Property Underwriting: Risk Fundamentals Analysis & Key UW Issues

Workshop Facilitator
Nabeel Turabi
Chubb Insurance Pakistan Limited

Agenda

- Need for Underwriting
- Brief review of COPE
- Loss Estimates
- Pricing
- Risk Fundamentals
- Case Study
- Contract Certainty
- Practical Challenges

Need for Underwriting

The process of evaluating a risk, and using that information to decide about the acceptability, pricing and terms.

- Underwriter has a broad role to write a profitable portfolio.
- Should have some broad familiarity with Mathematics, Physics, Chemistry, Engineering, Technology, Economic Environment, Legal framework etc

Underwriting Evaluation - COPE

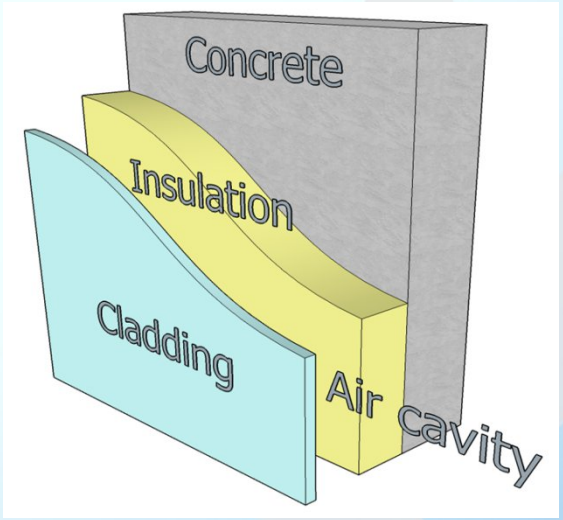
Construction

- Positive or negative impact on fire spread and fire load
- IAP terminology: Class 1
- Fire Resistant — *Reinforced concrete or concrete protected steel*
- Light Fire Resistant — *Concrete Slab, corrugated Asbestos, Non-Combustible Metal deck on heavy steel structure,*
- Combustible / Inferior — *Tile, Metal on combustible frame, Concrete block, floor of wood, Steel Joists, Light Steel Beams, timber beams exposed*

COPE – Construction

Internal / External Composite Sandwich Panels or Exterior Insulated Finishing System (EIFS)

- Thermal insulation, Weather resistance & to improve building appearance
- Often composite panels are built with combustible materials such as Polystyrene or polyurethane



Engineering input required:

- Fire resistant (mineral fibre) or not
- Percentage of floor or wall area
- Need for special fire sprinklers

Address Hotel – 2015 Fire

Extract from Reuters article:

DUBAI (Reuters) - A blaze that engulfed a Dubai skyscraper on New Year's Eve - the emirate's third high-rise fire in three years - has raised fresh questions about the safety of materials used on the exteriors of tall buildings across the wealthy region... Ultra-modern, flamboyant designs often involved heavy use of cladding - layers fixed to the outside of buildings for decoration, insulation or protection. After Dubai's latest blaze, which security officials said spread up the outside of the 63-storey Address Downtown luxury hotel and residential tower, experts are asking if the layers may in some cases make buildings more vulnerable to fire. "The fires that have erupted in Dubai landmarks have raised concerns about the quality of material used to clad the emirate's buildings," The National, a leading UAE newspaper, reported on Saturday. Experts say most of Dubai's approximately 250 high-rise buildings use cladding panels with thermoplastic cores, the newspaper said. Panels can consist of plastic or polyurethane fillings sandwiched between aluminum sheets. Such cladding is not necessarily hazardous, but it can be flammable under certain circumstances and, depending on a

Grenfell Tower Fire

"The 24 story Grenfell Tower, located in West London, experienced a tragic fire on June 14, 2017, in which at least 80 people died. The 1974 building was renovated in 2016 and retrofitted with aluminium composite panel rain screen cladding to improve energy efficiency and visual appearance. However, the renovation did not include the addition of sprinklers. The cause of the fire is reported to be a refrigerator in a fourth-floor unit. There were no automatic fire sprinklers to control internal fire. The fire spread and reached the external openings. Once ignited, the highly combustible new building cladding allowed the fire to spread rapidly up and along, and ultimately through, the entire building."

