



Cambridge Centre for Risk Studies
Advisory Board Research Showcase – 29 January 2019

Using the Risk Index for Decision Making

Centre for
Risk Studies



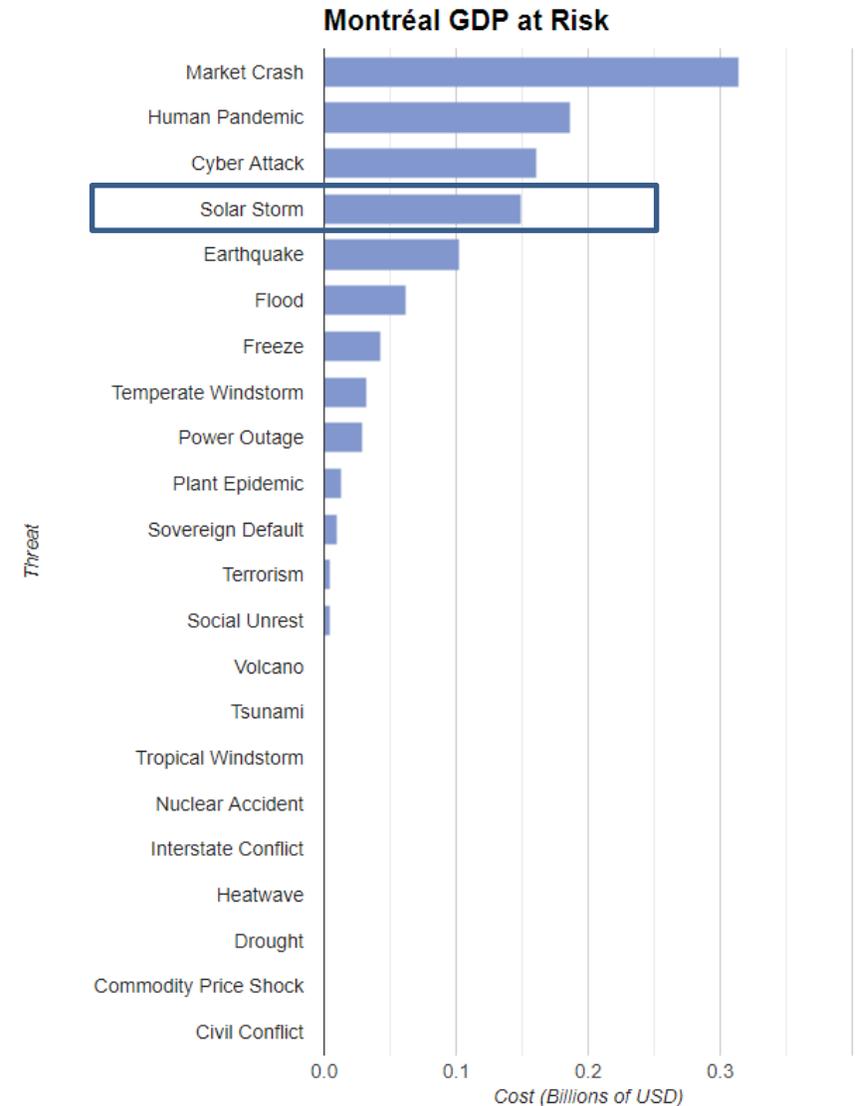
Simon Ruffle

Director of Research and Innovation
Cambridge Centre for Risk Studies



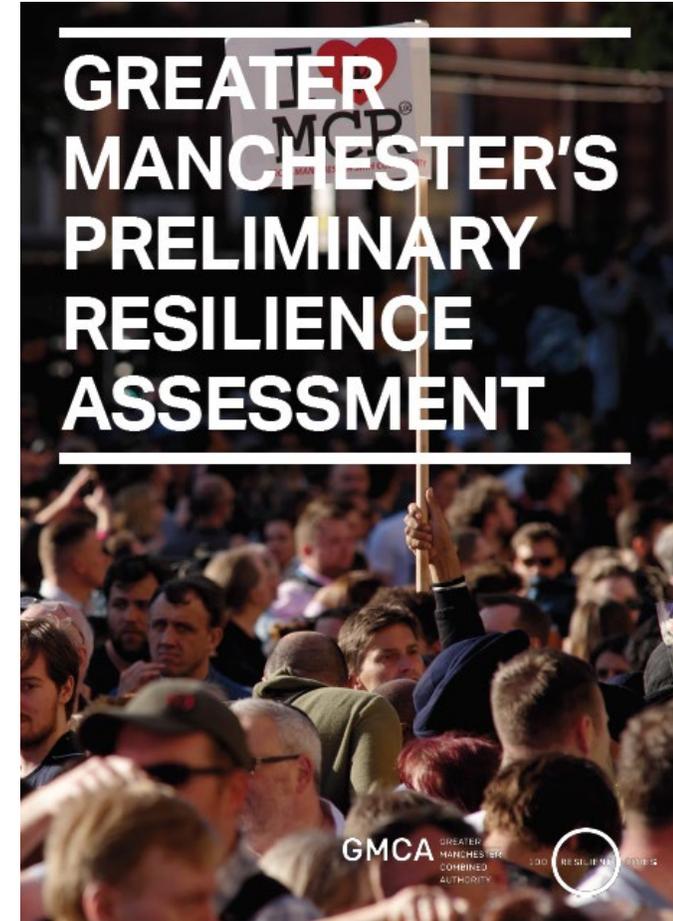
Informing Decision Making

- Anchoring to Facts
- Resilience Analysis
- Insurance
 - Purchasing
 - Growth Opportunities
- Corporate Risk Profiling
 - Tailoring the index to a company



