluntary limits of compensation and opt for appropriate insurance solutions.

Compulsory Public Liability insurance coverage is taken by commercial establishments and industrial units where there is a possibility of accidents affecting the public or congregate

Public Liability Policies being issued by Insurance companies can be classified into following three broad categories.

a. Public Liability Insurance Act 1991 –

b. Public Liability Non Industrial Risk - For offices, hotels, cinema houses, hospitals, schools etc.

c. Public Liability Industrial Risk – For godowns, warehouses and factories.

It is for consideration whether similar mandatory provisions could be introduced in the appropriate legislations / regulations :

a. For commercial / industrial establishments

b. For non-industrial establishments such as godown, warehouses, offices, hotels, cinema halls, sports clubs, etc.

c. For places of importance where seasonal public congregations are regulated / controlled by local authorities / organizers of events with associated system of permits / registration / entry tickets, etc., e.g. religious / pilgrimage centres / events.

d. To provide compensation for death / partial injury or permanent / partial disability and property damage to third party.

The levels of compensation could also be synchronized with those applicable for hazardous substances or for disaster insurance, as discussed above.

8.4.2 Insurance of Public Utilities

Public Utilities such as water, energy, transportation or even those like telecommunications (that have their own sources of revenue for the services rendered), suffer extensive damage due to natural catastrophe / disasters. Some of these may be in PPP mode or even privately owned (as in the case of telecommunications). Expeditious rest-oration of these facilities is essential for effective relief, rehabilitation and long term economic recovery.

Restoration of public utilities is essential for effective relief, rehabilitation and long term economic recovery, hence the specific insurance of public utilities

8.4.3 Insurance of Critical Infrastructure

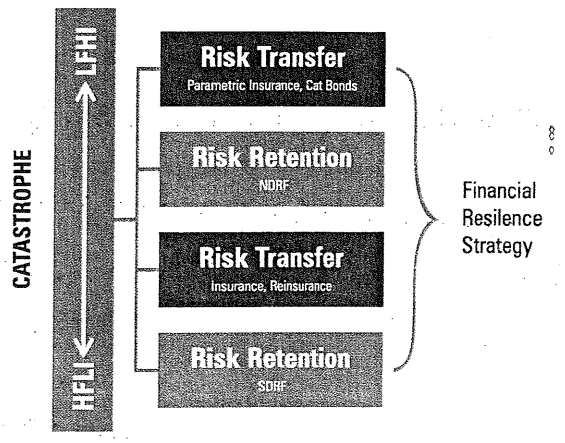
Insurance of other Government owned assets such as school buildings, hospitals, roads, bridges, etc. that get damaged during a disaster.

A regulation to make these institutions mandatorily purchase insurance as a solution for generating funds for repairs and restoration of their assets may be beneficial. Standard policies are available in the market. Suitable instruments may be made available to provide the option of purchasing parametric insurance cover for their repair and reconstruction.

All the suggestions made in the report relating to Disaster funding by Government can be summarised in the following diagram:

Insurance of critical infrastructure such as government owned assets including school buildings, hospitals, roads etc. to generate funds for repairs and restoration

CATASTROPHE RISK LAYERING



Source: Presentation by FA, NDMA at NPDRR, April 2013, New Delhi

09

Action Plan

ACTION PLAN

To summarize, the following are the major action points for consideration :

Encouraging States to purchase insurance

a. For meeting relief not covered by SDRF schemes

b. For repair/reconstruction expenditure following a disaster

c. Use of SDRF to partly offset expenditure on premium

Mandatory property insurance solutions in respect of property tax payers living in highly catastrophe prone urban areas (earthquake and cyclones to begin with)

Parametric based insurance solutions for low frequency, high impact, earthquake and cyclone perils for NDRF

Simple Natural Catastrophe Insurance Policies for non-BPL population with standard coverage and terms and conditions

a. Simple disaster insurance policy for individuals/families

b. Innovative products

c. Government funding for BPL/continuation of present relief

Enlarging the scope of Public Liability Insurance Act to cover places of importance where seasonal public congregations are regulated/controlled by local authorities/organizers of events with associated system of permits/registration/entry tickets, etc.

E.g. Religious/Pilgrimage centres/events

Enlarging the scope of Public Liability Insurance Act to cover public places, commercial, non-industrial and industrial risks who have visitors or where a large number of people congregate (e.g. malls, theatres, hospitals, hotels, exhibition sites), with a minimum compensation aligned with SDRF norms

Insurance of public utilities - Water, Energy, Transportation

Insurance of Critical Infrastructure – Schools, Hospitals etc.

10

Way Forward

WAY FORWARD

The report has highlighted the need to use both Government's funding as well as risk transfer through insurance to achieve financial resilience in disaster management. To implement the above action plan the following Government initiatives need to be considered and supportive insurance products / mechanism can be designed by the insurance industry in the following policy areas :

Insurance premiums as a risk transfer strategy

Allow the states to utilise part of the SDRF to pay for Insurance Premium to buy appropriate insurance solutions (As against the current norm of relying on reserves / contingency funding for relief and plan funding for reconstruction).

Mandatory Insurance of :

a. Private homes in highly vulnerable zones
b. Government Property like roads, bridges, schools, hospitals
c. Revenue generating public utilities like Electricity, Water and Drainage
d. Public places – Enlarging the scope of Public Liability Insurance Act to cover public places; commercial, non-industrial and industrial risks who have visitors or where a large number of people congregate
e. Places of importance where seasonal public congregations are regulated / controlled by local authorities / organizers of events with associated system of permits / registration / entry tickets, etc., e.g. Religious / Pilgrimage centres / events

Incentives

a. Use both funding and risk transfer mechanism to achieve financial resilience in disaster management
b. Incentives can be provided by the Government by way of premium subsidies or tax deduction benefits for purchase of such insurance cover

Insurance industry area

Insurance industry can design / innovate / develop suitable insurance solutions and affordable simple insurance products at affordable premium rates.

