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# Emerging Risk Management: Adding Bounce to the Crystal Ball

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# 1. Introduction

> *"There are known knowns; there are things we know we know. We also know there are known unknowns; that is to say, we know there are some things we do not know. But there are also unknown unknowns—the ones we don't know we don't know."*
>
> **Donald Rumsfeld,**
> Former United States Secretary of Defense[1]

Financial institutions today are exposed to a variety of global landscapes—all of which are driven by the economic, geopolitical, technological, socio-political, and environmental world that we live in. These different landscapes expose organizations to an accumulation of rapidly changing risks that must be managed in order to mitigate the threats to a firms' performance. Having the tools and capabilities to be prepared and respond appropriately to new trends and developments from these constant changing landscapes has become crucial to all industry sectors and especially to financial services.

Aside from exposure to significant supply chains that rely on elaborate networks to manage essential processes and operations, financial firms must also comply with regulatory mandates in response to directives from the highest levels of government. Regulators are subjecting firms to increasingly rigorous compliance audits through new initiatives like Dodd-Frank and also strictly enforcing existing standards. The financial services industry is struggling with a dilemma to balance regulatory costs against the need to invest in new technologies to retain and service customers. Should investments be made in the critical risk analytics and tools that are needed to understand the potential impact of emerging risks? Or should those resources instead be allocated to comply with regulatory mandates at the cost of earnings?

These factors have changed the fundamental role of how financial institutions manage risk subsequent to the post-2009 era of enhanced regulations like Dodd-Frank, Comprehensive Capital Analysis & Review (CCAR) and Basel III. These changes have also highlighted weaknesses in the existing risk management processes and exposed the vulnerabilities of financial organizations to a range of sudden shocks that can potentially be catastrophic. In the event that an unexpected shock does occur, financial entities are often unprepared to promptly respond appropriately. Consequently, organizations have to reassess their enterprise risk management frameworks in order to become more proactive in integrating emerging risks into daily business operations.

Yet it can be difficult to look to the future, with so much occupying our present. How do we deal with issues pertaining to our future, including the possible implications, risks and opportunities that they may bring? What will be the next crisis to unfold? How do we respond to new trends and developments that can be tumultuous to revenues, profitability and portfolios? These are the ongoing questions that CEOs continue to ask themselves in an effort to identify emerging trends that will impact their organizations.

This paper aims to answer, or at least provide some insights into these questions. It is intended to offer a perspective on the following topics related to strategic planning and emerging risks, including:

- How can we define emerging risks?
- What are the current emerging risks globally and how can institutions adapt or implement an enterprise risk management (ERM) framework to better respond to unknown and unknowable risks?
- How can we identify the landscape of organizational emerging risk?
- What are some of the implementation challenges that organizations will face in integrating an emerging risk group into an ERM environment, and what are some solutions?

1 Department of Defense News Briefing, Feb 12, 2002, Secretary Rumsfeld and Gen. Richard Myers, Chairman of the Joint Chiefs

# 2. Defining Emerging Risks

Enterprise risk management (ERM) now finds that is has a new critical challenge to address: realizing a comprehensive agenda for all of the risks that a financial institution must capture. By comprehensive, we mean that organizations must look at and be prepared for the continuum of risks that encompass not only known and unknown risks, but also those that are "unknowable" or that require elements of Black Swan management.

Initially theorized by Nassim Nicholas Taleb in the 2004 publication *Fooled By Randomness* which examines the role of uncertainty on financial events, and subsequently coined by Bent Flyvbjerg in 2010, Black Swan management is now defined as an event that has low probability but causes massive consequences. Such risks typically are not captured by statistical distributions as they can't be supported by a large volume of historical data that has been gathered over a stable time period. Black Swan events, however, have come to pose a challenge to the essential foundation of risk management as they comprise those rare and extreme events that are not imaginable prior to events transpiring, but their occurrence becomes quite logical once an event occurs.

An illustration of how emerging risks can be derived from Black Swan management is provided by the Geneva, Switzerland based World Economic Forum (WEF). As an independent global non-profit organization, the WEF is better known for its annual invitation-only meeting in Davos, Switzerland where it brings together leaders to help to shape our global, regional and industry agendas. The meeting includes chief executive officers along with selected politicians, representatives from academia, NGOs, theologians and the media.