"Grenfell: The Perfect formula for Tragedy" - White Paper copyright FM Global

COPE - Occupancy

- Presence & Hazardousness of industrial processes or materials used
- Inception Hazard
  - Paper factory – smoking
  - Warehouses – large amount of combustible fuel
- If mixed occupancy, then higher hazard occupancy is assumed
- Higher hazard occupancy
  - Requirement for higher levels of Fire Protection
  - Higher frequency of large loss
  - Capacity – Insurers opt for lower exposure line
  - Pricing – higher pricing

COPE - Occupancy

Common Hazards

- Heating, Hot works, Open Flames
- Poor Maintenance of Electrical Installations, switches or equipment,
- Poor Housekeeping,
- Storage of Fuel or combustible items
- Presence of dangerous chemicals, spray painting.
- Impact Damage: presence forklift, trucks on site
- Blocked Drains – exposure to water damage
- Use of contractors

Moral Hazard – UWs aim to consider and avoid this hazard

U/w consideration:

- *Common hazards can be addressed by management actions*
- *Shortcomings can be rectified relatively quickly & cheaply*

Risk Improvement Recommendations

No progress shows poor management attitude - often a predictor of large losses

Lack of progress could also be due to Moral hazard

COPE: Occupancy

Special Hazards – pertain to specific industrial activities

- Explosion hazard in flour mills or starch milling
- Spontaneous Combustion risk
- Flammable Chemicals & materials
- Corrosive gas & vapor / collapse exposure
- Explosion risk in gas fired spray dryers used for making powdered milk
- Use of solvents in industrial processes
- Flammable dust & waste in textiles
- Molten Metal Spills in Foundries

COPE: Occupancy

UW considerations

- Special protection systems – inert gas fire suppression
- Space separation
- Physical barriers eg. Bund wall
- Build & Plant Modification e.g explosion vents
- Safe plant design, building layout or physical protection systems

COPE: Protections

- Applies to all Perils
- Burglary & Theft, Explosion, Windstorm, Flood, EQ, Vehicle Impact
- Fire Protection:
  - Active – Used actively or deployed automatically
  - Passive – Components built into structures, Fire walls/doors, heat venting

Occupancies with higher inception hazards / lower fire resistance – require higher levels of protection to be deemed acceptable

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COPE: Exposure

Perils from beyond the premises

- Neighboring Property: Exposure in congested in Industrial Towns and Urban centers, hazardous neighboring risk
- Public Infrastructure & Social Factors: high crime locality, spontaneous riots ~ concern for Retail Sector, Public buildings, Warehouses
- Natural Perils

COPE: Exposure – NATCAT

- Modelled: to estimate insured losses for particular portfolio based on simulated catastrophes
- Probabilistic – average expected loss arising from an event of a given probability
- For unmodelled regions, we would also rely on past loss experience, hazard maps, design codes used and local knowledge.
- Other factors to consider: Design standards followed, Business Continuity Planning etc

World Natural Disaster Events Ranked by Number Of Insured Losses, 2023

Rank	Peril	Insured loss (US$ billions)
1	Severe Convective Storm	70
2	Flooding	13
3	Drought	10
4	Earthquake	7
5	Tropical Cyclone	6
6	Wildfire	5
7	Winter Weather	4
8	European Windstorm	4
9	Other	0
	Total	$118

(1) Natural disasters that cause at least US$25 million in insured losses; or 10 deaths; or 50 people injured; or 2,000 filed claims or homes and structures damaged. As of January 2024.

(2) Source: Insurance Information Institute (www.iii.org)

World Natural Disaster Events 2021

Rank	Peril	Number of events	Rank	Peril	Insured loss (US$ billions)
1	Severe weather (2)	135	1	Tropical cyclone	$39
2	Flooding	133	2	Severe weather (2)	37
3	Tropical cyclone	37	3	Flooding	22
4	Winter weather	25	4	Winter weather	17
5	Earthquake	24	5	Drought	6
6	Wildfire	19	6	Wildfire	5
7	European windstorm	11	7	Earthquake	3
8	Drought	10	8	European windstorm	2
9	Other	7	9	Other	0
	Total	401		Total	$131