11

Annexures

ANNEXURES

Annexure 1 : Past Catastrophe Losses (1989 to 2001)

11.1.1 Natural disasters

Past Catastrophe losses (Source: GIC Re)

Natural Disaster : Flood

Year	Loss at	Date of loss	No. of claims Reported	Est. Amt. (Rs. In Lacs)	No. of claims settled	Settled Amount (Rs. In Lacs)
1989	Maharashtra	Jul-89	4,172	5,331	3,633	1,964.70
1990	Andhra Pradesh	May-90	14,039	10,584	13,114	3,402.70
1990	Bombay	Jun-90		1,546		
1990	Orissa	Nov-90	1,506	224	1,414	118.70
1991	Bombay	Jun-91	5,205	10,279	1,714	4,361.20
1993	Punjab (Chandigarh)	Jun-93	5,101	3,228.5	4,690	1,704.40
1996	Andhra Pradesh	Jun-96		4,062		
1996	Andhra Pradesh	Nov-96	7,716	8,394.1	7,055	4,116.70
1997	Gujarat	Jun-97	2,707	2,897	2,151	1,529.00
1997	Maharashtra	Aug-97		1,924.3		1,924.30
1998	Maharashtra / Gujarat	Sep-98		5,163		5,163.00
2000	Bombay	Jul-2000		10,795		10,795.00
		TOTAL	**40,446**	**64,428**	**33,771**	**35080.00**

Natural Disaster : Earthquake

1991	Uttarkashi(UP)	20.10.91		31		31
1993	Maharashtra (Latur)	30.09.93	662	156	416	107
1997	Jabalpur	22.05.97	3,151	353	3,018	247
2001	Gujarat	26.01.2001		36,119		36,119
		TOTAL	**3,813**	**36,659**	**3,434**	**36,504**

Natural Disaster : Cyclone

1996	Andhra Pradesh	7.11.96	7,716	8,394	7,055	4,117
1998	Gujarat/ Kandla	9.06.98	3,296	135,731	3,116	49,753
1999	Orissa	29.10.99	14,287	26,887	7,151	5,538
		TOTAL	**25,299**	**171,012**	**17,322**	**59,408**

11.1.1 Man-made disasters

A. Riots / Bomb blasts

Past Catastrophe losses

				(Rs. In Lacs)
Gwalior Rayon	Riot	1982		648
Smt. Indira Gandhi	Riot	1984	8,844	8,933
Gwalior Rayon	Riot	1985		704
Hindustan Alu.	Riot	1990		1,000
Mr. Rajiv Gandhi	Riot	1991	940	711
Gujarat	Riot	1992		1,740
Ayodhya	Riot	1992	3,230	4,651
Ayodhya	Riot	1993	2,070	4,920
Bomb blast in Mumbai	Bomb blast	1993	355	3,519
Sea Rock	Riot	1993		1,600
Reliance Jamnagar	Riot	1998		1,920
TOTAL			**15,439**	**30,346**

B. Other Man-made disasters

Past Catastrophe losses

Bhopal gas Tragedy	1984	12,000	558,125
Uphaar Cinema Delhi	1997	59	DNA
Terrorist Attack Mumbai	2009	173	308
Stephen Court Fire	2010	43	DNA
AMRI Hospital Kolkatta Fire	2011	89	DNA

Source: GIC Re

Annexure 2 : Natural Catastrophes in India (2005)

Chronological list of all natural catastrophes in India in 2005

Sr. No.	Month	State	No. of persons dead / missing / Injured	Homeless (in '000s)	Total damage (Rs. In Crores)
		FLOOD			
1	April	Madhya Pradesh	150		
2	June - July	Gujarat	142	500	2,000
3	July	Assam, Arunachal Pradesh, UP, Bihar, West Bengal	83	4	
4	July - Aug	Mumbai, Maharashtra, Gujarat, MP	1,150	15,000	15,000
5	September	India, UP, Azamgarh	27		
6	September	HP, Dharwad	38		
7	September	Bangladesh, Bay of Bengal, Andhra Pradesh	91		1,800
8	October	West Bengal, Orissa, Calcutta	19	250	525
9	Oct- Nov	AP, Karnataka, Tamil Nadu	170		
		STORMS			
1	October	Andhra Pradesh, Tamil Nadu	33		
		EARTHQUAKE			
1	October	India	147,300	3,300	500
		DROUGHT, BUSH FIRES, HEAT WAVES			
1	May	AP, Orissa	150		
2	June	India, Bangladesh, Nepal, Orissa, Andhra Pradesh	375		
		COLD, FROST			
1	February	Jammu and Kashmir, Srinagar	300	6	
		MAJOR FIRES, EXPLOSIONS			
1	April	Andhra Pradesh	68		
2	July	Tamil Nadu	35		
3	July	Indian Ocean, India Arabian Sea	23		
4	September	Bihar	55		2,050
		SHIPPING DISASTERS			
1	August	Bihar	50		
2	October	UP	38		
		RAIL DISASTERS (INCL. CABLEWAYS)			
1	February	Maharashtra	73		
2	April	Gujarat	142		
3	October	MP	92		
		MISCELLANEOUS			
1	January	Maharashtra	540		
2	April	Bangalore	40		
3	May	New Delhi	57		
4	July	Haryana	100		
5	July	Uttar Pradesh	64		
6	September	Orissa	57		
7	October	Delhi	272		
8	November	Jammu & Kashmir	131		
9	December	Tamil Nadu	79		

Source Swiss Re Sigma 2/2006

Annexure 3 : Statewise Allocation of SDRF

The State wise total allocation of State Disaster Response Fund (Centre – State share) is as under :

State wise total allocation of State Disaster Response Fund

Sr. No.	States	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
		Rs. In Crores					
1	Andhra Pradesh	508.84	534.28	560.99	589.04	618.49	2,811.64
2	Arunachal Pradesh	36.74	38.58	40.51	42.54	44.67	203.04
3	Assam	263.77	276.96	290.81	305.35	320.62	1,457.51
4	Bihar	334.49	351.21	368.77	387.21	406.57	1,848.25
5	Chhattisgarh	151.32	158.89	166.83	175.17	183.93	836.14
6	Goa	2.96	3.11	3.27	3.43	3.60	16.37
7	Gujarat	502.12	527.23	553.59	581.27	610.33	2,774.54
8	Haryana	192.90	202.55	212.68	223.31	234.48	1,065.92
9	Himachal Pradesh	130.76	137.30	144.17	151.38	158.95	722.56
10	Jammu & Kashmir	172.46	181.08	190.13	199.64	209.62	952.93
11	Jharkhand	259.45	272.42	286.04	300.34	315.36	1,433.61
12	Karnataka	160.96	169.01	177.46	186.33	195.65	889.41
13	Kerala	131.08	137.63	144,51	151.74	159.33	724.29
14	Madhya Pradesh	392.75	412.39	433.01	454.66	477.39	2,170.20
15	Maharashtra	442.69	464.82	488.06	512.46	538.08	2,446.11
16	Manipur	7.22	7.58	7.96	8.36	8.78	39.90
17	Meghalaya	14.65	15.38	16.15	16.96	17.81	80.95
18	Mizoram	8.55	8.98	9.43	9.90	10.40	47.26
19	Nagaland	4.97	5.22	5.48	5.75	6.04	27.46
20	Orissa	391.58	411.16	431.72	453.31	475.98	2,163.75
21	Punjab	222.92	234.07	245.77	258.06	270.96	1,231.78
22	Rajasthan	600.66	630.69	662.22	695.33	730.10	3,319.00
23	Sikkim	22.75	23.89	25.08	26.33	27.65	125.70
24	Tamil Nadu	293.52	308.20	323.61	339.79	356.78	1,621.90
25	Tripura	19.31	20.28	21.29	22.35	23.47	106.70
26	Uttar Pradesh	385.39	404.66	424.89	446.13	468.44	2,129.51
27	Uttarakhand	117.66	123.54	129.72	136.21	143.02	650.15
28	West Bengal	304.83	320.07	336.07	352.87	370.51	1,684.35
29	Total SDRF(Centre+ State share) of which	6,077.30	6,381.18	6,700.22	7,035.22	7,387.01	33,580.93
30	Centre share of SDRF	4,677.82	4,911.70	5,157.29	5,415.17	5,685.95	25,847.93
31	State share of SDRF	1,399.48	1,469.48	1,542.93	1,620.05	1,701.06	7,733.00