The WEF is the architect of the annual *World Economic Forum Global Risks Report*. Now in its eighth edition, the report details a granular analysis of risk descriptions that have been summarized into the global risk landscapes from the input provided by the varying sector leaders. It was during the Global Risks 2006 annual meeting, with a theme of "Complexity and Resilience," where the global landscapes that form the origins for emerging risks were identified and defined. While it has been reported that most members at the time expressed confidence about the global economy, upon being asked to identify potential threats, participants surprisingly put forth a number of concerns that were manageable if isolated, but posed serious threats to globalization if they occurred simultaneously. The concerns included[2]:

- Asset bubbles and the massive misallocation of capital (e.g. the U.S. property market);
- Oil, the short term spike and possibly high or volatile prices in the long term;
- A global current account imbalance;
- China's possible troubles in the banking system and geopolitical tensions;
- A fiscal crisis in the industrialized countries

2 World Economic Forum, Global Risks 2012: An Initiative of the Risk Response Network

These concerns all had the makings of a Black Swan event and were reflected in the 2008 systemic credit crisis. Although the crisis was not anticipated, given the rising real estate prices that had begun early in the decade along with the massive rate at which global securitizations had taken place, it nonetheless made sense after the fact.

Because not all risks that are initially identified as an emerging risk will grow into the proportion of the 2008 credit crisis, our focus of emerging risks are those that have been identified by the WEF, to be systemic in nature. Financial organizations that are exposed to risks that can potentially be systemic should leverage the guidance outlined by the WEF and use it as a framework to explore the landscapes in their operating environments. We define emerging risks that are systemic to be those that will span across countries and sectors and continue to grow into global risks. At the same time, the systemic nature is what makes the risks interdependent with each element of the global risk landscapes.

Systemic events have subsequently come to be a challenge in risk governing as they may not be fully understood or assessed and therefore cannot be mitigated with confidence. Because the consequences of emerging risks are often not known, it can be difficult to put a monetary value on them by using traditional approaches such as defining loss amounts, probabilities and relative frequencies. In addition, we also now know that many of the traditional approaches to manage risk do not capture emerging risks due to their unique and adverse nature.

# 3. Current Emerging Risks

While financial institutions are in the business of taking risks, they are nonetheless realizing that the prevailing volatile uncertainty also dictates the need for greater flexibility regarding the unknowable. Thus it's no longer enough to focus only on those events for which the probability of occurrence and likely impacts can be identified. Rather organizations need to have a grasp of the unknowable by identifying exposure and correlation between external trends and risks that could ultimately result in a catastrophic or systemic harmful impact on their own survival.

The infinite combination of risks that are known, unknown and even unknowable is illustrated in the following exhibit of the WEF's "Top Five Global Risks in Terms of Likelihood." This typology of risks represents the basis for identifying threats that financial service and other entities will encounter. Although these landscapes are only updated annually, they are a foundation that ERM executives and thought leaders can use as a basis to quantify and qualify unknown risks—as well as to mitigate emerging risks within an enterprise risk management environment.

To address these landscapes and establish a foundation that incorporates the unknown risks into ERM, Capgemini also advocates leveraging the Committee of Sponsoring Organizations (COSO) ERM framework[3] as a guideline to manage emerging risks that are defined to be relevant to financial entities. Applying COSO as a basis to incorporate emerging risk management, can aid in considering the scenarios, risk profile, risk tolerance and principles that will be used in setting up a governing structure.

## 3.1. Classifying Emerging Risks

Emerging risks should be incorporated into the organization's strategic planning. It is essential to have a dedicated effort or team to emphasize the importance of this role to the overall enterprise risk environment. Having a dedicated team of risk professionals to identify emerging risks and their impact on the organization's corporate strategy will be a competitive advantage. In addition to being able to identify new developments and trends that may impact strategic and operational performance, senior management will also be in a position of strength to better manage the unexpected and mitigate the impact of a systemic shock.

It is necessary for management to try and classify emerging risks into one of the two broad categories: external or internal events. Classification of internal and external will help to define the risk source as either primarily inside the organization or external to the firms' realm of influence.

## 3.2. Emerging Risk Classification: Internal

Internal emerging risks originate from within the organization. They can be viewed as strategic, in that they can be dictated by the mission, philosophy, strategies, products, portfolios and other organizational indicators. It requires a dedicated team to give critical thought to specific scenarios and variables and then to try and make them concrete. The identification of internal emerging risks is often based on the niche and brand that the bank seeks to emulate.