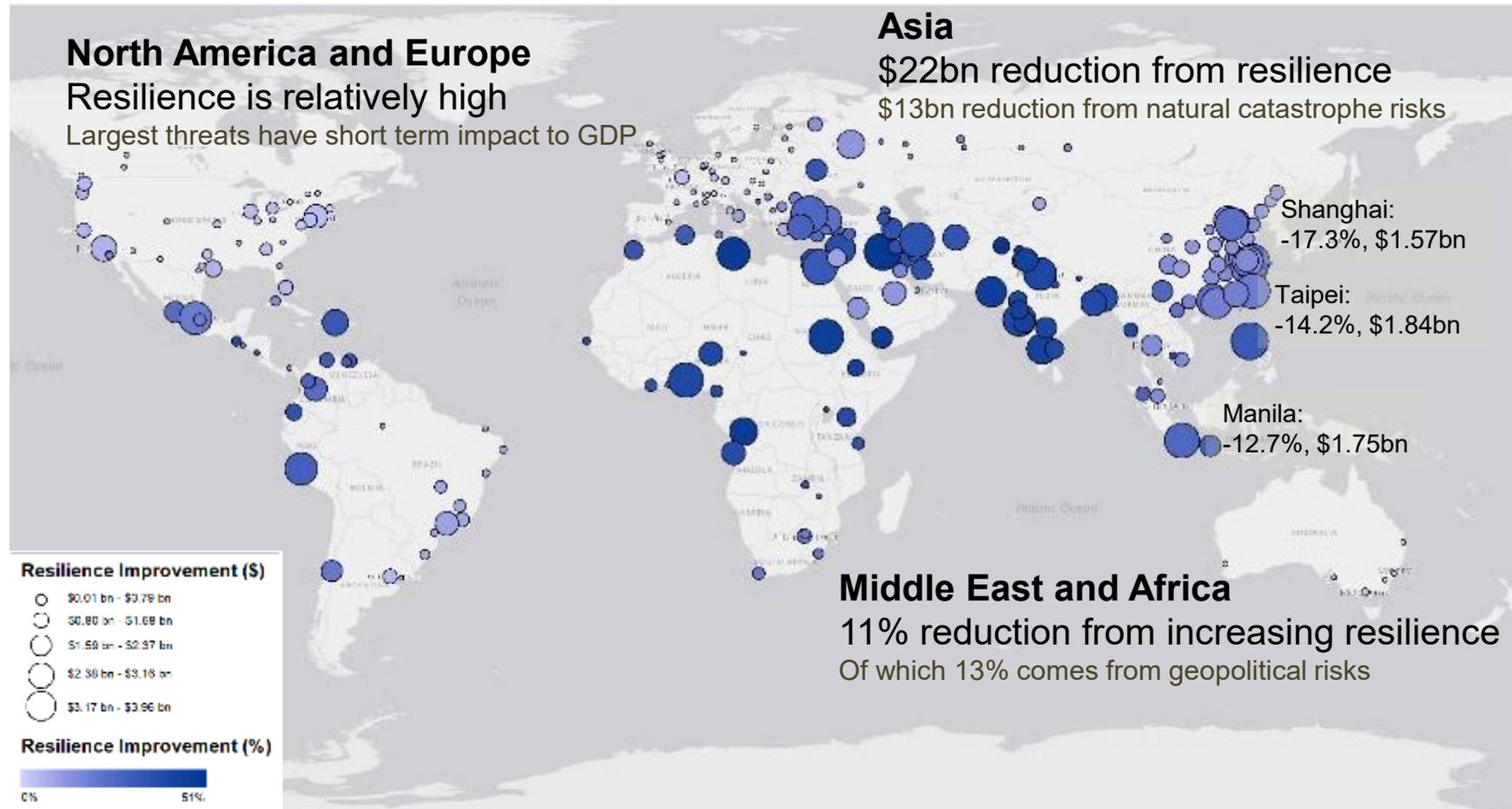
City Resilience Analysis

- City Risk Index 2018 used in Greater Manchester's Preliminary Resilience Assessment 2018
- Underscores significant threats that impact the city-region economy
- Highlights Greater Manchester's economic exposure to a range of threats
- Advanced the case for exploring how to build a more resilient economy
- Comparison with similar cities worldwide
- Helping city region in its vision to be one of the most resilience places in the world



Closing the Protection Gap

- If all cities increased their resilience by one ranking, GDP@Risk decreases by \$40bn to \$537bn, a 7% reduction in expected loss



Site Specific Risk Assessment

Site Risk Assessment

US Sites (Global Risk Index 2019 Analysis)

Open

US Sites (Global Risk ...

