

Allianz Global Corporate & Specialty

Global Claims Review 2015: Business Interruption In Focus

Global trends and developments
in business interruption claims



Allianz 

Scope of the Report

This report focuses on global developments in business interruption-related insurance claims over the period 2010 to 2014, identifying the top causes of losses and other trends across a number of different business sectors, regions and countries. It also examines a number of emerging risks that will impact global businesses and the insurance claims landscape in future.

The findings detailed in this report are based on the analysis of 1,807 business interruption-related insurance claims from 68 countries (with a total value of more than €3bn) recorded for the accident years 2010-2014, each with a total value after deductible of €20,000 or higher. All claims figures quoted are 100% (not only the Allianz Global Corporate & Specialty share but including coinsurers' shares) and excluded deductible (i.e they represent the full payment made).

Of the 1,807 claims analyzed, 149 claims relate to **"very large events"** (see page 7) which have been treated separately due to their high impact on the database. The remaining 1,658 business interruption claims are herein referred to as **"base claims"**.

While the losses analyzed are not representative of the industry as a whole, they give a strong indication of the major business interruption risks which dominate industrial insurance.

Allianz Global Corporate & Specialty business scope

Allianz Global Corporate & Specialty (AGCS) is the Allianz Group's dedicated carrier for corporate and specialty insurance business. AGCS provides insurance and risk consultancy across the whole spectrum of specialty, alternative risk transfer and corporate business.

Insurance product lines covered – herein referred to as lines of business – include:

- Aviation (including space)
- Energy
- Engineering
- Entertainment
- Financial Lines (including directors' and officers' [D&O])
- Liability
- Marine
- Mid-Corporate
- Property

In addition AGCS also provides alternative risk transfer coverage through its subsidiary, Allianz Risk Transfer AG.

The claims analyzed in this report cover all these lines of business, except alternative risk transfer business.

Allianz claims analysis reported in €.

Cover Photo: Shutterstock

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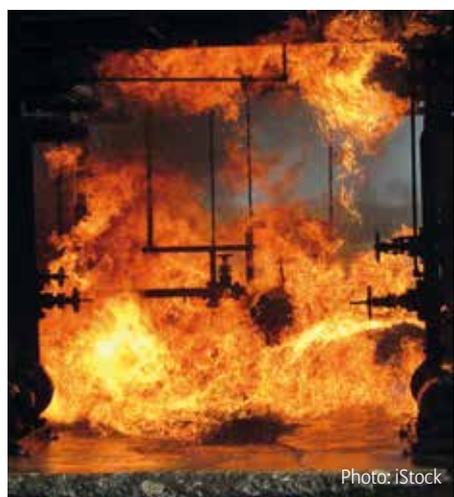
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Executive Summary

According to risk managers and corporate risk experts surveyed by the **Allianz Risk Barometer**, the impact of **business interruption (BI)** is the top risk companies face in today's increasingly interconnected and globalized business environment.

This report examines global BI claim developments over the years 2010-2014 and highlights top causes of BI losses during that period, as well as current and future trends. It also focuses on BI losses in three sectors: energy, entertainment and property & engineering.

Top 10 losses analysis



Fire & Explosion accounted for 59% of 1,807 BI claims globally, according to data analyzed over a five-year period. According to AGCS insurance claims analysis, the vast majority of insured BI losses are not caused by natural catastrophes. Non-natural hazard events account for 88% of BI losses, according to value.

Top causes of business interruption (BI) loss by total value (2010-2014):

- 1 Fire and explosion
- 2 Storm
- 3 Machinery breakdown
- 4 Faulty design/material/manufacturing
- 5 Strike/riot/vandalism
- 6 Cast loss (entertainment)
- 7 Flood
- 8 Collapse
- 9 Human error/operating error
- 10 Power interruption

*Top causes of BI losses by value. All losses >€20,000
Source: Allianz Global Corporate & Specialty*

Recent loss activity/trends

Over the past five years, there have been a number of large losses following major fires, storms, floods and earthquakes where BI has been a key loss driver. Almost all large property insurance claims now include a major element of BI, which typically accounts for the majority of the loss.

According to AGCS, the average large BI property insurance claim is now in excess of €2m (€2.21m: \$2.38m). This is around 36% higher than the corresponding average direct property damage loss (€1.63m).

Although Fire & Explosion is the top cause of BI loss around the globe, costing €1.7m in losses on average, there are some major differences regionally.

