Adapting to Extreme Events: Are We Ready?

Hank Watkins
Lloyd’s
President, North America
“Things take longer to happen than you think they will, and then they happen much faster than you thought they could.”

- Rudiger Dornbusch, Economist
What is an Emerging Risk?

A risk which is yet to be fully understood that may have significant consequences for the insurance industry
Emerging risk features

What makes them worth considering?

Emerging risk features:
- Limited quantification
- Limited knowledge
- High impact
- High uncertainty

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Emerging risks management
A journey of knowledge growth
Lloyd’s emerging risks survey 2017

Figures indicate number of Managing Agents identifying the risk

- Cyber: 31
- Terrorism: 27
- Eurozone instability: 21
- Climate change: 18
- Space weather: 16
- Autonomous vehicles: 16
- Pandemic: 14
- Geopolitical tensions: 14
- Insurance industry challenges: 13
- Flood: 13
- Windstorm: 10
- Regulation: 10
- Nanotechnology: 10

Risk category:
- Natural environment
- Society and security
- Technology

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Lloyd’s City Risk Index
2015-2025

301 cities
18 threats
US$4.56trn at risk

Lloyd’s City Risk Index 2015-2025 analyses, for the first time, the potential impact on the economic output (GDP@Risk) of 301 of the world’s major cities from 18 manmade and natural threats.

Based on original research by the Cambridge Centre for Risk Studies at the University of Cambridge Judge Business School, the Index shows how governments, businesses and communities are highly exposed to systemic, catastrophic shocks and could do more to mitigate risk and improve resilience.

Identifying the risks, modelling and measuring their impacts, and investing in greater resilience – from better infrastructure to increased...
Hazard warning

The research behind Lloyd’s City Risk Index 2015-2025 is firmly rooted in precedent. From the Panama disease outbreak that wiped out Latin America’s banana industry in the 1950s to Superstorm Sandy, which cost New York US$19bn in 2012, past catastrophes illustrate the potential of the Index’s 18 threats to devastate economies and communities worldwide.
Total GDP@Risk All Cities: $4.56trn
New York

GDP@Risk: All threats

$90.36 bn

1. Market crash $25.14bn
2. Oil price shock $15.73bn
3. Cyber attack $14.08bn
4. Flood $13.07bn
5. Human pandemic $8.21bn
6. Wind storm $2.97bn
7. Freeze $2.34bn
8. Solar storm $2.27bn
9. Power outage $1.67bn
10. Nuclear accident $1.42bn
11. Heatwave $1.19bn
12. Plant epidemic $1.08bn
13. Terrorism $0.59bn
14. Sovereign default $0.55bn
15. Earthquake $0.04bn
16. Drought $0.00bn
- Tsunami $0.00bn
- Volcano $0.00bn

Solar storm: While the threat itself is not emerging our vulnerability to the risks it poses is.
London

GDP@Risk: All threats

$53.43 bn

1. Market crash $14.08 bn
2. Flood $9.71 bn
3. Oil price shock $8.81 bn
4. Cyber attack $7.89 bn
5. Human pandemic $4.67 bn
6. Drought $2.80 bn
7. Solar storm $1.18 bn
8. Wind storm $1.11 bn
9. Power outage $0.93 bn
10. Terrorism $0.58 bn
11. Freeze $0.54 bn
12. Plant epidemic $0.44 bn
13. Heatwave $0.27 bn
14. Sovereign default $0.27 bn
15. Nuclear accident $0.12 bn
16. Earthquake $0.00 bn
- Tsunami $0.00 bn
- Volcano $0.00 bn

Solar storm: While the threat itself is not emerging our vulnerability to the risks it poses is.
Dallas

GDP@Risk: All threats

$15.67bn

1. Market crash $6.16bn
2. Oil price shock $3.23bn
3. Cyber attack $2.89bn
4. Human pandemic $1.71bn
5. Flood $0.45bn
6. Drought $0.43bn
7. Wind storm $0.41bn
8. Solar storm $0.40bn
9. Power outage $0.34bn
10. Heatwave $0.24bn
11. Plant epidemic $0.22bn
12. Sovereign default $0.11bn
13. Nuclear accident $0.05bn
14. Terrorism $0.01bn
15. Earthquake $0.00bn
   - Freeze $0.00bn
   - Tsunami $0.00bn
   - Volcano $0.00bn

Market crash $5.16bn
Oil price shock $3.23bn
Cyber attack $2.89bn
Human pandemic $1.71bn
Flood $0.45bn
Drought $0.43bn
Wind storm $0.41bn
Solar storm $0.40bn
Power outage $0.34bn
Heatwave $0.24bn
Plant epidemic $0.22bn
Sovereign default $0.11bn
Nuclear accident $0.05bn
Terrorism $0.01bn
Earthquake $0.00bn
Freeze $0.00bn
Tsunami $0.00bn
Volcano $0.00bn

Solar storm: While the threat itself is not emerging our vulnerability to the risks it poses is.

$1.30bn $2.60bn $3.90bn $5.20bn

Select location

Dallas

Average annual GDP $221.99bn
Total GDP@Risk $15.67bn
7.06% of Average annual GDP

GDP@Risk: Top 5 threats

1. Market crash $6.16bn
2. Oil price shock $3.23bn
3. Cyber attack $2.89bn
4. Human pandemic $1.71bn
5. Flood $0.45bn

View breakdown of threats

Download Dallas factsheet

Share this data

View city rankings by country
San Francisco

GDP@Risk: All threats

$41.35bn

1. Market crash $10.53bn
2. Oil price shock $6.60bn
3. Cyber attack $5.90bn
4. Earthquake $5.67bn
5. Flood $5.48bn
6. Human pandemic $3.51bn
7. Drought $0.89bn
8. Solar storm $0.82bn
9. Power outage $0.70bn
10. Wind storm $0.55bn
11. Plant epidemic $0.45bn
12. Sovereign default $0.23bn
13. Terrorism $0.03bn
14. Freeze $0.00bn
   - Heatwave $0.00bn
   - Nuclear accident $0.00bn
   - Tsunami $0.00bn
   - Volcano $0.00bn

Total GDP@Risk $41.35bn
9.12% of Average annual GDP

Average annual GDP $453.20bn

View breakdown of threats

Download San Francisco factsheet

Share this data

View city rankings by country

Solar storm: While the threat itself is not emerging our vulnerability to the risks it poses is.
Future cities – building infrastructure resilience

Nine areas for collective action to build city resilience

1. Improve data collection
2. Using this new data to quantify the risk and help inform stakeholder decision-making
3. Establish metrics to enable the development of indices and models to assess resilience
4. Find ways to incentivise investment by making resilience assessments available
5. Incentivise policyholders to take risk mitigation measures through risk-based pricing
6. Develop collaborative models and tools that provide a transparent, comprehensive and accessible approach to analysing and pricing risk
7. Encourage the creation of indices that can be used by insurers to incorporate levels of resilience into the underwriting process
8. Create shared understanding of how the components and stakeholders of cities interact and what the key areas and concerns are for each stakeholder
9. Consider resilience services which draw on facilities management, disaster recovery, build and operate contracts and insurance
Consortium: Disaster Risk Facility at Lloyd’s

Identifying innovation barriers and working with others to remove them

Launched in 2016

- USD 445m Capacity