

# Emerging Risk Management –

Looking ahead for what is  
sneaking up behind you

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# Unknowingly risky

## Lloyd's

- "an issue that is **perceived to be potentially significant** but which may **not be fully understood** or allowed for in insurance terms and conditions, pricing, reserving or capital setting".

## SwissRe

- We define emerging risks as newly developing or changing risks which are **difficult to quantify** and which **may have a major impact** on an organisation. We investigate these risks because of the substantial potential impact on our business.

## Guy Carpenter

- Emerging risks can be new and unforeseen events and/or the evolution of previously known risks that are **difficult to quantify** but **likely to have a significant impact** on the (re)insurance sector
- To quote Donald Rumsfeld (and how could I not), former US Secretary of Defense,

*"There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know."*

- Known knowns represent the risks we have identified, understood and quantified, and to a degree managed
- Known unknowns represent the emerging risks we have identified as potentially impacting our business but which are little understood and difficult to quantify
- Unknown unknowns represent the emerging risks we have not identified, and to some degree good emerging risk practice seeks to move the unknown unknowns to known unknowns and at some point to understand them and thus move them to known knowns.

# More Black Panther than Black Swan

- Emerging risks are elusive predators, and we are the potential prey.
- Emerging risks stalks us, and gradually grow in strength and confidence until they are able to do us harm.
- Risk managers cannot stay within the safety of their compounds. They must venture forth and seek out the elusive predator.
- Risk Managers must:-
  - **FIND IT** - Operate as 'trail scouts' seeking out the '**unknown unknowns**'.
  - **NAME IT** - Seek to determine the nature of an emerging risk sufficient to articulate it – transforming it to a '**known unknown**'
  - **CATCH IT** – Caging the emerging risk requires a joint effort across the business. The business needs to validate the named risk and determine that it is credible (And relevant).
  - **STUDY IT** – Live with it, watch it. It will change and shift its shape.
  - **TAME IT** - In time you will grow to know it. It will become a '**known known**'.
- Such ventures are fraught with danger:-
  - You might shoot a few rats mistaking them for panthers.
  - You might return from the wilderness with exotic tales and suffer the ridicule of your colleagues.
  - The predator may charge out of the shadows and catch you unawares, and poorly armed.
  - You may get lost in the jungle of opinion and never re-surface.

# What if....it's not relevant?

- Emerging risk management is not 'crystal ball gazing'.
- Emerging risk management is not the study of the Multiverse, a hypothetical set of infinite possible universes that together comprise everything that exists and can exist.
- Emerging risk management should operate as a tool to supporting medium to longer term strategy planning, opportunity, resilience and sustainability.
- Seek to define emerging risk to keep the practice relevant:-

“Emerging risks are risks which may develop or which already exist that are difficult to quantify and may have a high future loss potential. They are marked by a high degree of uncertainty.”

Emerging risks can be further defined as a condition, situation or trend that could impact the Company's financial strength, competitiveness position or reputation within the next three to five years.

- **Objective**

**BUSINESS PROTECTION** - To establish and embed a forward-looking systematic framework aligned to strategy planning to determine emerging risks that could, at some point over the 'plan period', impact the business's ability to achieve its objectives, impair the business's financial strength, competitive position or reputation.

**BUSINESS ADVANTAGE** - To enhance the business's risk agility particularly in regard to reacting to potentially market impacting emerging risks to secure a competitive advantage.

# The Parable of the Emerging Risk Manager

## THE GOSPEL OF THOMAS

*'And he said: Man is like a wise fisherman who cast his net into the sea; he drew it up from the sea full of small fish; among them he found a large good fish, the wise fisherman; he threw all the small fish into the sea, he chose the large fish without difficulty. '*

Cast your net wide, catch many fish – the big fish are obvious, knowing which little fish are just little to throw back and which are young fish to keep and watch grow is trickier.

Risk managers need to look beneath , around and beyond the macro-economic global picture.

Know **YOUR** business to best establish credible links between big picture emerging risk and your risk profile:-

- Its products
- Its ambitions and aspirations
- Its geographic reach
- Its customers, target customer base and social span
- Its operating structure
- Its political and regulatory exposures
- Its media and reputational footprint (and that of its clients)
- Its people!

Emerging risks do not emerge at a uniform pace. Risk Managers should be ready to work with the business on rapidly emerging and dynamic risks.

Do not get hung up on delineating rapidly emerging risks from 'live or emerged risks' – focus on the ability to build in an end-to-end process within the business that can operate swiftly when necessary.

Emerging risks often migrate to become new drivers of existing risks, and are thus incorporated into our appetite and exposure assessments.