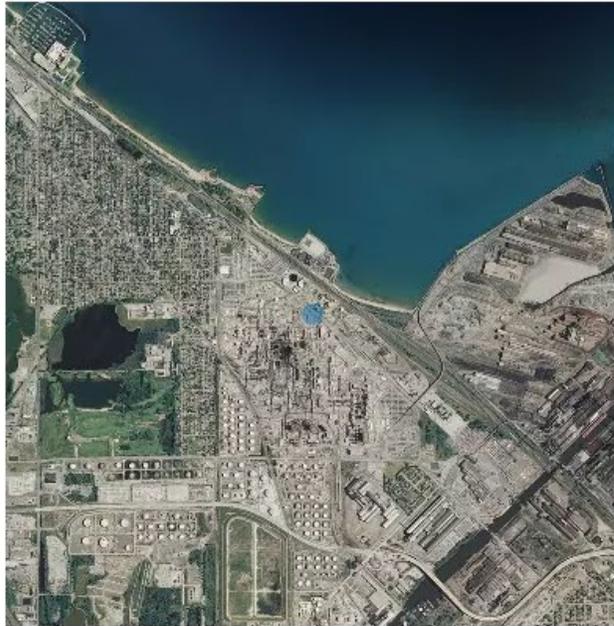
Whiting Refinery A

Open

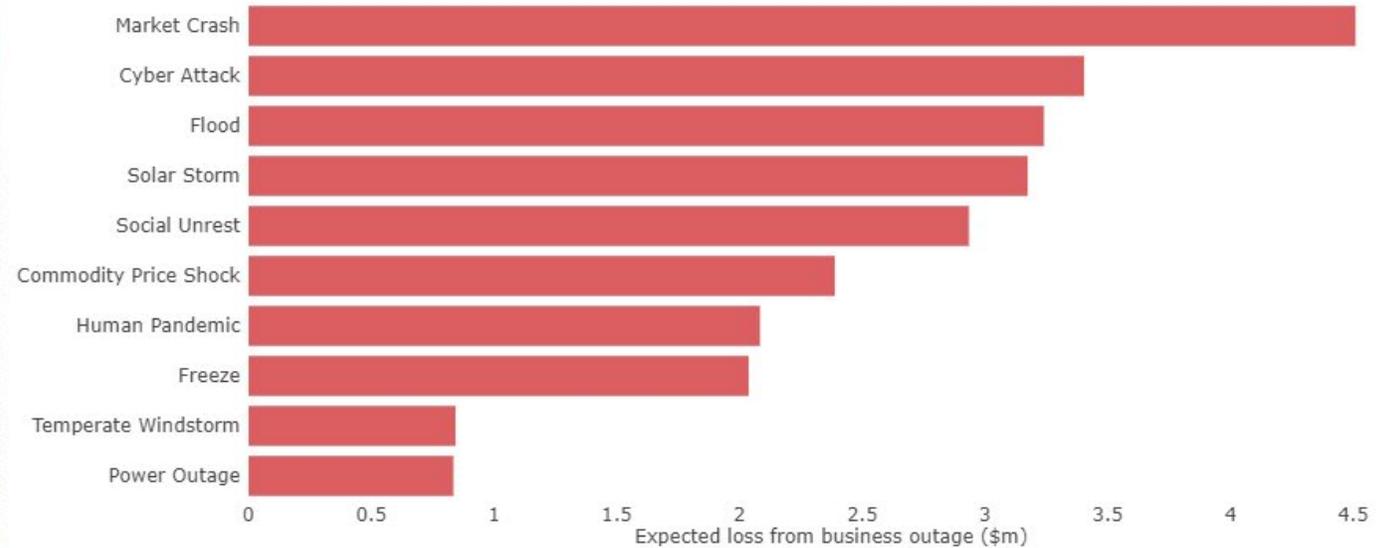
Business Outage

Repair cost

Whiting Refinery A



Top 10 Threats to Revenue at Whiting Refinery A

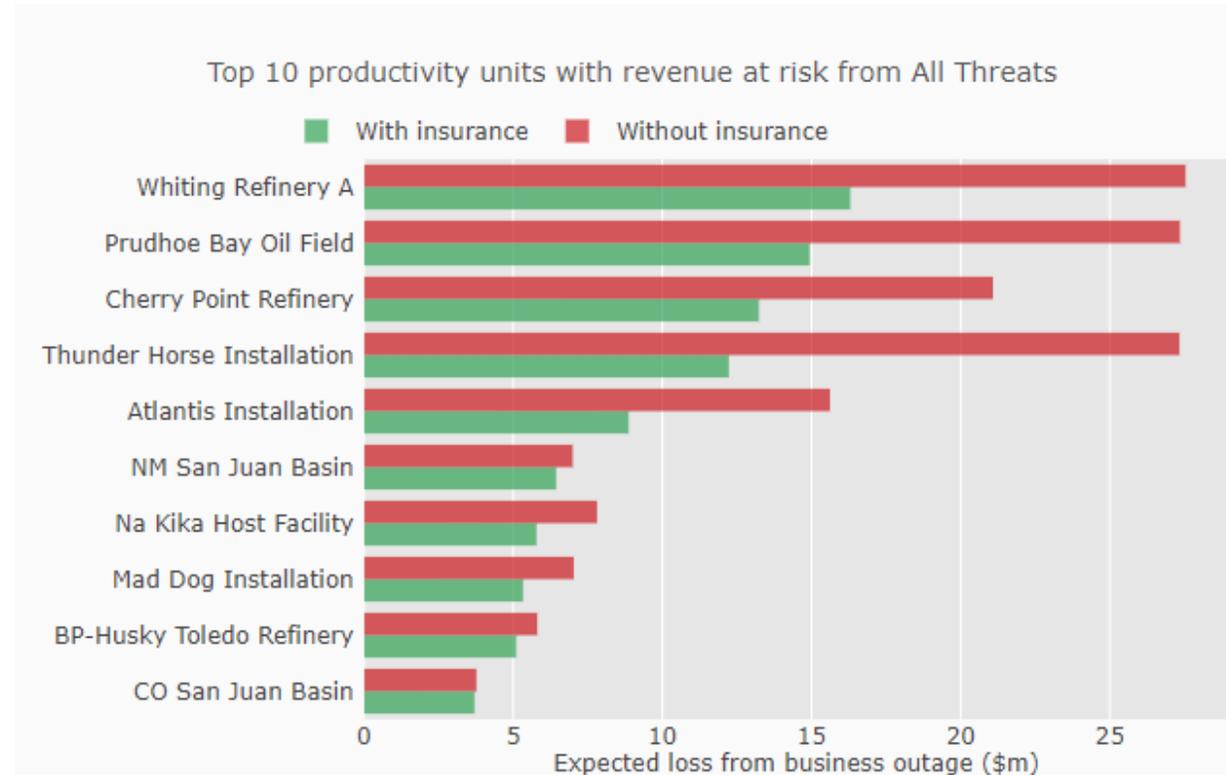