Source:- NDMA

No. 32-3/2013-NDM-I
Government of India
Ministry of Home Affairs
(Disaster Management Division)

'C' Wing, 3rd Floor, NDCC- II,
Jai Singh Road, New Delhi-110001,
Dated the 21st June 2013

To

1. Chief Secretaries of all States
2. The Relief Commissioners / Secretaries, Department of Disaster Management of all States

Subject: - Items and Norms of assistance from the State Disaster Response Fund (SDRF) and the National Disaster Response Fund (NDRF) for the period 2010 – 2015.

Sir/ Madam,

I am directed to refer to this Ministry's letter No. 32-3/ 2012-NDM-I, dated 28th September 2012 regarding forwarding the list of revised items and norms from assistance from SDRF/ NDRF in the wake of identified natural calamities.

2. It has now been decided to further revise the norms in respect of S. No. 9 (a) (i) i.e. repair/ restoration of fully damaged/ destroyed Pucca houses from Rs. 35,000/- per unit to Rs. 70,000/- per unit, of the revised list of items and norms of assistance from SDRF and NDRF. Similarly, it has also been decided to further revise the norms in respect of S. No. 1(e) i.e. "provision of Gratuitous relief for families in dire need of immediate sustenance after a calamity: 5 (i) (B) (a) & (b) and 5 (ii) i.e. provision of input subsidy to SMF and OSMF (where crop loss is 50% and above) in respect of rainfed, irrigated and perennial crops: 6 (ii) & (iii) i.e. "provision of fodder/ feed concentrate and water supply in cattle camps". The State Governments concerned should draw up a separate plan with concerned Central Ministries and Planning Commission etc. for mitigating the drought situation. These revised norms, as cited above, will be effective from 1st March 2013.

3. The revised items and norms can also be downloaded from website of Disaster Management Division of Ministry of Home Affairs i.e. *www.ndmindia.nic.in*.

4. Accordingly, a copy of further modified/ revised items and norms of assistance from SDRF/ NDRF in the wake of identified natural calamities is **Annexed**.

5. This supersedes this Ministry's earlier letter on this subject, the last being No.32-3/ 2012-NDM-I dated the 28th September, 2012.

Yours faithfully,

(Goutam Ghosh)
Deputy Secretary to the Govt. of India
Telefax: 23438123

Encl: As above.

Copy for information and necessary follow up action to:-

1. Accountants General of all State Governments.
2. Comptroller & Auditor General (CAG), New Delhi.
3. Controller General of Accounts (CGA), New Delhi.
4. Resident Commissioners of all State Governments.

Copy to: -

1. Secretary, National Disaster Management Authority, NDMA Bhawan, Safdurjung Enclave, New Delhi.
2. Ministry of Finance, Department of Expenditure [Shri Rajeev Kumar, JS (PF-I)], North Block, New Delhi.
3. Ministry of Agriculture [Joint Secretary (DM)], Krishi Bhawan, New Delhi.
4. Planning Commission [Joint Secretary (SP)], Yojna Bhawan, New Delhi.
5. All concerned Central Ministries/ Departments / Organizations.
6. PMO / Cabinet Secretariat.
7. PS to HM/ PS to MOS (R)
8. Sr. PPS to Home Secretary/ Secretary (BM)/ Joint Secretary (DM)/ NIC.

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Annexure -

REVISED LIST OF ITEMS AND NORMS OF ASSISTANCE FROM STATE DISASTER RESPONSE FUND (SDRF) AND NATIONAL DISASTER RESPONSE FUND (NDRF)

(Period 2010-15, MHA Letter No. 32-7/2011-NDM-I Dated 16th January 2012, modified vide letter No. 32-3/2012-NDM-I, dated 28th September 2012, modified vide letter No. 32-3/2013-NDM-I, dated 21st June 2013)

SNO.	ITEM	NORMS OF ASSISTANCE
1	2	3
1	**GRATUITOUS RELIEF**	
	a) Ex-Gratia payment to families of deceased persons.	**Rs.1.50 lakh** per deceased person including those involved in relief operations or associated in preparedness activities, subject to certification regarding cause of death from appropriate authority. - In the case of an Indian citizen who loses his life due to a notified natural calamity in a foreign country, his family would not be paid this relief. - In the case of a Foreign citizen who loses his life due to a notified natural calamity within the territory of India, his family would also not be paid this relief.
	b) Ex-Gratia payment for loss of a limb or eye(s).	**Rs. 43,500/-** per person, when the disability is between 40% and 80%. **Rs. 62,000/-** per person, when the disability is more than 80%. Subject to certification by a doctor from a hospital or dispensary of Government, regarding extent and cause of disability.
	c) Grievous injury requiring hospitalization	**Rs. 9,300/-** per person requiring hospitalization for more than a week. **Rs. 3,100/-** per person requiring hospitalization for less than a week.
	d) Clothing and utensils/ house-hold goods for families whose houses have been washed away/ fully damaged/severely inundated for more than a week due to a natural calamity.	**Rs.1,300/-** per family, for loss of clothing. **Rs.1,400/-** per family, for loss of utensils/ household goods.
	e) Gratuitous relief for families in dire need of immediate sustenance after a calamity. GR to be provided to those who have no food reserves, or whose food reserves have been wiped out in a calamity, and who have no other immediate means of support.	**Rs. 40/-** per adult and **Rs. 30/-** per child, not housed in relief camps. State Govt. will certify that (i) these persons have no food reserve, or their food reserves have been wiped out in the calamity, and (ii) identified beneficiaries are not housed in relief camps. Further State Government will provide the basis and process for arriving at such beneficiaries district-wise. Period for providing gratuitous relief will be as per assessment of the State Executive Committee (SEC) and the Central Team (in case of NDRF). The default period of assistance will upto to 30 days, which may be extended upto 60 days in the first instance, if required, and subsequently upto 90 days in case of drought/ pest attack.