Internal events are represented by idiosyncratic and operational events, along with their correlation across risk types including credit, market, or liquidity. Thus a brokerage firms' emerging risks management will more heavily focus on characteristics inherent to securities trading while a merchant bank can expect greater exposure—although not be limited—to international finance and the underwriting of long-term loans to companies.

3 *Enterprise Risk Management: Observations and Perspectives 2013*, Capgemini, 2013

## Exhibit 1: Comparison of 2012 vs. 2013 Global Risk Categories[4]

### Top 5 Global Risks in Terms of Likelihood

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012* | 2013* |
|---|---|---|---|---|---|---|---|
| 1st | Breakdown of critical information infrastructure | Asset price collapse | Asset price collapse | Asset price collapse | Meteorological catastrophes | Severe income disparity | Severe income disparity |
| 2nd | Chronic disease in developed countries | Middle East instability | Slowing Chinese economy (<6%) | Slowing Chinese economy (<6%) | Hydrological catastrophes | Chronic fiscal imbalances | Chronic fiscal imbalances |
| 3rd | Oil price shock | Failed and failing states | Chronic disease | Chronic disease | Corruption | Rising greenhouse gas emissions | Rising greenhouse gas emissions |
| 4th | China economic hard landing | Oil and gas price spike | Global governance gaps | Fiscal crises | Biodiversity loss | Cyber attacks | Water supply crises |
| 5th | Asset price collapse | Chronic disease, developed world | Retrenchment from globalization (emerging) | Global governance gaps | Climatological catastrophes | Water supply crises | Mismanagement of population ageing |

### Top 5 Global Risks in Terms of Impact

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012* | 2013* |
|---|---|---|---|---|---|---|---|
| 1st | Asset price collapse | Asset price collapse | Asset price collapse | Asset price collapse | Fiscal crises | Major systemic financial failure | Major systemic financial failure |
| 2nd | Retrenchment from globalization | Retrenchment from globalization (developed) | Retrenchment from globalization (developed) | Retrenchment from globalization (developed) | Climatological catastrophes | Water supply crises | Water supply crises |
| 3rd | Interstate and civil wars | Slowing Chinese economy (<6%) | Oil and gas price spike | Oil price spikes | Geopolitical conflict | Food shortage crises | Chronic fiscal imbalances |
| 4th | Pandemics | Oil and gas price spike | Chronic disease | Chronic disease | Asset price collapse | Chronic fiscal imbalances | Diffusion of weapons of mass destruction |
| 5th | Oil price shock | Pandemics | Fiscal crises | Fiscal crises | Extreme energy price volatility | Extreme volatility in energy and agriculture prices | Failure of climate change adaptation |

Economic Environmental Geopolitical Societal Technological

Source: World Economic Forum

4 Top five global risks by impact and likelihood, 2007-2013 landscapes for the potential impact and likelihood of global risks over the next 10 years, on a scale of 1 to 5

## 3.3. Emerging Risk Classification: External

External emerging risks are systemic or geopolitical events and consist of large scale occurrences or circumstances that arise from global trends. They are generally beyond any particular organization's or individual's capacity to control. Such risks can impact an organization as well as multiple parties across geographic borders, industries and/or sectors. These types of emerging risks also tend to be large-impact, hard-to-predict and rare events.

The continually unfolding weather catastrophes like super storm Sandy that hit the northeastern part of the United States in 2012, or the 2010 eruption of volcanic ash in Iceland, both support the proposition for the massive impact that climate change and global warning can have on a financial institution's global business operations. These weather catastrophes are also examples of how climate change has become an emerging risk.

In the aftermath of Sandy, financial institutions with significant exposure to the northeastern coast of the United States encountered damages not only to their daily operations but also impacted by the credit exposure that the storm had brought on their portfolios (e.g. homes and businesses in coastal towns that were destroyed or devastated by this weather catastrophe). While weather catastrophes had previously not been viewed as related to financial risk, a systemic view now shows the contagion relationship for which weather-related risks could culminate in global scale events that have a significant impact to firms. Rather than offer financial weather risk management as a product to their own customers, financial institutions are now implementing their own solutions to mitigate the impact of climate variables on their business operations and profits.