(1) Natural disasters that cause at least US$25 million in insured losses; or 10 deaths; or 50 people injured; or 2,000 filed claims or homes and structures damaged. As of January 2022.
(2) Includes severe convective storms such as thunderstorms, tornadoes and hailstorms, straight-line winds and flooding that could occur with these storms
Source: Insurance Information Institute (www.iii.org)

Top 10 Deadliest World Natural Catastrophes, 2023

Rank	Date	Country	Event	Deaths
1	Feb. 6-20	Turkey and Syria	Turkey and Syria Earthquakes	59,272
2	Aug. 13-27	Europe	Heatwave	8,339
3	Jul. 10-30	Southern and Southeastern Europe	Cerberus Heatwave	5,949
4	Sep. 4-12	Greece, Bulgaria, Libya, Turkey	Storm Daniel	4,730
5	Sep. 8	Morocco	High Atlas Earthquake	2,946
6	Apr. 1-Dec. 31	India	India Seasonal Floods	2,653
7	Oct. 7-15	Afghanistan	Western Afghanistan Earthquakes	1,480
8	Feb. 20-Mar. 15	Southern Africa	Cyclone Freddy	1,434
9	Sep. 3-8	Western Europe	Heatwave	1,306
10	May 2-5	Democratic Republic of the Congo	Eastern DRC Flooding	470
All other events				~6,400
Total				~95,000

(1) (1) Natural disasters that cause at least 10 deaths. As of January 2024

(2) Source: Insurance Information Institute (www.iii.org)

MB Exposure

Machinery Breakdown: Sudden and unforeseen physical loss or damage to the insured plant

- Low: Office, Shops, Telecoms
- Medium: Light Manufacturing
- High: Cement Plants, Power-gen, Petrochemicals, Auto

- Ideally never standalone basis
- Adequate Deductibles
- Standard exclusions: wear & tear, corrosion, rust, oxidation, consumable, refractory lining, damage covered under warranty etc

Role of Engineers

- Provide their input to Underwriters
  - Comment on COPE factors
  - Maintenance Programs
  - Upkeep & Operations
  - Comments related to Moral Factor
- Risk Management / Advisory
- Claims Investigation

Estimated Maximum Loss

1. **EML** is the amount (or %) which is considered by the Insurer to be an accurate reflection of the worst financial effect the maximum foreseeable losss would have.
2. **EML:** or the maximum loss that could occur under normal conditions of operations, use and loss prevention (eg intervention of fire brigade, operation of fixed extinguishing systems) in the building in question, whereby any exceptional circumstances (accident or unforeseen event) which would significantly alter the risk are ignored (definition as per the *Comite European des Assureurs*)
3. **PML** (Probable Maximum Loss): The anticipated maximum property fire loss that could result given the normal functioning of protective features (firewalls, sprinklers, a responsive fire department, etc.), as opposed to
4. **MFL** (Maximum Foreseeable Loss), which would be similar valuation, but on a worst-case basis with respect to the functioning of the protective features. Underwriting decisions typically would be influenced by PML evaluations, and the amount of reinsurance ceded on a risk would normally be predicated on the PML valuation.
5. **Other terminology:**

NLE (Normal Loss Expectancy), MFL (Maximum Foreseeable Loss), EML (Estimated Maximum Loss), PML (Probable Maximum Loss), MCL (Maximum Credible Loss), MAS (Maximum Amount Subject), PML (Possible Maximum Loss), MPL (Maximum Possible Loss) and CL (Catastrophic Loss).

Pricing

Pricing Adequacy for a Portfolio

- 10 to 20 year of Loss Experience for Homogenous Risk
- Adjusted for future trends & IBNR
- Acquisition, RI cost, UW Expenses, and Profit Margin (ROE)
- Portfolio premium apportioned to each risk

Pricing improvement only by differentiated approach accounting for COPE, Deductibles and loss history, coverage terms for individual risks

Differentiated Approach

- Risk Selection characteristics
- Rate Adequacy targets / Underwriting Strategy
- Various rating tools - FLEXA plus loading for additional coverages
- NATCAT guidance