2.	**SEARCH & RESCUE OPERATIONS**	
	(a) Cost of search and rescue measures/ evacuation of people affected/ likely to be affected	As per actual cost incurred, assessed by SEC and recommended by the Central Team (in case of NDRF). - By the time the Central Team visits the affected area, these activities are already over. Therefore, the State Level Committee and the Central Team can recommend actual/ near-actual costs.
	(b) Hiring of boats for carrying immediate relief and saving lives.	As per actual cost incurred, assessed by SEC and recommended by the Central Team (in case of NDRF). The quantum of assistance will be limited to the actual expenditure incurred on hiring boats and essential equipment required for rescuing stranded people and thereby saving human lives during a notified natural calamity.
3	**RELIEF MEASURES**	
	a) Provision for temporary accommodation, food, clothing, medical care, etc. for people affected/ evacuated and sheltered in relief camps.	As per assessment of need by SEC and recommendation of the Central Team (in case of NDRF), for a period up to 30 days. The SEC would need to specify the number of camps, their duration and the number of persons in camps. In case of continuation of a calamity like drought, or widespread devastation caused by earthquake or flood etc., this period may be extended to 60 days, and upto 90 days in cases of severe drought. Medical care may be provided from National Rural Health Mission (NRHM).
	b) Air dropping of essential supplies	As per actual, based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF). - The quantum of assistance will be limited to actual amount raised in the bills by the Ministry of Defence for airdropping of essential supplies and rescue operations only.
	c) Provision of emergency supply of drinking water in rural areas and urban areas	As per actual cost, based on assessment of need by SEC and recommended by the Central Team (in case of NDRF), up to 30 days and may be extended upto 90 days in case of drought.
4.	**CLEARANCE OF AFFECTED AREAS**	
	a) Clearance of debris in public areas.	As per actual cost within 30 days from the date of start of the work based on assessment of need by SEC for the assistance to be provided under SDRF and as per assessment of the Central team for assistance to be provided under NDRF.
	b) Draining off flood water in affected areas	As per actual cost within 30 days from the date of start of the work based on assessment of need by SEC for the assistance to be provided under SDRF and as per assessment of the Central team(in case of NDRF).
	c) Disposal of dead bodies/ Carcases	As per actual, based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF).
5	**AGRICULTURE**	
(i)	**Assistance to small and marginal farmers.**	
A.	**Assistance for land and other loss**	
	a). De-silting of agricultural land (where thickness of sand/ silt deposit is more than 3", to be certified by the competent authority of the State Government.)	**Rs. 8,100/-** per hectare for each item.

	b) Removal of debris on agricultural land in hilly areas	(Subject to the condition that no other assistance/ subsidy has been availed of by/ is eligible to the beneficiary under any other Government Scheme)
	c) De-silting/ Restoration/ Repair of fish farms	
	d) Loss of substantial portion of land caused by landslide, avalanche, change of course of rivers.	**Rs. 25,000/-** per hectare to only those small and marginal farmers whose ownership of the land is legitimate as per the revenue records.
B.	**Input subsidy (where crop loss is 50% and above)**	
	a) For agriculture crops, horticulture crops and annual plantation crops	**Rs. 4,500/-** per ha. in rainfed areas and restricted to sown areas. **Rs. 9,000/-** per ha. in assured irrigated areas, subject to minimum assistance not less than Rs.750 and restricted to sown areas.
	b) Perennial crops	**Rs. 12,000/-** ha. for all types of perennial crops subject to minimum assistance not less than Rs. 1500/- and restricted to sown areas.
	c) Sericulture	**Rs. 3,200/-** per ha. for Eri, Mulberry, Tussar **Rs. 4,000/-** per ha. for Muga.
(ii)	**Input subsidy to farmers other than small and marginal farmers**	**Rs. 4,500/-** per hectare in rainfed areas and restricted to sown areas. **Rs. 9,000/-** per hectare for areas under assured irrigation and restricted to sown areas. **Rs. 12,000/-** per hectare for all types of perennial crops and restricted to sown areas. - Assistance may be provided where crop loss is 50% and above, subject to a ceiling of 1 ha. per farmer and upto 2 ha per farmer in case of successive calamities irrespective of the size of holding being large.
6.	**ANIMAL HUSBANDRY - ASSISTANCE TO SMALL AND MARGINAL FARMERS**	
	i) Replacement of milch animals, draught animals or animals used for haulage.	***Milch animals*** **-** **Rs.16,400/-** Buffalo/ cow/ camel/ yak etc. **Rs.1650/-** Sheep/ Goat ***Draught animals*** **-** **Rs.15000/-** Camel/ horse/ bullock, etc. **Rs.10,000/-** Calf/ Donkey/ Pony/ Mule - The assistance may be restricted for the actual loss of economically productive animals and will be subject to a ceiling of 1 large milch animal or 4 small milch animals or 1 large draught animal or 2 small draught animals per household irrespective of whether a household has lost a larger number of animals. (The loss is to be certified by the Competent Authority designated by the State Government). ***Poultry:-*** Poultry @ **37/- per bird** subject to a ceiling of assistance of **Rs 400/-** per beneficiary household. The death of the poultry birds should be on account of a natural calamity. *Note:* - Relief under these norms is not eligible if the assistance is available from any other Government Scheme, e.g. loss of birds due to Avian Influenza or any other diseases for which the Department of Animal Husbandry has a separate scheme for compensating the poultry owners.

	ii) Provision of fodder / feed concentrate including water supply and medicines in cattle camps.	Large animals- **Rs. 50/-** per day. Small animals- **Rs. 25/-** per day. Period for providing relief will be as per assessment of the State Executive Committee (SEC) and the Central Team (in case of NDRF). The default period for assistance will be upto 30 days, which may be extended upto 60 days in the first instance and in case of severe drought up to 90 days. Based on assessment of need by SEC and recommendation of the Central Team, (in case of NDRF) consistent with estimates of cattle as per Livestock Census and subject to the certificate by the competent authority about the requirement of medicine and vaccine being calamity related.
	iii) Transport of fodder to cattle outside cattle camps	As per actual cost of transport, based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF) consistent with estimates of cattle as per Livestock Census.
7	**FISHERY**	
	i) Assistance to Fisherman for repair / replacement of boats, nets – damaged or lost -- Boat -- Dugout-Canoe -- Catamaran -- net (This assistance will not be provided if the beneficiary is eligible or has availed of any subsidy/ assistance, for the instant calamity, under any other Government Scheme.)	**Rs. 3,000/-** for repair of partially damaged boats only **Rs. 1,500/-** for repair of partially damaged net **Rs. 7,000/-** for replacement of fully damaged boats **Rs. 1,850/-** for replacement of fully damaged net
	ii) Input subsidy for fish seed farm	**Rs. 6,000** per hectare. (This assistance will not be provided if the beneficiary is eligible or has availed of any subsidy/ assistance, for the instant calamity, under any other Government Scheme, except the one time subsidy provided under the Scheme of Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture.)
8	**HANDICRAFTS/HANDLOOM – ASSISTANCE TO ARTISANS**	
	i) For replacement of damaged tools/ equipment	**Rs. 3,000** per artisan for equipments. - Subject to certification by the competent authority designated by the Government about damage and its replacement.
	ii) For loss of raw material/ goods in process/ finished goods	**Rs. 3,000** per artisan for raw material. - Subject to certification by Competent Authority designated by the State Government about loss and its replacement.
9	**HOUSING**	
	a) **Fully damaged/ destroyed houses**	
	i) Pucca house	**Rs. 70,000/-** per house
	ii) Kutcha House	**Rs.15,000/-** per house
	b) **Severely damaged houses**	
	i) Pucca House	**Rs.6,300/-** per house
	ii) Kutcha House	**Rs.3,200/-** per house