Site Risk Protection Through Insurance

Top productivity units by threat

Select threat:

All Threats



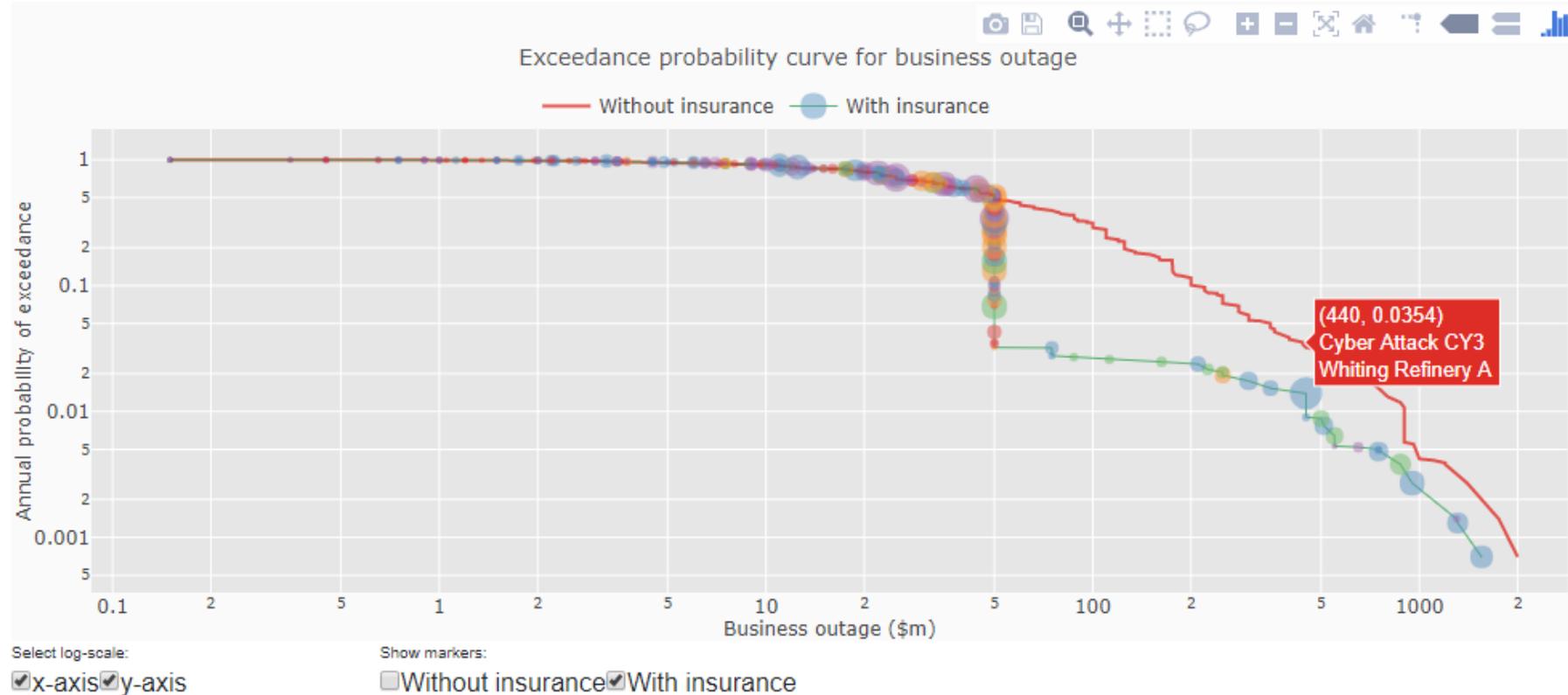
Insurance could reduce the total expected loss from All Threats business outage from \$154.0m to \$95.48m