The internal and external events affecting the achievements of an entity's objectives must be identified to distinguish between risks and opportunities. Events that are opportunities are channeled back to management's strategy or to the objective-setting processes. When key stakeholders and decision makers gather to discuss a specific topic of interest that may be the source of an emerging risk, it can lead to new business opportunities. For example, a group of multinational bankers that gather to discuss issues surrounding global water supply can illustrate how opportunities can be found that may benefit all parties involved. Aside from financing possibilities for water and energy-related loan transactions, there may also be financial opportunities for stakeholders connected to the energy and technology sectors as well as for infrastructure needs in both the public and private sector markets.

# 4 Identifying the Landscape of Organizational Emerging Risks

A starting point to identify emerging risks is to survey and evaluate the catastrophic events that a financial organization could potentially face—including those that are derived from the macroeconomic environment which affects not only the organization but could also impact the entire industry. Significant events such as climate change or energy and fuel supply shortages can pose as much of a risk to banks as poorly structured credit products. For example, imagine that the main reactor of a big energy firm experiences a complete breakdown and operating failure. It results in the loss of both the primary as well as back-up power sources for a large population including most, if not all, of the firm's customers. Among some of the possible consequences of this event may be, but are not limited to:

- A devaluation in the energy company's stock price
- Rioting and looting at stores in the impacted area
- Destabilization of the energy markets in certain regions of the country

To the financial organizations that hold loans or securities of the above energy firm, there is an inevitable exposure to credit risk along with the likely downgrade of the company's credit rating. However, the damage in this situation is not solely limited to the risk of extending credit to the company, but also to other revenue generating business such as: potential hedging product devaluations; exposure to energy loan defaults; depreciation of the neighboring mortgage properties to which the bank holds liens; and a whole range of systemic risk events which can severely impact the bank's portfolios.

This example reiterates that the need for identifying such potentially catastrophic events should be evaluated for both conceivable and inconceivable scenarios no matter how remote the prospect may seem. Scanning the radar of events that one might potentially be exposed to and may have a significant or systemic impact on the organization should be based on a broad range of attributes. The risks should be assessed based on their source; the firms' risk types; risk characteristics as well as by the manner in which the risks can manifest.

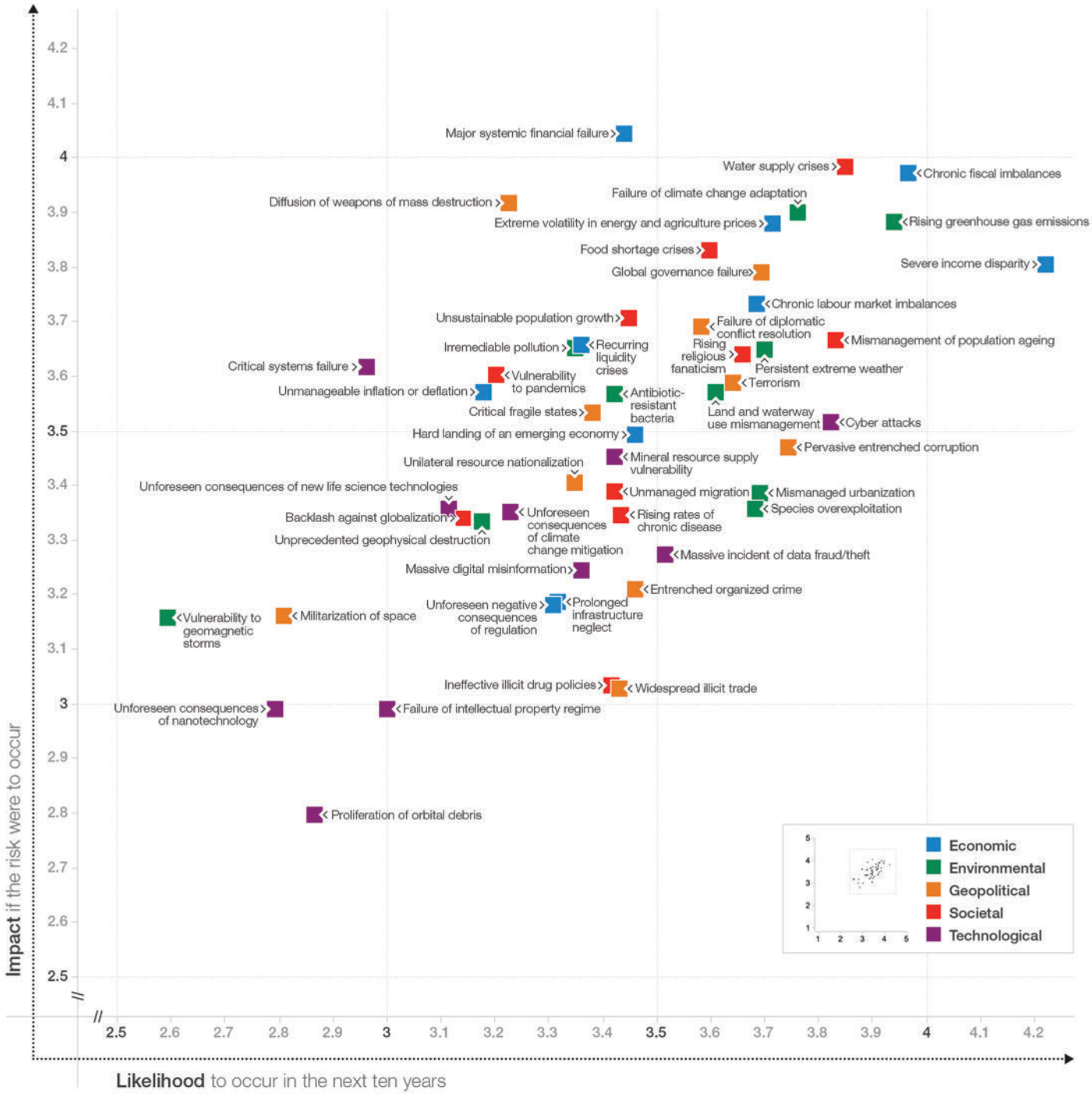
A finite list identified from a large set of risk combinations, can subsequently be risk ranked using both qualitative and quantitative analysis according to the likelihood and severity of impact. The use of scenario analysis and event simulations should also include counterintuitive considerations so that the risk rankings can be mapped on a grid according to the likelihood of occurrence and severity of losses. In other words, firms should also consider possibilities that are contrary to what one might believe to be logical.