	(c) **Partially Damaged Houses** - both pucca/ kutcha (other than huts) where the damage is at least 15 %	**Rs. 1,900/-** per house
	d) **Damaged / destroyed huts:**	**Rs. 2,500/-** per hut, *(Hut means temporary, make shift unit, inferior to Kutcha house, made of thatch, mud, plastic sheets etc. traditionally recognized as hut by the State/ District authorities.)* *Note*: -The damaged house should be an authorized construction duly certified by the Competent Authority of the State Government.
	e) Cattle shed attached with house	**Rs.1,250/-** per shed.
10	**INFRASTRUCTURE**	
	Repair/restoration (of immediate nature) of damaged infrastructure: *(1) Roads & bridges (2)Drinking Water Supply Works, (3) Irrigation, (4) Power (only limited to immediate restoration of electricity supply in the affected areas), (5)Schools, (6)Primary Health Centres, (7) Community assets owned by Panchayat.* Sectors such as Telecommunication and Power (except immediate restoration of power supply), which generate their own revenues, and also undertake immediate repair/ restoration works from their own funds/ resources, are excluded.	***Activities of immediate nature :*** Illustrative lists of activities which may be considered as works of an immediate nature are given in the enclosed **Appendix.** ***Assessment of requirements :*** Based on assessment of need, as per States' costs/ rates/ schedules for repair, by SEC and recommendation of the Central Team (in case of NDRF). - As regards repair of roads, due consideration shall be given to Norms for Maintenance of Roads in India, 2001, as amended from time to time, for repairs of roads affected by heavy rains/floods, cyclone, landslide, sand dunes, etc. to restore traffic. For reference these norms are • Normal and Urban areas: upto 15% of the total of Ordinary Repair (OR) and Periodical Repair (PR). • Hills: upto 20% of total of OR and PR. *Note*: States shall first use its provision under the budget for regular maintenance and repair.
11	**PROCUREMENT**	
	Procurement of essential search, rescue and evacuation equipments including communication equipments, etc. for response to disaster.	- Expenditure is to be incurred from SDRF only (and not from NDRF), as assessed by the State Executive Committee (SEC). - The total expenditure on this item should not exceed 5% of the annual allocation of the SDRF.

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APPENDIX
(Item No. 10)

Illustrative list of activities identified as of an immediate nature.

1. **Drinking Water Supply :**

i) Repair of damaged platforms of hand pumps/ring wells/ spring-tapped chambers/public stand posts, cisterns.
ii) Restoration of damaged stand posts including replacement of damaged pipe lengths with new pipe lengths, cleaning of clear water reservoir (to make it leak proof).
iii) Repair of damaged pumping machines, leaking overhead reservoirs and water pumps including damaged intake – structure, approach gantries/jetties.

2. **Roads**

i) Filling up of breaches and potholes, use of pipe for creating waterways, repair and stone pitching of embankments.
ii) Repair of breached culverts.
iii) Providing diversions to the damaged/washed out portions of bridges to restore immediate connectivity.
iv) Temporary repair of approaches to bridges/embankments of bridges., repair of damaged railing bridges, repair of causeways to restore immediate connectivity, granular sub base, over damaged stretch of roads to restore traffic.

3. **Irrigation :**

i) Immediate repair of damaged canal structures and earthen/masonry works of tanks and small reservoirs with the use of cement, sand bags and stones.
ii) Repair of weak areas such as piping or rat holes in dam walls/ embankments.
iii) Removal of vegetative material/building material/debris from canal and drainage system.

4. **Health :**

Repair of damaged approach roads, buildings and electrical lines of PHCs/ community Health Centres.

5. **Community assets of Panchayat**

a) Repair of village internal roads.
b) Removal of debris from drainage/ sewerage lines.
c) Repair of internal water supply lines.
d) Repair of street lights.
e) Temporary repair of primary schools, Panchayat ghars, community halls, *angamwadi*, etc.

*****

Most immediate

No. 32-3/2010-NDM-1
Government of India
Ministry of Home Affairs
(Disaster Management Division)
'A' Wing, Lok Nayak Bhavan,
Khan Market, New Delhi
Dated the 28th September, 2010.

Office Memorandum

Subject: "Guidelines on Constitution and Administration of the State Disaster Response Fund and National Disaster Response Fund".

Section 46(1) and section 48(1) (a) of the Disaster Management Act, 2005 stipulates constitution of a National Disaster Response Fund at the National level and constitution of State Disaster Response Fund at the State level respectively. In pursuance to the provisions of the Disaster Management Act, the Government of India has notified the constitution of the National Disaster Response Fund vide the Gazette of India, Extraordinary Part-II-Section 3- Sub-section(ii) Notification No. 1995 dated September 28th 2010. (Copy enclosed).

The Thirteenth Finance Commission (TFC) has made provision of funds for the State Disaster Response Fund in its recommendations which has been accepted by Government of India. Keeping in view of the provision of the Disaster Management Act, 2005 and the recommendations of Thirteenth Finance Commission, Government of India has framed guidelines for administration of National Disaster Response Fund (NDRF) at the National level and for State Disaster Response Fund at the State level, which are enclosed herewith for necessary action.

As provided under the Act, all the State Governments are advised to constitute and notify the constitution of the State Disaster Response Fund and send a copy thereof to this Ministry for reference and record.

(Dev Kumar)
Director (DM-I)
Telefax: 24642853

Encl: As above.

Distribution:-

1. Ministry of Finance, Department of Expenditure, North Block, New Delhi.
2. Ministry of Agriculture, Department of Agriculture & Cooperation, Krishi Bhavan, New Delhi.
3. National Disaster Management Authority, New Delhi.
4. Chief Secretaries of (All States).
5. The Relief Commissioners/ Secretaries, Department of Disaster Management, of (All States).
6. Accountants General of all State Governments.
7. Controller General of Accounts (CGA), New Delhi.
8. Comptroller & Auditor General (CAG), New Delhi.

Annexure 6 : Conditionality of Central Contribution to SDRF

The share of the Central Government in SDRF shall be remitted to the State Government in two instalments in June and December in each financial year. Likewise, the State Government shall also transfer their contribution to the SDRF in two instalments in June and December of the same year, provided that if Ministry of Home Affairs, upon being satisfied that exigencies of a particular calamity so warrant, may recommend an earlier release of the Central share up-to 25% of the funds due to the State in the following year. This release will be adjusted against the instalments of the subsequent year.