Storm and flood related losses are notable in Asia, reflecting the region's continuing economic development and increasing exposure to natural hazards.

Storm is also the top cause of BI loss in the Caribbean & Central America region, accounting for a third of insurance claims by value.

The top 10 causes of BI loss for global businesses account for over 90% of BI losses, with this list dominated by non-natural catastrophe events (8).

Losses by business sector

Energy

Fire & Explosion is the top cause of BI loss by number of claims and value in the energy sector, followed by machinery breakdown and power interruption. Wear and tear on aging equipment and water damage are also major loss drivers. The average energy BI claim costs almost €4m (€3.96m)

BI exposures are growing within the energy sector and claims severity is increasing as a proportion of the overall claim. Additionally, interdependencies between companies is an increasing loss factor, resulting in regional contingent business interruption (CBI) claims if one plant is disrupted.

Cyber exposures are another potential cause of property damage and BI claims. There are fears that a malicious cyber-attack against a refinery or petrochemical facility could result in a fire or explosion.

Offshore oil and gas BI losses have been relatively benign due to a recent lack of natural catastrophe events and increased safety awareness in the industry, but property damage losses have increased in number and amount.

Entertainment

Losses due to cast member inability to perform due to accident or illness account for 60% of entertainment insurance claims received and almost three quarters of claims according to value. The average entertainment BI claim costs €264,000. However, performance interruption among top talent can easily push claims into the millions of dollars.

In addition, extra expenses related to other production delays, such as property damage and inclement weather can also be costly. Even minor delays can result in major loss amounts.

Digital technology, visual effects, extravagant live events and other trends are changing the typical face of entertainment BI claims. Interruptions can bring expensive claims. Also the increasing complexity of live music and sporting events is a fast growing area of the industry, bringing new and potentially expensive interruption risks.

Property & Engineering

The shift of manufacturing to China and Southeast Asia, increased interdependencies, just-in-time production and diminishing stock are resulting in larger BI and CBI claims.

The top five causes of BI loss in the property sector account for 88% of all claims by value. Strike/riot/vandalism is the third top cause of BI loss by value, despite generating relatively few claims by number.

Increased interdependencies can significantly affect the cost of a major loss event. Property BI claims are likely to increase further in future with the growing relevance of non-damage events. Increasing automation is influencing and impacting supply chains.

Technical and human issues are responsible for the top five causes of BI loss in the engineering sector.

Current and future trends

Reported loss estimates from the largest events across the insurance industry during 2015, excluding those caused by natural catastrophes, total more than **\$7bn** at time of writing with the Tianjin loss potentially accounting for almost half of this total. The Tianjin incident is the latest to highlight the growing complexity of large insurance claims and the increasing relevance of BI.

BI and CBI are significant drivers behind the increasing severity of very large property losses. In future, non-physical damage causes of business interruption will become more relevant too.

Business continuity management remains a gap in the supply chain risk management programs of many multinational companies. There is an increasing need for businesses to analyze their production processes accordingly.

Detailed risk assessment of their supply chain risks can help businesses identify and plan an effective response integrated into their overall business continuity plan.

Pre-loss claims meetings between insurers and businesses are increasingly important. They enable both parties to establish a claims protocol – a clear procedure of what to expect, what to do and how to communicate in the event of an incident.

It has been shown that companies that are able to actively manage a BI event significantly reduce the time it takes to restore operations.

Introduction:

More severe business interruption implications

The greater interconnectivity of the global economy is manifesting itself in increasingly more complex production processes with higher economic values. The end result is more severe business interruption (BI) implications. For insurers this means potentially larger and more complicated losses than in the past. It also means that one event – like a fire at a factory or a flood in one region – can generate many claims from large numbers of companies.

\$1m

Average business interruption insurance claim

88%

of business interruption insurance losses are not nat-cat related

In August 2015, the Chinese port city of **Tianjin** was rocked by a series of explosions that killed more than 170 people. They also destroyed property, causing significant disruption and an insured loss that is expected to total billions – ranking among the costliest man-made disasters in Asia's history. The incident was also the latest to highlight the growing complexity of large insurance claims and the increasing relevance of BI. Although losses here to date have been dominated by physical damage, BI may well emerge as a major driver of total costs arising from this event.

Over the past five years in particular there have been a number of large losses following major fires, storms, floods and earthquakes, where BI has been a key loss driver.