**TIME TO IMPACT** can quickly become **TIME TO REACT!**

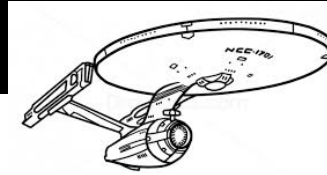
# The Field Guide to Practical Emerging Risk Management

- **Consensus of Opinion** – There is rarely a consensus of opinion on emerging risk. Don't wait for the market to reach one. Secure a best efforts consensus of opinion within your business.....and keep a gauge on it against the evolving market view.
- **Emerging Risk Committees** – If you feel you need one keep it fluid. Personally I prefer to plug emerging risks into risk owning BAU committees and SME led cross-function working parties.
- **Quantifying Emerging Risk** - Give it a go. If you think the calculation kernel can assist then attempt to plug it into an internal model parameterisation process. Otherwise try and frame it around a range from profit impact to franchise threat. Use as simple 'materiality' and 'impact point' axis, but factor in things like 'familiarity' with the subject. Where possible articulate a speculative appetite or tolerance around the risk.
- **Emerging Risk Scenarios** – Use the ORSA – plug a 'wild card' emerging risk component into your stress and scenario analysis. Use global scenarios and Bayesian Tree analysis. Emerging risks may operate as future magnifiers of existing risks.
- **Plan Risk** – Within the ORSA or Forward-looking Assessment position your emerging risk. Is it an emerging risk that threatens your plan trajectory. Does your plan trajectory hit a risk at a future point that the business was not previously exposed to (A future risk). Is it both! Remember opportunity brings risk, emerging markets bring emerging risks!
- **SME's with vision** – Draw on the modelling teams, the Underwriter forums, the FP & A teams. Work with the Treasury function and find the HR and Marketing people that understand social media & behaviour and demographics. Never forget that your people in your offices are part of that 'external' social mobilisation.
- **Keep emerging product risk front and centre** – Have an underwriting view, plug into broker forums, actuarial and exposure management forums, Lloyd's and insurance market association forums, and reinsurer and broker analysis.
- **Use external sources** – Try to think outside your comfort zone, plunder diverse sources. Use external forums and social media, keep close to the pulse of public opinion. Use political risk and security analysts. Think beyond colonial boundary maps, national identities and traditional cohorts. Think about tenuous associations and possible interdependencies.
- **Rationalise** – Look at much but focus on the most plausible. Take the macro and contextualise it to the micro.
- **Boards** – Be prepared to justify what is not an emerging threat to your business against a media storm of global issues. NEDs often see the world as one great emerging risk. Credible elimination of possible emerging risk is key.
- **Looking back at what's in front** - Every 12 months do a snapshot refresh. Review your ER register of a year ago and determine how those risks have changed. Deliver that analysis to the business. It will tell you a lot about your ER process.

# **Emerging Risk Management –**

**A whistle-stop tour of an possible  
Insurance Company emerging risk world**

# Space – A new frontier



- **Asteroid Impact** – Planet killers frequency 1:500,000 Yrs. Emerging Risk - In 1.4 million years, there will be a 5% increase in the rate of impact.
- **Emerging Political Risk** - Commercial exposure to satellites built and launched in Ukraine, and launched in Russia. Ukraine satellites built with Russian parts.
- **Space Debris** – The amount of orbital debris today is double that of 20 years ago and over 30% higher than just 5 years ago” (SwissRe 2011) . Risk remains low.
  - **Emerging Political Risk** - Deliberate events such destruction by the Chinese government of their own Low Earth Orbit satellite in 2007 have contributed to this growth (It is not just Disney that are picking up the Star Wars franchise – China are too!)
- **Solar Flares – Satellites** - 2015 Solar cycle: we are currently approaching the solar maximum which is less intense than the previous cycle. Satellites are designed to deal with this level of radiation and are built with plenty of redundancy and margins
  - A heavy solar flare has the potential to cause damage to several satellites in a single event. Tests of ice cores indicate that this sort of event only occurs approximately once in 500 years, so the probability of an event is very low.
- **Solar Flare – Power Grid** - The hazard posed by geomagnetic storms is one of the most significant. Because of the potential for long-term, widespread problems.
  - As the North American electric infrastructure ages and we become more and more dependent on electricity, the risk of a catastrophic outage increases with each peak of the solar cycle.