The share of the Government of India to the SDRF due in a year shall be released to the State Governments subject to fulfilment of the following conditions :-

- The first instalment of Central contribution to SDRF for 2010-11 will be released unconditionally. The second instalment of central contribution to SDRF for 2011-11 and subsequent instalments will be released on receipt on confirmation of accounting procedure as laid down by the Commission and other conditions as mentioned below. Any deviation from these accounting practices could result in withholding of further releases until the required accounting procedure is adopted or restored.
- A 'State Disaster Response Fund' has been duly constituted by the State Government as specified in DM Act, 2005, following the accounting procedure and manner described by the Commission. The creation of the SDRF duly certified by the Accountant General (A&E) of the State shall be furnished by the State Government to the Ministry of Finance well before the release, say by October, 2010.
- State has constituted the State Executive Committee (SEC).
- The State Government shall furnish a certificate to the Ministry of Home Affairs and to Ministry of Finance in the months of April and October every year indicating that the amount received earlier has been credited to the SDRF along with the State's share of contribution, accompanied by a statement giving the up-to-date expenditure and the balance amount available in the SDRF. This statement is to be provided in the prescribed format. Once Finance Accounts are available expenditure reported for a particular year should match with expenditure figure in Major Head: 2245 and balance in SDRF in MH: 8121. In case of any discrepancy, the figures in MH: 2245 and in MH: 8121 in Finance Accounts will be considered.
- The central contribution due in December every year shall be released after the receipt, in the Ministry of Home Affairs and in the Ministry of Finance of an 'Annual Reports on Natural Calamities', prepared by the State Government on any notified natural calamities, faced in the previous year, by September of every year. This Annual Report shall, inter-alia, furnish details of expenditure incurred by the State Government on each of calamities, for each type of expenditure allowed as per the items and norms of expenditure of SDRF/National Disaster Response Fund (NDRF) so fixed by MHA with the concurrence of Ministry of Finance.
- Whenever SDRF of a State is replenished with additional grant-in-aid from NDRF, the State Government would treat this grant in the same manner as the funds in SDRF as far as transfer and accounting are concerned However, in such cases, a specific utilization certificate will be required within three months of the financial year in which such a grant is released.
- The release of instalments shall be made by Ministry of Finance subject to the above conditions being satisfied unless advised by Ministry of Home Affairs to withhold or adjust the release to any State.

Annexure 7 : Insurance Products Covering Disaster Perils

01. Fire and Special Perils Policy

Scope of cover: Covers properties like house, buildings, plant, machinery and stocks of factories.

a) Fire
b) Lightning
c) Explosion/implosion
d) Aircraft damage
e) Riot, strike, malicious and terrorism damage
f) Storm, cyclone, typhoon, tempest, hurricane, tornado, flood and inundation
g) Impact damage (by any rail/road vehicle or animal)
h) Subsidence and landslide including rock slide
i) Bursting and/or overflowing of water tanks, apparatus and pipes
j) Missile testing operations
k) Leakage from automatic sprinkler installations
l) Bush fire
m) Earthquake fire and shock

02. Industrial All Risk Policy

(For companies having overall Sum Insured of Rs. 100 Crores and above in one or more locations in India)

The cover in its widest form will include the following perils / covers:

a. Fire and all Special Perils
b. Burglary
c. Machinery breakdown/boiler explosion / electronic equipment insurance
d. Business interruption (Fire and all Special Perils)

03. Marine Policy

This policy covers goods, freight and other interests against loss or damage to goods whilst being transported by rail, road, sea and/or air.

a. Different policies are available depending on the type of coverage required ranging from an ALL RISK cover to a restricted FIRE RISK ONLY cover.
b. This policy is freely assignable and is basically an agreed value policy.

04. Motor policy

It covers all types of vehicles plying on public roads. As per the Motor Vehicles Act, 1988 it is mandatory for every owner of a vehicle plying on public roads, to take an insurance policy, to cover the amount, which the owner becomes legally liable to pay as damages to third parties as a result of accidental death, bodily injury or damage to property. A Certificate of Insurance must be carried in the vehicle as a proof of such insurance.

Two types of covers are available :

a. Liability only policy - This covers third party liability for bodily injury liability and/or death and property damage. Personal Accident cover for owner-driver is also included.
b. Package policy - This covers loss or damage to the vehicle insured in addition to (1) above.

05. Personal Accident

a. The insurance provides compensation in the event of death or disability directly due to accident.
b. The policy operates worldwide and is a 24 hours cover.
c. Different coverage are available ranging from a restricted cover of death only, to a comprehensive cover covering death, permanent disablements and temporary total disablements.
d. Group personal accident policies are also available for specified groups

06. Health Insurance

a. The policy covers hospitalisation expenses for the treatment of illness / injury provided hospitalisation is more than 24 hours. Pre-hospitalisation expenses for 30 days and

post-hospitalisation expenses for 60 days are also payable.

b. Day-care treatment: The Medical expense towards specific technologically advanced day-care treatments/surgeries where 24 hour hospitalisation is not required.

c. Ambulance Charges for shifting the insured from residence to hospital are covered up to the limits specified in the policy.

07. Public Liability Policy

This policy covers the amount which the insured becomes legally liable to pay as damages to third parties as a result of accidental death, bodily injury, loss or damage to the property belonging to a third party. The legal cost and expenses incurred in defending the case with prior consent of the insurance company are also payable subject to certain terms and conditions.

Three types of Public Liability Policies

a. Public Liability Non Industrial Risk - For offices, hotels, cinema houses, hospitals, schools etc.

b. Public Liability Industrial Risk - For Godowns, warehouses and factories.

c. Public Liability Insurance Act 1991 - This is a mandatory policy to be taken by owners, users or transporters of hazardous substance as defined under Environment (Protection) Act 1986 in excess of the minimum quantity specified under the Public Liability Insurance Act 1991.

d. The Public Liability Policy can be extended to cover the following risks on payment of an additional premium

1. Natural calamities like flood, earthquake etc.
2. Pollution risk subject to NOC from Pollution Control Board
3. Transportation risk

08. Homeowners Policy

This is a package policy specially designed to meet the insurance requirements of a householder by combining under a single policy, a number of our standard policies usually taken by householders The policy comprises of 10 sections as given here under

a) Fire & allied perils
b) Burglary & house breaking including larceny and theft.
c) All risks (jewellery & valuables)
d) Plate glass
e) Breakdown of domestic appliances
f) T.V. Set including VCP/VCR (All risks)
g) Pedal cycles (All risks)
h) Baggage insurance
i) Personal Accident
j) Public Liability

09. Shopkeepers Policy

a. This is a package policy specially designed for small shopkeepers. It is a single policy combining the various insurance requirements of shopkeepers.

b. Only one policy can be taken by one shopkeeper for each shop in a specific location having separate books of accounts.

The policy comprises of following 11 sections:

a) Building & contents
b) Burglary & housebreaking
c) Money insurance
d) Pedal cycles
e) Plate glass
f) Neon sign/glow sign
g) Baggage
h) Personal Accident
i) Fidelity Guarantee
j) Public Liability
k) Loss of profit

10. Weather Index based Agriculture Product

Weather based insurance and crop Insurance schemes are relatively new but are available in the market for agricultural crop losses due to drought as well as rainfall.