Almost all large property insurance claims now include a major element of BI. So much so, that BI losses typically account for the lion's share of large property claims, sometimes dwarfing the property damage itself.

According to AGCS, the average large BI property insurance claim is now in excess of €2m (€2.21m: \$2.38m). This is around 36% higher than the corresponding average direct property damage loss (€1.63m).

Primary loss driver

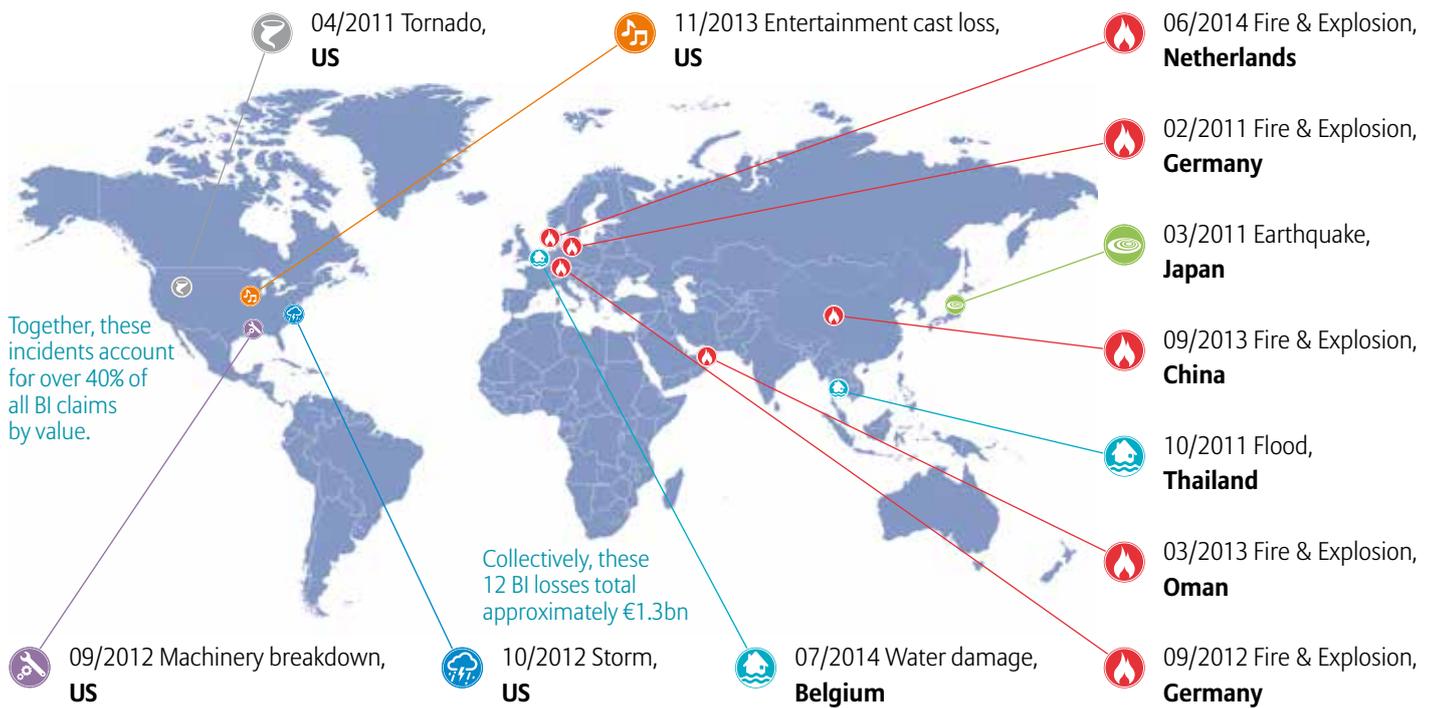
The primary driver for increasing BI losses is growth in complex global supply chains, which work to an ever tighter set of interdependencies, with “just-in-time”, “just-in-sequence” and “lean manufacturing” now standard practices.

This is leading to increasing concentrations of risk, which are often located in areas that can be impacted by disruptive natural catastrophes and a host of other events. An example of this has been the shift of manufacturing to South East Asia, and China in particular, where risk management and asset protection are still maturing, as the Tianjin loss demonstrates.

Tianjin is an important transport hub and manufacturing center – it is ranked as the fourth largest port in the world in terms of total cargo throughput and the 10th largest container port, demonstrating the aggregation of risk seen in such logistics hubs.