# Titanic shipping risks ahead



- **Mega-ships** - Ship sizes have grown exponentially across every class over recent years . The safe operation of such vessels is not without its challenges however when it comes to managing an accident like fire, grounding or collision.
- **Economic relationship** - Much of this growth in ship size is being driven by a huge spike in the worldwide demand for raw materials. Fast growing economies such as China are calling for vast quantities of coal, oil and iron ore.
- **Emerging environmental risk** – mega-ships would carrying circa 15,000 tonnes of heavy fuel oil for their own power, a major spillage, particularly when navigating in the proximity of environmentally sensitive areas (Arctic shipping Lanes) and further away from the appropriate salvage resources.
- **Liquid Gas** - The rise of liquefied natural gas (LNG) powered ships represents an emerging risk. This development raises safety concerns because an increasing number of ports are not used to handling such fuel-powered vessels.
- **Arctic Shipping Lanes** - The IPCC predicts that Northern Sea Route (NSR) is predicted to have up to 125 days per year suitable for navigation by 2050 due to climate change resulting in an increased loss of sea ice.
- **Shipping casualties** in Arctic Circle waters have increased to an average of 45 per year during 2009-2013 from only seven during 2002-2007. Damage to machinery caused a third of these incidents, higher than the average elsewhere, reflecting the harsher operating environment
- **Salvaging** - Marine experts warn that the cost of removing wrecks like the stricken Costa Concordia is spiralling . The cost of this complex job is rising fast - with insurers and reinsurers, and ultimately ship-owners, having to foot the bill.
- **Environmental relationship** - The increase in costs are driven include factors such as global awareness of environmental impact.
- **Mega-ships** - The challenges and Implications of removing shipwrecks in the 21st Century, explains how increasing vessel sizes and growing cargo volumes are driving up wreck removal costs. These are uncharted waters for salvors.“

# Frack the planet! –



- **Fracking** - Extraction of shale oil and shale gas has mushroomed, driven by U.S self-sufficiency targets, and relatively cheap set-up/operating costs. In the United States it is now said to represent 30% of oil and 40% of natural gas total production.
- **Operators** are functioning close to the boundaries of existing experience, and of what the equipment is capable of dealing with in terms of pressures and wear and tear.
- **Regulation** - The U.S federal government has increased regulation; the U.K government is behind fracking, insisting it is safe if properly regulated
- **Reputational Risk (CSR)**– Companies operating in support of fracking run a higher reputational risk. A recent ICM survey reporting that 40% of people are against fracking near their homes or communities.
- **Insurance Risk** Current view – Fracking operators are mainly small and thus a higher risk. Whilst at present there is limited appetite to insure front end operations, underwriters have already benefited from expansion of traditional infrastructures to transport, process and store fuel derived from fracking operations.
- **Commercial** – Increased fracking activity may replace other diminishing extraction processes, thus reducing market for traditional energy products. A shift to larger operators such as Shell and Total could impact traditional markets.
- **Reputational** – Increased fracking heightens the risk of environmental damage and thus the reputational risk to those organisations that support it. Insurers could find themselves a target of social media driven campaigns.
- **Social** (The new wild west) – Fracking communities of transient oil/gas workers are vulnerable . Approximately half of U.S workers are employed by services companies that conduct hydraulic fracking. Fracking workers are more than seven times more likely to die on the job than other types of workers. Oil and gas field workers work an average 20 hour shift.
- **Economic** – Investment in fracking & production from it may divert resources from advancement of renewable energy.
- **Environmental** - Experts have not been able to provide reassurance that the practice is entirely safe and many remain very concerned about the potential dangers.- quakes/release of contaminants.

# The 3 R's – Reduce, Run-out > Renew (Hopefully!)



**Blackouts** – Businesses face the real possibility of 1970s style blackouts as early as winter 2015.

UK regulator Ofgen warns that UK's spare energy margin could fall from the current 14% to 2% in 2015/2016.

**Regulation** - European environmental regulation sets onerous targets to curb polluting energy production by 2020. Investment has been slow, greener plants are expensive - New nuclear plants not coming on line until 2023.

**Renewable Energy** – Remains costly, due to generator costs and connectivity, and provide intermittent and unreliable power, so are often regarded as an investment in PR more than serious and economic solution to sustainable energy.

Sept 2013 Energy Department study conducted by the National Renewable Energy Laboratory (NREL) indicates that by 2025 wind and solar power electricity generation could become cost-competitive

**Cyber-security** - The global energy sector is increasingly vulnerable to cyber attacks with its adoption of internet-based industrial control systems (ICS) an open invitation to hackers, warned Marsh this week.

According to the broker's Advanced Cyber Attacks On Global Energy Facilities paper, energy firms are being disproportionately targeted by increasingly sophisticated hacker networks motivated by commercial and political gain.