Site Risk Protection Through Insurance

Insurance exceedance probability curve

Loss process:

Business Outage
 Repair cost



Indicate a loss level (in \$m) of concern:

100

A business outage loss level of \$100m has a 28.9% chance of being exceeded without insurance and a 2.6% chance of being exceeded with insurance

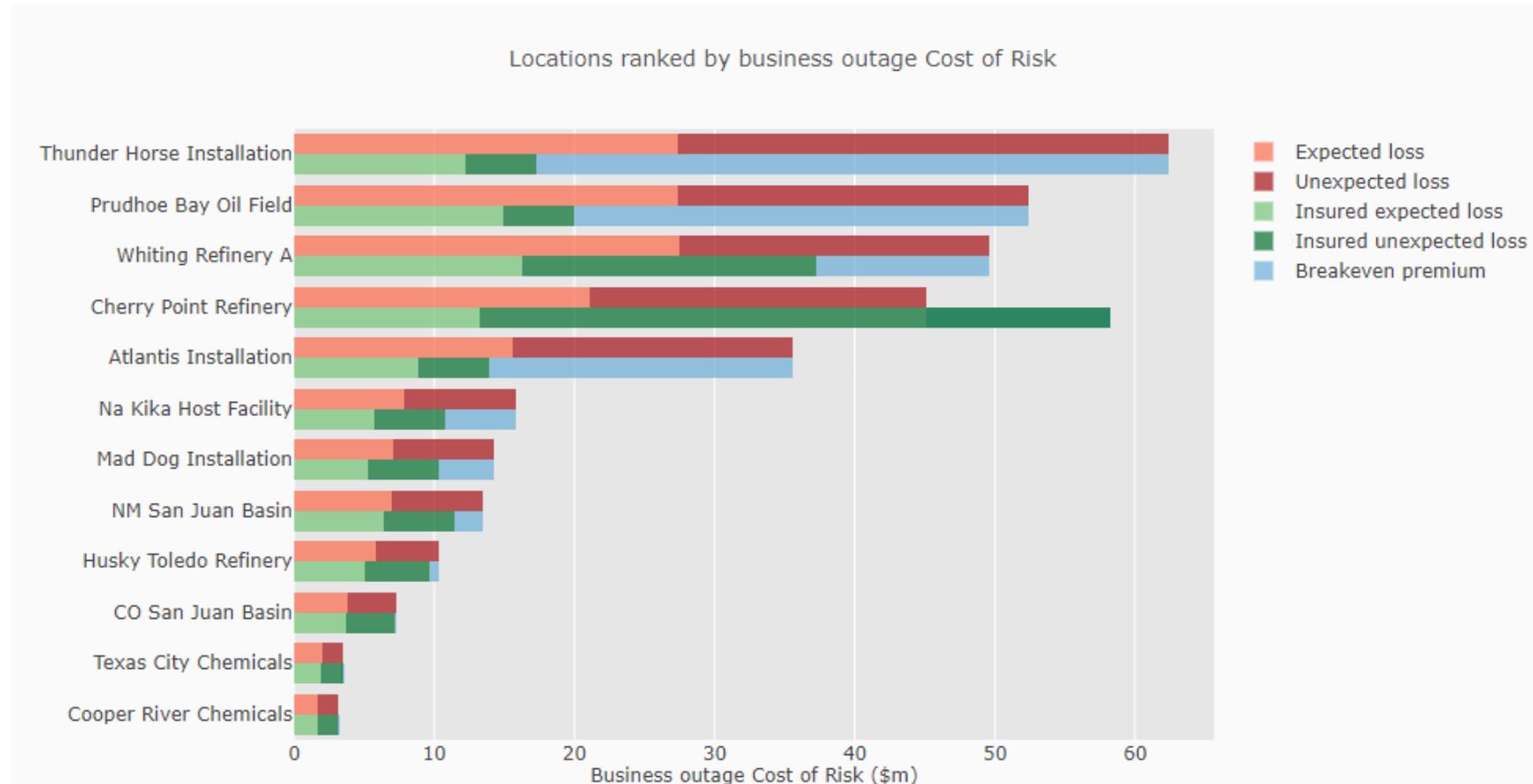
Indicate an exceedance probability (%) of concern:

5

There is a 5% chance of exceeding a business outage loss level of \$350.0m without insurance and \$50.0m with insurance

Cost of Risk Analysis

Cost of Risk Analysis



Cost of capital (%):

10

Risk appetite return period:

100

Mapping Lines & Exposure to Threats

<i>Insurance Lines</i>	<i>Type of Exposure</i>	 Finance Economics & Trade	 Geopolitics & Security	 Natural Catastrophe & Climate	 Technology & Space	 Health & Humanity
Commercial Property	Physical Damage		1	3	2	
	Revenue Loss / Business Interruption		1	3	2	2
	Contingent Business Interruption		1	2	3	
Commercial Political Risk / War Market	Physical Damage		3			
	Revenue Loss / Business Interruption		3			
	Human Injury, Illness or Death		2			
	Financial Asset Devaluation	1	2			
Casualty Liability	Duty of Care to 3rd Party	2	2	2	2	2
	Human Injury, Illness or Death		2	2	1	2
Liability D&O; E&O	Financial Asset Devaluation	2	1	1	2	2
Workers Comp	Human Injury, Illness or Death		3	2	1	2
Credit and Surety	Financial Asset Devaluation	3	2	1	1	2
Personal Accident	Human Injury, Illness or Death		2	2	1	2
Cyber Liability	Digital Asset Loss		1		3	
Life & Health	Human Injury, Illness or Death		1	1	2	3
Pensions & Annuities	Financial Asset Devaluation	3	1	1	2	1

Product Alignment with Risk

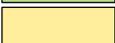
For selected cities

	Istanbul	Jakarta	Kuala Lumpur	Manila	Seoul	Singapore
Insurance Penetration	2.0	0.5	2.7	0.9	4.7	0.7
Recent Growth Rate	V High	High	High	Moderate	Moderate	High

Finance, Economics and Trade	Moderate	Low	High	Low	Moderate	High
Geopolitics and Security	High	Moderate	Moderate	High	High	Low
Natural Catastrophe and Climate	High	Moderate	Low	V. High	Moderate	Low
Technology and Space	Moderate	Moderate	Moderate	Low	Moderate	Moderate
Health and Humanity	High	High	High	High	Moderate	Moderate

Commercial Property	3	2	1	3	2	1
Commercial Political Risk / War	3	2	1	3	3	1
Casualty Liability	3	3	3	1	3	2
Liability D&O; E&O	2	2	3	1	2	3
Credit and Surety	3	2	3	2	2	3
Personal Accident	3	2	2	3	2	1
Cyber Liability	2	1	2	1	3	3
Life & Health	3	3	3	3	2	2
Pensions & Annuities	2	1	3	1	2	3