Such trends are also resulting in increasing **contingent business interruption (CBI)** losses, which is when a business is unable to operate because of an event that damages one of its suppliers, thus preventing it from engaging in normal trade.

“Very Large Events”: Largest Business Interruption Losses (Analyzed Portfolio only)



Very large events - AGCS identified four major events during the analysis period – a US tornado (2011) the Japanese earthquake (2011), the Thailand floods (2011), and Superstorm Sandy (2012), as well as eight other claims which differ relative to normal claims activity in the impacted line of business. These events totalled 149 claims.

Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014.

For example, many automotive and electronics companies in Europe and the US suffered losses when suppliers in Japan were unable to produce vital components following the 2011 Tohoku earthquake and subsequent tsunami. Similar losses were experienced by global companies later in the same year when widespread flooding affected clusters of manufacturers located in Thailand.

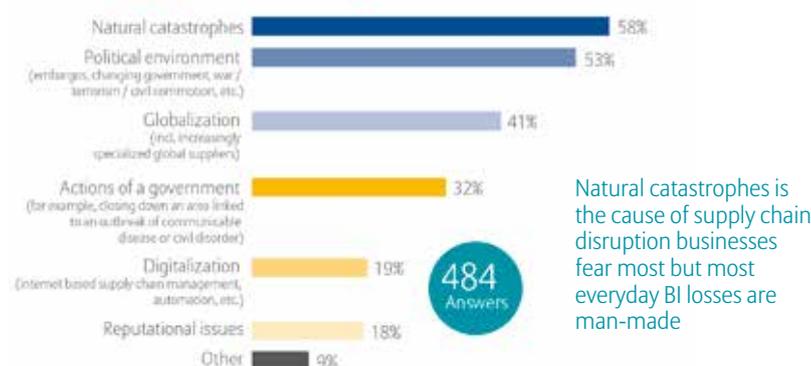
Indirect impact

With increased interdependencies, BI and CBI losses can significantly affect the total cost of a major natural catastrophe or other loss event. For example, the Tohoku earthquake and tsunami alone led to some 150 claims notifications for AGCS and the vast majority of these notifications were from companies located outside Japan.

Supply chain disruption also played a part in the fire at the SK Hynix factory in Wuxi, China, in September 2013, which was reported to have cost insurers around \$1bn, not including potentially higher CBI losses¹. The cost of the claim reflected the time and expense of restoring specialist “clean rooms” used in the production of semi-conductors, as well as CBI losses suffered by computer equipment manufacturers in North America.

According to AGCS analysis, the majority of everyday BI losses are not caused by natural catastrophes. **Fire & Explosion** is the top cause of business interruption accounting for 59% of all BI insurance claims, according to value. Eight of the top 10 causes of BI losses are man-made (see page 12), with non-natural hazard events accounting for 88% of BI losses, according to value.

Which are the main risks that can lead to a supply chain disruption?