Risk Fundamentals Review

- **Background:** Source, history, new or renewal
- **Ownership:** Review of ownership, new acquisition, experienced, plant in early years of operation following construction, or plant up for sale, loss history
- **BI/PD ratio:** High, Medium or Low. Helps assess volatility of the risk and gauge for UW action: Time Excess, Rate, FAC, XOL..
- **Location:** NAT CAT Exposure, SRCC exposure, Neighboring exposure
- **Engineering Feedback on:**
  - Comments on COPE
  - Technology and Design configuration. Owner Experience / O&M Experience
  - Adequacy, values, conclusions / findings from survey / Recs
  - Other issues / comments on MB, BI, Contingent Business Interruption etc
  - EML / PML
- **UW Comments & Proposal**
  - Summarizing for Risk Analysis
  - Mitigations
  - Rate Adequacy
  - UW Aspects / concerns
  - Proposal

BI Wordings

Wordings Extract

- Company agrees that if … any building or other property or any part thereof used by the Insured at the premises for the purpose of the business be interrupted or interfered with in consequence of PHYSICAL DAMAGE indemnifiable under Section 1 of this Policy then…
- BI Insurance to cover loss of Gross Profit due to (a) **Reduction in turnover** and (b) **increase in cost of working**

Common Extensions

- Denial of Access
- Suppliers & Customers Extension
- Public Utilities Extension

BI Wordings

- **Gross Profit basis: Manufacturing**
- **Revenue: Professional Services**
- **Rent & Fees: Real Estate**
- **ICOW: Financial Services**
- **Delay in Start-up: Contract Works**

Underwriting queries:

- Adequacy of Values
- Redundancy of Operations / spares / Business Continuity planning ?
- Availability of critical equipment / Lead Time
- Critical Supplier or customers ? CBI accumulation

Risk Review – Case Study

- Slip
- Information available to Underwriters
- Discussion sheet
- My Comments

Common Issues / Challenges for Underwriters in Pakistan

Manuscript Wordings

UW considerations:

- Operative Clause should be for ‘Physical Loss, destruction or Damage’
- Basis of settlement should be clearly defined and on indemnity principle
- Clear basis of Valuation
- Occurrence clause ~ 72 hours for application of natural perils coverage & deductibles
- Average Clause
- Standard Exclusions including mandatory Treaty Exclusions
- Standard conditions: Claims notification, Arbitration, Cancellation, Jurisdiction

Supply of Information

- Crucial to conduct an accurate risk assessment
- Should include Values break by locations and items
- COPE information:
- BI Values calculation
- Engineering data
- O&M details, Key Equipment data, LTSA, OEM details, Lead times, plant operational data

Values – a conversation

Insured: Reported value is PKR 5 billion (5% above expiring)

Underwriter: OK, so is there a break up of values available? Interesting how no changes in this figure over last many years of your business (5% for currency depreciation estimate)

Insured: Well my finance manager has calculated after accounting for reducing prices for machines/equipment each year

Underwriter: OK, so your Finance Manage over all these years is also a valuation expert

Insured: When this was built it cost us much more but now depreciation has also been factored in.

Underwriter: materials and taxes have remained unchanged over last 3-5 years, so the inflation never happened? Cost of Labour, years

Insured: If we do not depreciate then our premiums will go up

Underwriter: not necessary as underwriter will typically aim to price for exposure plus you will remain exposed to risk of being underinsured (via average clause)

Values

- Undervaluation could lead to underpricing of risk
- Could lead larger price / rate increase – swing in pricing
- Risk of average application.
- Escalation Clauses
- Potential for disagreements over claims adjustments.
- Regulatory steps taken in certain jurisdictions can be an example on how to mitigate under valuation.

Tendering

- Yearly tendering reduces quality
- Leads to short term poor relationships
- Damaging to long term interests of both Insured and Insurer
- More exposed to market conditions (hard & soft)
- Underwriters will be reluctant to spend on additional services given only one year on risk

Other issues

- Timely reporting of Claims
- Pricing Sacrificing Quality / client's need to do own due diligence

Relationship

- Practical issue discussed impact relationship between companies

Steady and open relationship lead to:

- Smooth renewals
- Reaction to larger claims likely to be better
- Better service (claims + engineering)
- Market fluctuations are smoother

Practical Challenges

- Quality of Information
- Contract Certainty
- Under Valuation
- Flood Exposure
- Slow response to risk recommendations
- Fire Protection System
- Timely reporting of claims
- Sacrificing quality for price.
- Tendering (yearly)
- Lack of relationships

Thank you