Annexure 8 : Caribbean Case Study

Caribbean Catastrophe Risk and Insurance Fund (CCRIF) established in June 2007 offers as a very good case study. This was the first multi-national Catastrophe Scheme. Policies were issued to National Governments to provide immediate liquidity to Governments following a disaster. Policies were on a parametric basis.

In August 2007, Hurricane Dean which hit Caribbean islands tested this solution. Hurricane Dean was the 7th most severe Atlantic hurricane ever recorded till then and it was the 3rd most intense hurricane recorded at landfall (Mexico).This Passed Lesser Antilles as a category 2 storm. CCRIF policies for St Lucia and Dominica islands were not triggered. But Hurricane Dean strengthened as storm headed straight for Jamaica becoming a Catastrophe 5 storm (the highest classification). Jamaica was in the middle of a parliamentary election; the potential recovery from CCRIF was widely promoted by the government. Hurricane Dean just missed Jamaica; Storm path passed some 40 kilometres south of the island and its Maximum strength on land was category 2, but category 1 for major population centres.

Dean was assessed as a circa 1 in 10 year event (frequency and severity) for Jamaica. But CCRIF cover was designed to pay a 1 in 20 year loss. So no payment is correct. But expectation needs to be managed and cover refined. Much of loss suffered was agriculture, not covered by CCRIF; much of loss caused by rainfall, again not explicitly covered by CCRIF.

CCRIF renewed successfully in 2008 - all countries renewed (including new Jamaican government). Cover offered in 2008 was at the 1 in 15 level for hurricane looking to add agriculture and flood in 2009

Hurricane Dean showed both what is possible for cyclone path forecasting and its limitations. Forecasts by definition most likely will be wrong. For small territories and/or small margins of error like the CCRIF index calculation, care must be taken but intelligently used the forecasts provide insurers and governments with valuable information to mitigate risk.

Annexure 9 : Swiss Re Parametric Solution

Swiss Re Parametric Solution (based on Gujarat EQ)

Mw 7.7 event in Bhuj area

a. **Impact on population :**
   1. Nearly 20,000 fatalities & 160,000 injuries.
   2. 750 fatalities in Ahmedabad, a town 300 km east of epicentre.

b. **Impact on property:**
   1. 7,904 villages in 21 districts of Gujarat impacted.

c. 370,000 completely & 931,000 partially destroyed houses and huts.

d. Economic losses of USD 4.5 Bn vs. insured loss of USD 100 Mn (base year 2001)

Peril covered : Earthquake

TRIGGER CONCEPT :

a. Ideally - A transaction would be based on an observable damage figure: damaged houses, casualties, etc.

b. In reality - Above observables is not available right after the earthquake and typically fluctuate considerably as there is no official body to capture them.

c. Alternatively, Swiss Re has successfully used a parametric triggering concept, using available observables to PREDICT likely damage pattern:

d. I.e. using the earthquakes' energy (measured by Magnitude) and its epicentre location (as reported by worldwide seismograph networks and reported online within minutes after the earthquake) to immediately predict the extent of areas affected by severe shaking.

e. Overlay the shaking pattern on a population density map to calculate number of affected people.

f. This predicted damage (i.e. NOT observed) allows for a nearly instantaneous decision about a payment for a cover structured accordingly

TRIGGER MECHANISM :

Parametric trigger - amount of pay-out dependent on estimated affected population calculated using predefined approach.

Maximum pay-out can be set at, say Rs. 1,000 Crores

Trigger can be modified to allow for:

a. Additional regions (e.g. Bihar, Assam etc.)

b. Additional perils (which would require significant modelling effort)

c. Further refinements in input parameters such as portfolio resolution, impact factors, attenuation function etc. possible.

After an earthquake occurs, trigger is calculated on a pre-defined portfolio (e.g. population per district in Gujarat) using the following steps :

Step 1: Distance of locations from epicentre

Step 2: Estimated intensity at locations using pre-defined attenuation function

Step 3: Population impacted at each location using agreed relationship between intensity & percentage of population impacted

Step 4: Determine event pay-out using pre-agreed index & pay-out relationship

Example:

Payout Set-up			
Event Affected	Attachment Point	Exit Point	Event Payout
Population	Affected Population	Affected Population	% of Cover
18,13,374	10,00,000	30,00,000	40.67%

Payout Calculations			
Country	Cover	Event Payout	Event Paycut
	INR	% of Cover	INR
India	1000,00,00,000	40.67%	406,68,68,750

Pay-out = INR 407 Cr. Expected Loss ~2.0 % in low layer

Payout Set-up			
Event Affected	Attachment Point	Exit Point	Event Payout
Population	Affected Population	Affected Population	% of Cover
54,55,862	30,00,000	50,00,000	100%

Payout Calculations			
Country	Cover	Event Payout	Event Paycut
	INR	% of Cover	INR
India	1000,00,00,000	100%	1000,00,00,000

Pay-out = INR 1,000 Crores. Expected Loss ~1.0 % in high layer

Annexure 10 : Parametric Trigger Information

Parametric Trigger Information – AIR World wide[13]

Triggers typically fall under one of five broad types defined below, although these can be customized to match the transaction's needs. All trigger types are in widespread use. Selection should be based on the specific risk transfer objectives of the sponsor.

Indemnity Trigger

The recovery is based on the sponsor's actual losses, just as in most reinsurance contracts. The modelling agent estimates the transaction's risk based on the sponsor's actual portfolio of exposure.

Modelled Loss (Notional Portfolio) Trigger

The loss to the bond is determined by the modelling agent by collecting actual events' parameters, such as magnitude and epicentre location for earthquakes, recreating them in its catastrophe model, and estimating their financial impact on the notional portfolio originally used to estimate the bond's risk. This portfolio may or may not be similar to the sponsor's actual exposure.

Industry Loss Index Trigger

The bond is triggered based on actual losses to the insurance industry as a whole. In the U.S., the loss is typically measured by Property Claims Services®, which is why this is often referred to as a 'PCS® trigger'. The sponsor does not need to divulge the details of its portfolio to investors for this type of trigger; instead, the modelling agent uses its own database of insured industry exposure to estimate the bond's probability of being triggered. A risk analysis of the sponsor's portfolio can also be performed in order to estimate correlations between the sponsor and the industry's risk profile, and select an industry loss trigger that will minimize basis risk.

Parametric Trigger

Recovery is based on objective measurements, such as a hurricane's maximum wind speed and landfall location, or the ground motion measured by multiple seismometers after an earthquake. In order to minimize the sponsor's basis risk, a detailed risk analysis of the sponsor's portfolio is performed before deciding on the parameters of a qualifying event.

Parametric Trigger Catastrophe Bonds Modelled by AIR

AIR has performed risk analysis for six catastrophe bonds with parametric trigger types. These parametric structures vary in complexity – ranging from simple cat-in-a-box triggers to robust third order polynomial index formulae. These six catastrophe bonds also cover several regions and perils throughout the world.