**Arctic** - Seeing an increase in other new business as well. It is rich in fossil fuels. Experts guess that 22 percent of the world's remaining undiscovered oil and gas reserves lie below ice at the top of the globe.

The Arctic accounts for more than 20 percent of the undiscovered hydrocarbon resources in the world, with an estimated 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas and 44 billion barrels of natural gas liquids.

# Arab Springs do not always lead to Arab Summers

**Social Unrest** – Thailand remains an issue/Brazil could face instability as a result of protests and a looming general election, scheduled for the final quarter of the year.

EU countries social unrest increased in 2011-2012. Overall, the risk of unrest in the EU is likely to be due to the policy responses to the ongoing sovereign debt crisis and their impact on people's lives and perceptions of well-being.

**Social Media** - People have become far more interconnected to each other. Social media is increasingly being used to organise political, religious and environmental protest and more extreme activity. Potential moves by western governments for legislation to block access may aggravate the situation.

**Terrorism** - Europe faces terror threat from jihadists in Iraq and Syria. Particularly nationals returning from fighting abroad. Aggravating the threat is woefully inadequate intelligence-sharing in Europe.

**MENA** - The political turmoil that swept across the Middle East and North Africa (MENA) since the beginning of the Arab Spring in December 2010 has reignited the recurring debate about energy security and the reliability of MENA as an energy supplier. The insurgency in Iraq is yet to impact oil production and exports. but in case that it does or if there were to be military intervention by other friendly countries, the rise in crude oil prices could be sharper.

Potential repercussions are likely to be felt through several years policy uncertainty, deteriorating security, will impact the long term production and export capacity of various MENA oil and gas producers, including some of those unaffected directly by the Arab Spring and sanctions.

**Q2 2014** – Aon security -Very High risk ratings in Iraq and Libya, and the High rating in Egypt, despite the recent election.

**Ukraine** - Russian gas company Gazprom has potential to be politically manipulated. Ukraine is a transit point for pipeline gas supplies to European countries and hence in case the dispute persists the affected countries would have to scout for gas from other sources. The latter could add substantial new demand to the gas markets and this situation would get aggravated once winter approaches and gas demand escalates.

**Liquefied Natural Gas** - With the large additional demand of natural gas from Ukraine and Europe, the demand supply dynamics of liquefied natural gas are bound to get impacted resulting in significant increase in LNG prices. Moreover, tensions in Ukraine could also impact oil prices through high geo political risk premium.

**Regional Instability** - The Ukraine crisis impacts the risk of doing business with the country, having considerable impacts on agriculture, energy and trade sectors. The local context in Ukraine drives increased risks in the rest of the region, infecting Russia and several other former soviet states including Moldova, Armenia, Belarus and Georgia.

**Growing complexity of sanctions and embargos** - Insurance companies have been able to avoid serious breaches of US embargoes so far. But this remains a very complex area for world-wide-cover insurers with an ever growing global trading environment threaded through insecure and volatile regions..