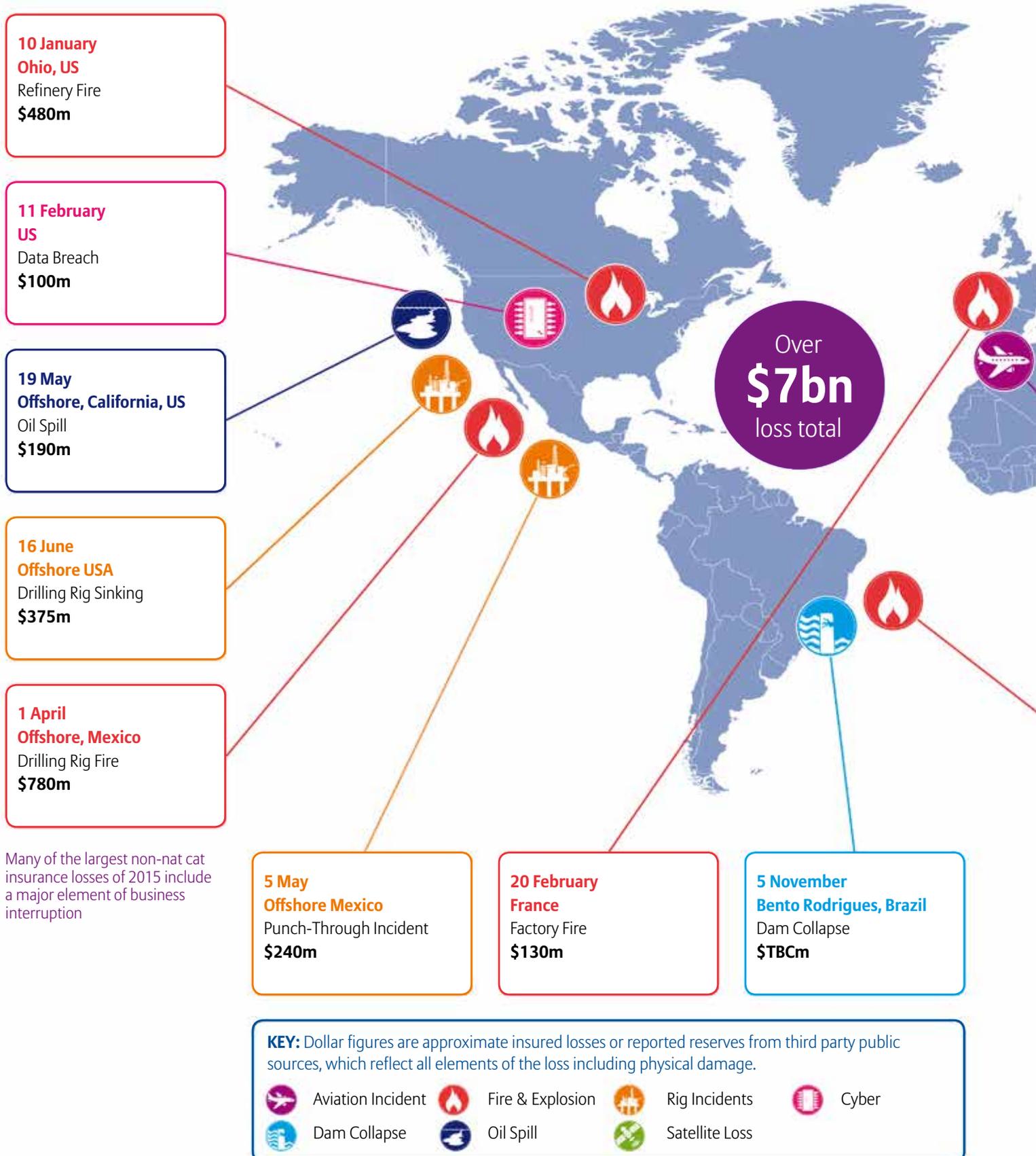


Source: Allianz Risk Barometer 2015, which surveys over 500 risk managers and experts. Figures represent a percentage of all eligible responses. More than one answer selected.