Hybrid Trigger

Recovery is based on the disaggregation of actual losses to the insurance industry as a whole down to a more granular geographical level. A hybrid of both the previously mentioned modelled loss trigger type and industry loss index trigger type takes the relatively coarse resolution industry loss reporting and disaggregates it. It breaks it down to a finer geographical resolution using loss ratios developed by a modelling agency's recreation of an event. These loss ratios are based on the same industry exposure analysed for industry loss index trigger risk analysis. This allows the sponsor to further reduce basis risk as they can represent their portfolio with finer resolution market share percentages of insured industry exposure.

Indian Cyclones

Coastal India frequently suffers from damaging meteorological events such as tropical cyclones, storm surges, high winds, flooding and coastal erosion. India has a very long coastal line of 5,700 km. This is made of 2,700 km of the east coast bordering Bay of Bengal and 3,000 km of the west coast bordering the Arabian Sea. The average annual frequency of tropical cyclones in the north Indian Ocean (Bay of Bengal and Arabian Sea) is about 5.

[13] AIR Worldwide – Information to General Insurance Council – December 2012

The following parameters can be considered to define the effect or damage on live stock and property due to cyclonic event

1. Wind speed
2. Central pressure
3. Rain fall

Data Sources:

India Meteorological Department (IMD) as a nodal agency. The following complied parameters are available on request.

- Spatial Resolution: District level / Meteorological observatories of required locations.
- Pressure (hpa)
- Temperature (Degree Celsius)
- Humidity (%)
- Rainfall (mm)

Coverage/network of the data:

The network weather stations map and the screenshot representing the lists of states, districts and location details of IMD are readily available.

Data can be obtained for all the weather stations from IMD data centre. These met-observatories were monitored by regional and state meteorological centres for collecting the datasets and archiving them for long period.

Indian Earthquakes

There were seven devastating earthquakes in the Indian Subcontinent (Uttarkashi in 1991, Killari in 1993, Jabalpur in 1997, Chamoli in 1999, Bhuj in 2001, Andaman-Sumatra in 2004 and Kashmir in 2005) in the last two decades. Some parts of Kashmir, Northern Himachal Pradesh, Northern Bihar, and Kutch, Andaman and Nicobar Islands and North Eastern region of the country are in Zone V and susceptible to great earthquakes of magnitude more than 8.0. These regions are the boundaries of the Indian plate that is colliding against the Eurasian plate in North-Northeast direction at the rate of about 50 mm per year. About 17.3% of lands in India are vulnerable to earthquakes of intensity VIII (MSK) and fall in high damage risk zone. And 30.8% of lands are in moderate damage risk zone (MSK VII).

The following parameters can be considered to define the effect or damage on live stock and property due to an earthquake event:

- Earthquake location
- Magnitude of earthquake
- Depth of earthquake
- Earthquake source mechanism
- Peak Ground Acceleration
- MMI or MSK Intensity

Data Sources:

1. India Meteorological Department (IMD)
2. Institute of Seismological Research (ISR, Gujarat)
3. Geological Survey of India (GSI)
4. National Geophysical Research Institute (NGRI)

Coverage/network of the data:

The network map of seismological stations and list of stations and location details of IMD are available when required.

Earthquake catalogue can be obtained from India Meteorological Department (IMD), as a nodal government agency responsible for monitoring earthquake activity and archiving them for long period. Besides, IMD also provides compiled data on other parameters. Geology and fault (seismotectonic) maps can be obtained from Geological Survey of India (GSI) and GPS data from National Geophysical Research Institute (NGRI), Hyderabad.

Annexure 11 : Sample of Indian Natural Catastrophe Insurance Policy

(For illustration purposes)

A. PREAMBLE

This is a Package Policy specially designed to cover the House, Contents and Personal Accident risks of a householder under a single policy against Natural Catastrophe Perils.

B. SCOPE

This policy has three Sections as given here under :

1. Coverage for dwelling
2. Coverage for contents
3. Personal Accident

Section 1 – Coverage for dwelling

This policy provides cover against loss or damage to your dwelling due to operation of any of the catastrophe perils defined in the policy. The building / premises should be owned by you.

Section 2 – Coverage for Contents

This policy provides cover against loss or damage to the contents that are kept in your dwelling in which you normally reside and is affected due to operation of any of the catastrophe perils as defined in the policy.

Section 3 – Personal Accident

This policy provides cover against the unfortunate death of any of the immediate four family members as defined in the policy and was living in the dwelling covered under the above Section 1 due to operation of any of the catastrophe perils as defined in the policy.

This policy would also provide relief in the case of permanent disability/injury suffered by the family members on account of the catastrophe event/peril.

C. AMOUNT PAYABLE

Section 1 – For damage to dwelling

Kutcha Construction	Rs. 50,000
Pucca Construction	Rs. 100,000

In the event of partial damage the amount payable will be the percentage of damage calculated on the above amount.

Section 2 – For contents

Kutcha Construction	Rs. 25,000
Pucca Construction	Rs. 50,000

Section 3 – Personal Accident

Death of Four family members Rs.100,000 per person

D. DEFINITIONS

'Natural Catastrophe Perils' means Earthquake, flood and inundation caused by windstorm, storm, cyclone, tempest, typhoon, hurricane, tsunami, subsidence, landslide, rockslide, and any other peril as declared by the Government as a Natural Catastrophe Peril (Localised Flooding and Inundation due to any other cause to be excluded).

'Natural Catastrophe Event' is an event which overwhelms local capacity necessitating national and international assistance and one as declared by the Government as 'Natural Catastrophe Event'

'Dwelling' is a place which you own or a rented place in which you ordinarily reside and hold a proof of residence, such as ration card, Unique Identification Number, bank passbook, voters' identity etc.

'Kutcha Construction' is a construction having walls and/or roofs of wooden planks/thatched leaves and/or grass/hay of any kind/bamboo/plastic cloth asphalt cloth/canvas/tarpaulin and the like.

'Pucca Construction' is one which is not a kutcha construction.

'Immediate Family Members' mean father, mother, spouse, children, unmarried sister or unmarried brother living normally in the same residence.

E. EXCLUSIONS

For Section 1 and 2

1. This policy covers only dwellings by whatever names called but not any business, trading or commercial premises even if they are occupied as residence.
2. Loss, destruction or damage to the building caused by war and allied perils.
3. Loss, destruction or damage caused by pollution, contamination
4. Loss, destruction or damage to the building caused by an act of terrorism
5. Consequential loss of any kind

For Section 3

a. Suicide or attempted suicide
b. Death due to normal illness
c. Death due to any accident not related to the 'catastrophe event'

Note:
Coverages for shopkeepers will be available on the basis of S.I. or product classification.
Further details will be worked out once the concept is approved.

Disaster Relief And Risk Transfer Through Insurance

Discussion Paper By IRDA - NDMA, July 2013