Risk-driven alignment with insurance product

	Strong Alignment
	Moderate Alignment
	Weaker Alignment

Mapping a Corporate Global Footprint



Mapping Supply Chains to Cities

 **Apple iPhone**



 **Starbucks Coffee**



 **Nike Sports shoes**



 **BlackBerry Phone**



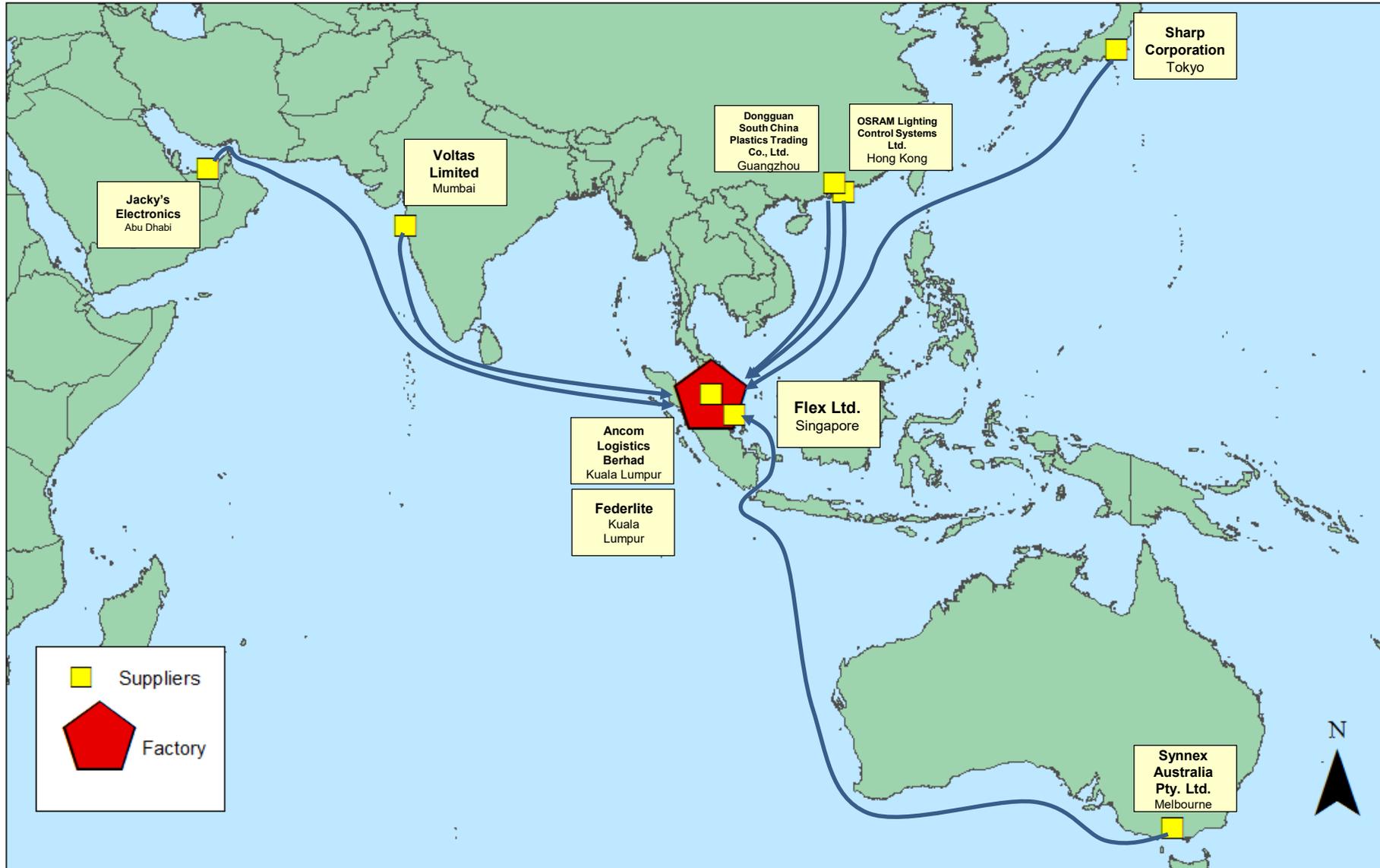
 **H&M Clothing - Jacket**



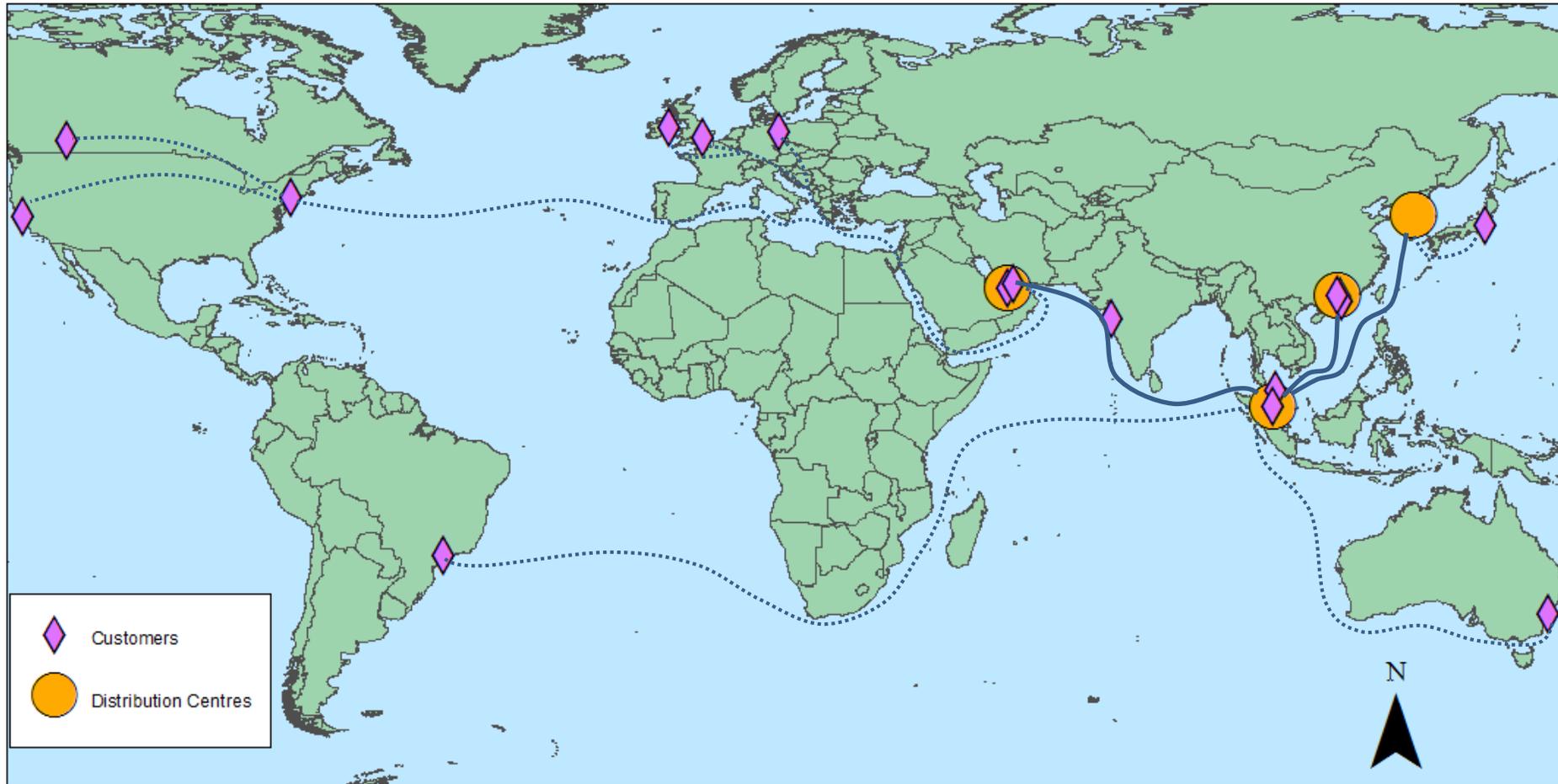
 **Adidas Sports shoes**



Supply Chain

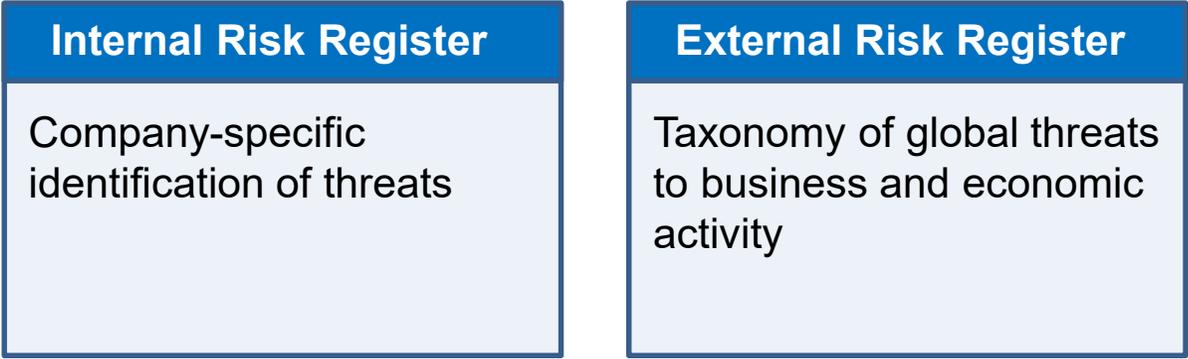


Distribution System



Global Risk Index to Corporate Resilience Framework

Integrated risk profile of internal and external risks

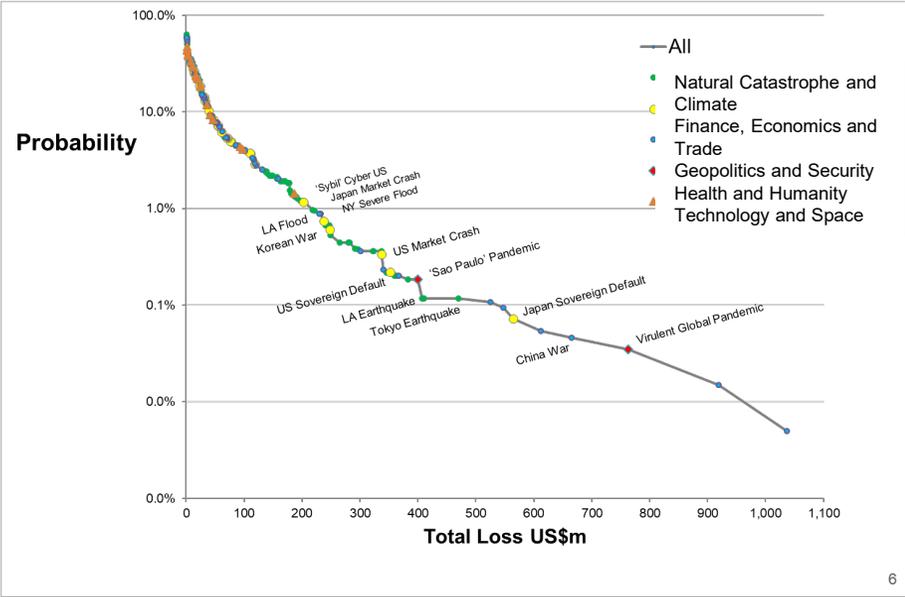


Company-Specific Inputs

Business Network
Locations and revenue sources

Activity matrix
Productivity units

Operational Structure
Business lines and subsidiaries



Example Scenarios that reach Severe Loss Threshold

Scenarios that cause loss of over \$20 M to either output (supply shock) or consumption (demand shock) include the following examples:

- Sovereign Crisis in Malaysia
- Extreme SE Asia Regional Monsoon Flooding
- Human Epidemic in SE Asia
- Separatism and Social Unrest in UEA
- Financial Crisis Property Crash Emerging Markets
- War between North and South Korea
- War between China and Japan

Similar internal risk scenarios might include:

- Litigation from a major trading partner
- Mass action by consumers, under new regulations

Scenarios for Corporate Risk Management



Workshop being run by Cambridge for senior executives of a global financial services company to evaluate emerging geopolitical risks and develop scenarios for their risk management response.
July 2018

Risk in Corporate Governance

- Financial Reporting Council: The UK Corporate Governance Code 2018
- “The board should carry out a robust assessment of the company’s emerging and principal risks”
- “Principal risks ... threaten the company’s business model, future performance, solvency or liquidity and reputation”
- “..companies should consider the potential impact and probability of the related events”



Centre for
Risk Studies



UNIVERSITY OF
CAMBRIDGE
Judge Business School