# Weird Weather

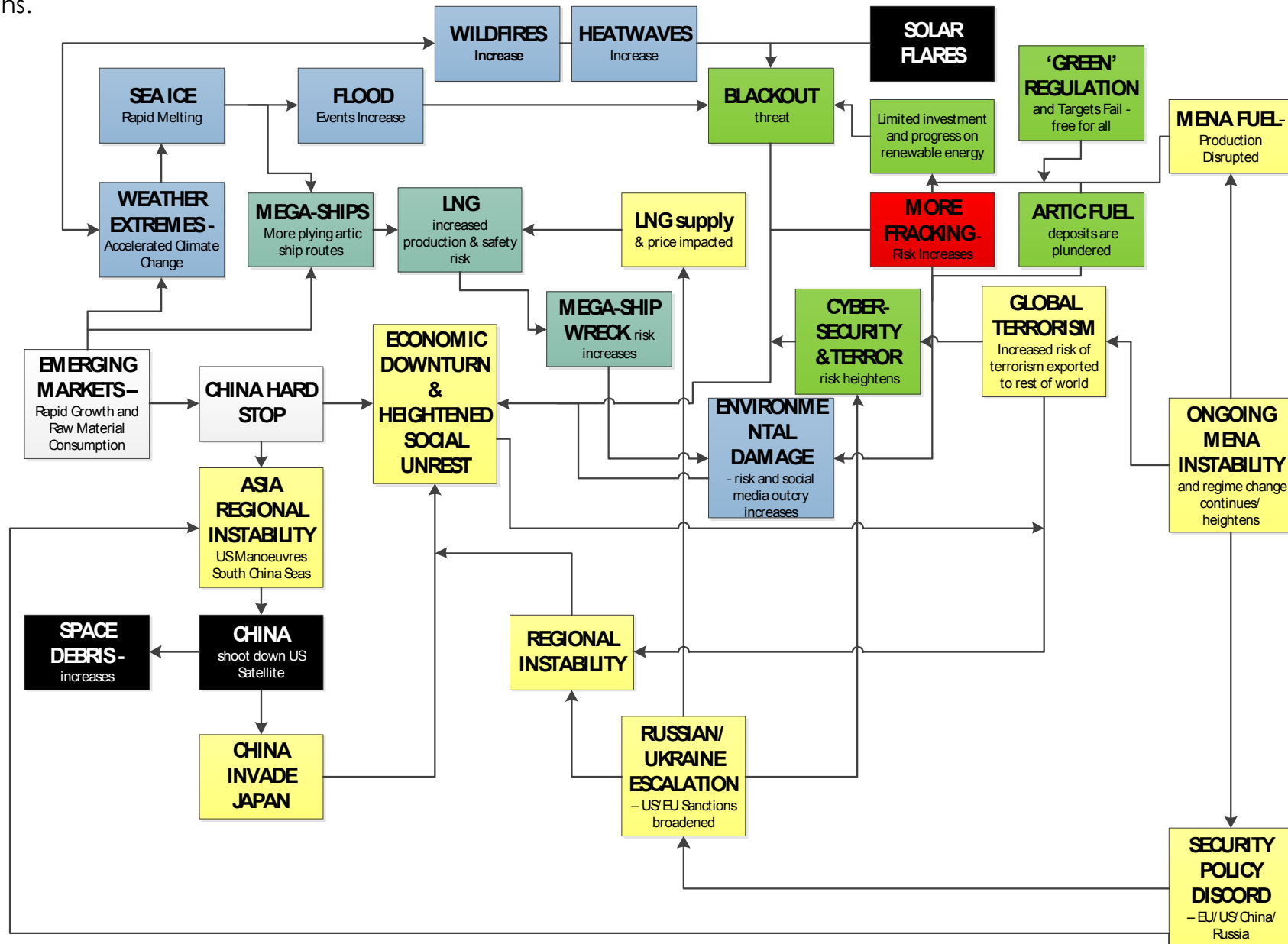


- **Global Warming** – The Intergovernmental Panel on Climate Change (IPCC), October 2013 - Scientists are 95% certain that humans are the “dominant cause” of global warming. More weather extremes predicted.
  - Near-term projections (2016-2035) - Some changes (e.g., more frequent hot days) will probably be evident in the near-term, while other near-term changes (e.g. More intense droughts and tropical cyclones) are more uncertain.
- **Extreme Weather Events** - Are weather extremes becoming more common/intense?
  - **Flood risk** appears to be increasing: Thailand, Japan, Sandy, Canada, Europe. Climate change and economic growth factors (population and wealth) combine to increase risk for insurers going forward.
  - A new study for the first time found links between the rapid loss of snow and sea ice cover in the Arctic and a recent spate of exceptional extreme heat events in North America, Europe, and Asia. The study adds to the evidence showing that the free-fall in summer sea ice extent and even sharper decline in spring snow cover in the Northern Hemisphere is reverberating throughout the atmosphere, making **extreme events more likely to occur.**
  - On balance, extreme weather is projected to become more common and intense
  - Impacts of extreme weather are disproportionately large
  - Impacts of extreme weather are NOT just meteorological: **societal factors** can matter more
  - Extreme weather may change more dramatically than average climate conditions
  - **Wildfire** - Future climate change is expected to lead to substantial increases in fire probability and areas burned. The areas at greatest risk are western and southern U.S, south-west Canada, parts of the Mediterranean basin, south-central Australia. There may however be surprises due to our limited understanding of the interaction between climate, vegetation response and human activity.
  - The potential increases in fire activity can be expected to have some implications for the insurance industry especially property and to some extent, liability lines.

# Emerging associations – illustrative but insightful



Emerging risk management needs to think out of the box about implications in complex systems (e.g. ecosystems or economies), and unlikely interactions.



# Summary

**GOAL** – Move the 'unknown unknowns' to 'known knowns'.

**RELEVANCE** – Frame the context of emerging risk against YOUR business (Know your global footprint).

**SCOPE** – Scan the widest horizon, cast the net far and deep – think global, think interdependencies.

**WATCH** – Emerging risks evolve, change and develop new associations – 'Under watch' should mean subject to continuous scrutiny.

**ASSESS** – If it is potentially relevant to your business it can be subjected to some degree of risk assessment by your business.



# Emerging Risk Management