Historically, it was counterintuitive to think that currency controls would ever be imposed on U.S. exporters due to any constraints placed on converting a foreign currency into USDs as well as for hedging tools to support it. Given the traditional strength of the U.S. dollar both as a reserve currency and also from countries buying it for investment purposes and preferring it as the only acceptable medium of exchange, very few could imagine that the time would come when it was no longer the strongest currency for trading. But this has become the case for emerging markets like China, where the convertibility of the Chinese Yuan, or Remenbi (RMB) is the only accepted monetary instrument in finalized trade agreements. Nor was it conceivable when the Euro was created that the country of Cyprus would be devastated by the inability to print money and have to devalue its' currency to readjust the economy. But the recent seizing of Cypriot bank accounts to help pay for recapitalizing the two primary banks was a shock that was unimaginable a few years ago.

Brainstorming to derive an exhaustive list of scenarios is also an approach that helps identify the key performance indicators (KPI) that can be applied to the organizational dashboard and ultimately used to alert management to new emerging risks.

Based on the outcome of the updated 2013 global risk landscape survey, we see in the following exhibit that the average landscape rankings have changed over the preceding seven years although the relative risk rankings according to the impact and likelihood has had minimal change.

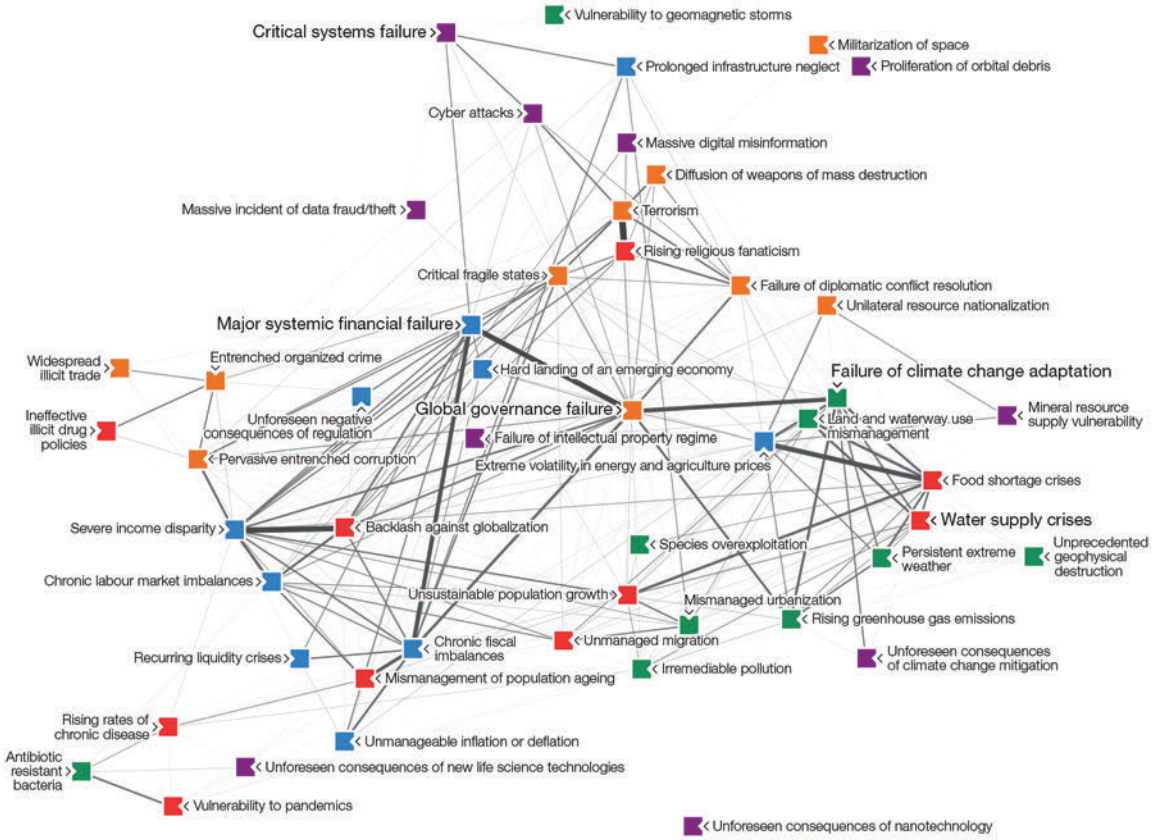
## Exhibit 2: Global Risk Landscapes 2013




Source: World Economic Forum

The landscapes of risks that banks and other related organizations are exposed to are also interconnected as illustrated below in the Risk Interconnection map. Financial organizations will find that once the risks have been risk-rated and ranked according to their varying scenarios, typically the more interconnected risks can be reflected by where they lie on the center of the axis while those risks with less interdependency will lie further out on the chart.

## Exhibit 3: Global Risk Interconnection Map 2013




Source: World Economic Forum

As financial organizations are more and more interconnected, the industry has interrelated assets, liabilities and payment flows. This interconnectedness also contributes to systemic risk. Large interconnected financial entities pose a specific risk to the financial system and requires a higher standard for enterprise risk management. Despite globalization, the financial system as a whole is safer as a combination of loosely connected systems (from which a weak link can easily be discarded) than as a single, integrated whole, in which a weak link can contaminate the rest of the system.

# 5. Implementation Challenges & Solutions

Depending on the organization, there may be different approaches required to handle external and internal emerging risks, as emerging risks can have several competing models of how reality might unfold, yet lack the validity of any accepted paradigm. Therefore the scenario analysis and simulation models that an institution uses should have the capability for resilience to be built into the risk models.

Several reasons exist as to why some traditional models are limited in identifying emerging risks:

- Current statistical models are static; the data and scenarios are limited to specific sources and lack the capacity to perform scenario analysis and probabilistic modeling that encompasses a wide variety of sources.
- The data is oftentimes not maintained on a regular or on-going basis due to the limited skilled resources that are needed to consistently monitor strategy.
- When these trends and developments do occur, they are not incorporated into strategy on an ongoing basis. Incorporating emerging risks into the overall corporate strategy results in enhanced risk analytics data to evaluate for how new trends and developments can have an overall impact on the organization.

Some of the new, developing approaches include the use of advanced analytics and data mining techniques. These approaches have several encouraging benefits:

- They offer the ability to expand risk factors to include customer and marketing analytic concepts into more granular specifications that identify customer or market segments.
- They can be used to supplement behavioral scorecards with predictive models to analyze transactions (such as electronic bill payments, deposits and/or cash management) in order to further refine and enhance early warning signs. These models can also be used to evaluate second or third order (domino) affects from individual risk events. An example of this would be evaluating the primary impact that would incur in the event of a large plant closure on ancillary units combined with the secondary impact that the bank would encounter from a reduction in account activity by the unemployed labor force.
- Finally, data mining on text for unrelated and unstructured data can also be evaluated to expose hidden patterns or correlations.

The following exhibit captures additional implementation challenges classified into key aspects of the risk management process.

## Exhibit 4: Implementation Challenges

| | |
|---|---|
| **Risk Identification** | • Catastrophic event identification requires an events repository that is customized to the institutions' business and operations.<br>• Developing a systemic approach for risk ranking is required to distinguish between events that are acceptable versus unacceptable. |
| **Rapid Risk Assessment** | • Evaluating and deriving informed and value-creating decisions where risks may emerge, especially while planning for new business or operations where the trade-off is between risk and opportunity.<br>• Assessing the significance of the risks to the entity stakeholders—the dimensions of vulnerability and velocity need to be considered in addition to impact and likelihood.<br>• Determining appropriate scenarios and event simulations is tricky since an exhaustive simulation is impossible. |
| **Control Activity** | • Cascading action plans often is problematic without the right structure with well-defined roles and responsibilities.<br>• Measuring, monitoring and reviewing risks and KRIs periodically for sensitivity and effectiveness is important.<br>• Champion versus challenger approach to framework fine tuning needs to be built over time. |
| **Data Quality & Availability** | • Reliability of internal data to identify the KRIs—data quality, traceability, lineage, etc.—continues to be challenging.<br>• Considering the impact, probability and correlations (interconnectedness with other risks) in relation to the organization's strategy and objectives requires a good amount of data and analysis.<br>• Availability of loss data relating to these events will be scarce; external data continues to be used as a proxy. |

Monitoring the effectiveness of emerging risk mitigation efforts requires evaluation of past events and analysis of future trends. A look-back analysis considers how emerging risks were or could have been mitigated and provides lessons on how to better manage such risks in the future. Forward-looking analysis requires the definition and use of relevant leading indicators to alert management to changes in the organization's exposure to emerging risks.

Emerging risks should also be identified by the risk source or those landscape elements that have the intrinsic potential for a risk to emerge. Drivers of risk must also be considered along with governance issues, which will define how people throughout the enterprise will deal with the risks and respond to the potential consequences.

## Recommendation: Manage External Events via a Rapid Response Team

External emerging events, by definition, are those over which institutions have very little, if any, ability to precisely define, anticipate or control. Therefore, it is important that the institution be well prepared to react to such events once they occur. Although organizations have processes and structures in place to manage risks on a daily basis, the fact is that these mechanism often do not address emerging risks primarily because they may not be quantified, remote, low probability with a high impact.

As one of the world's foremost providers of consulting, technology and outsourcing services, Capgemini can provide the increasingly specialized skill sets required to respond to potential problems that may lead to new emerging risks. Our subject matter experts can review relevant threats facing an organization, identify the many varieties of risk at both the portfolio and enterprise levels, and provide an expert opinion to help management make informed decisions.

The following exhibit illustrates a framework that can be used to help start this process.

### Exhibit 5: Starting Point to Consider and Identify Emerging Risks

| | |
|---|---|
| **By Source of Risk** | • Technological<br>• Societal<br>• Environmental<br>• Economic |
| **In Relation to Objective Types** | • Strategic<br>• Operational<br>• Reporting<br>• Compliance |
| **By Risk Characteristic** | • Exogenous/endogenous<br>• Predictability<br>• Degree of Control<br>• Duration |
| **By Manner in which the Risk Manifests** | • Long-term changes<br>• Sudden, unexpected events<br>• Gradually deteriorating operating condition<br>• Local events with systemic impacts<br>• Resulting from catastrophic events |

# 6. Conclusion

In this paper, we have explored how emerging risk has become an important piece of a financial institution's overall risk management strategy. We have defined emerging risk in the context of recent events and outlined methods to classify and identify emerging risks. We have also discussed a few implementation approaches and possible solutions.

Finally, we have noted Capgemini's service solutions and advanced analytics as essential components of a comprehensive risk management framework, specifically targeting external and internal emerging risks respectively.

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