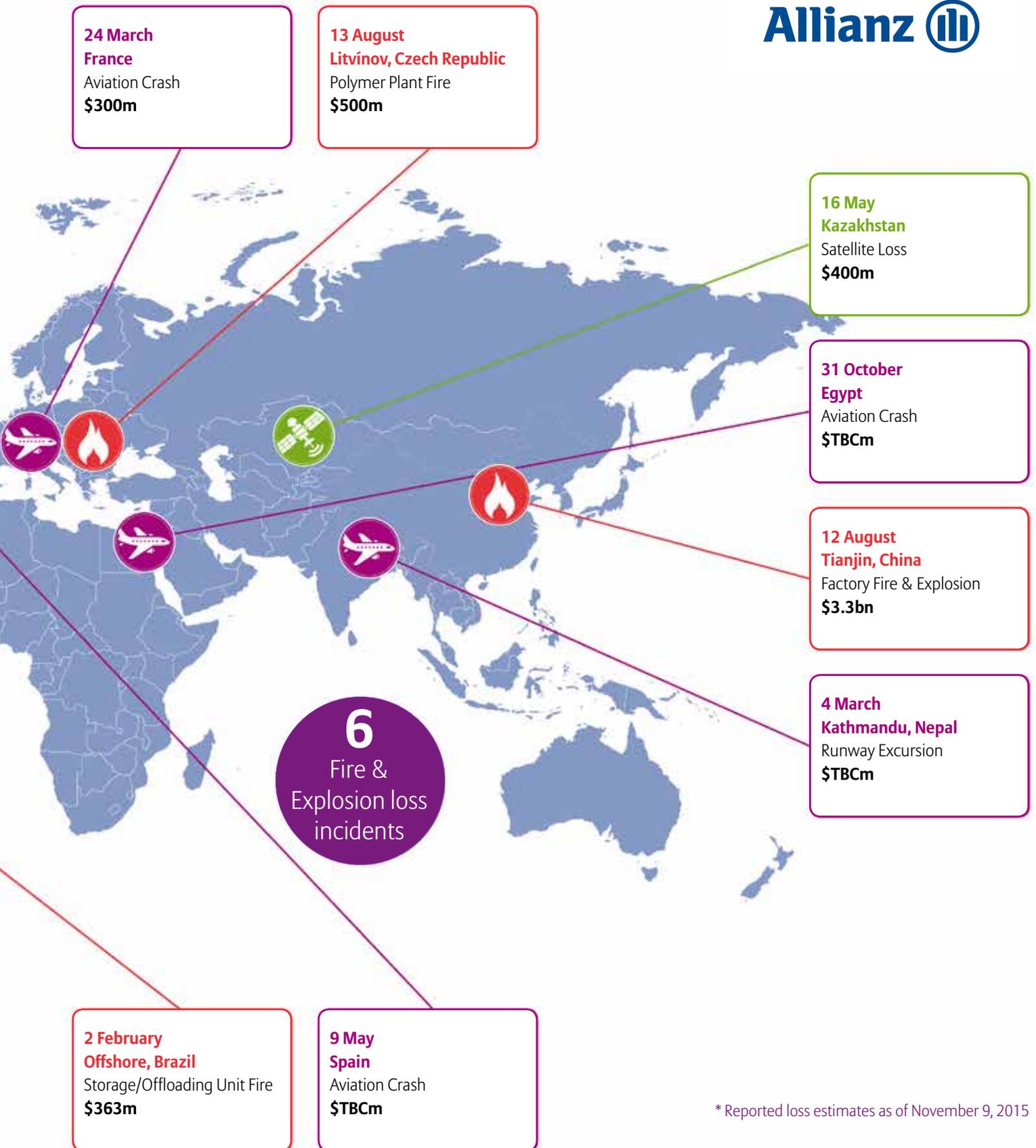
¹ Source: Insurance Insider, November 2013

Global Loss Atlas - Largest Non-Nat Cat Losses 2015*

Reported loss estimates from the largest events across the insurance industry, excluding those caused by natural catastrophes, total more than \$7bn.



Many of the largest non-nat cat insurance losses of 2015 include a major element of business interruption



* Reported loss estimates as of November 9, 2015

* All information is taken from public sources, and loss estimates as shown here should not be taken as confirmation by AGCS of reported losses. Sources include: Reuters, JLT Specialty, Insurance Insider, Asia Insurance Review, Guy Carpenter, Wall Street Journal, The Guardian, Lloyd & Partners

This loss atlas does not include 100% liability or financial lines losses. Loss locations are approximate for illustrative purposes.

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2015 loss activity and trends

The largest reported losses of 2015 from across the insurance industry, for physical damage, business interruption and other causes, excluding those caused by natural catastrophes, currently total in excess of \$7bn*. Fire & Explosion is the main loss driver.

This year's loss activity has, to date, been dominated by the two massive explosions in the port of Tianjin, in northern China, aviation incidents across three continents, as well as a number of rig problems off the US coast.

At the time of writing, the Tianjin explosion looks set to become the largest man-made loss of 2015, with many predicting it could become the largest such loss in Asia's history. The blast destroyed warehouses and production facilities, impacted a nearby railway station and residential structures, as well destroying vehicles and shipping containers in the port. Many insurance sectors have been impacted including: marine, property, automotive and general aviation.

Confirmed insurance industry losses via company announcements have already totaled almost \$2bn¹. However, reinsurance broker Guy Carpenter believes the total insured loss could be as high as \$3.3bn² but this

estimate excludes damage outside the blast zone, as well as business interruption (BI), contingent business interruption (CBI) and potential pollution claims.

Loss adjustments are subject to change due to the uncertainties surrounding the explosion. Adjusters struggled to access the site for many weeks after the blast as access was restricted due to fears over the nature of the explosion and potential contamination. However, the incident is the latest to highlight the growing complexity of large property insurance claims.

It also reflects the growth of accumulation risk, particularly in highly industrialized areas. As China has risen to economic power, it has also become increasingly exposed to the large claims that have a global impact. Tianjin also shows that man-made disasters can have a major impact on a global scale.

*Excluding 100% liability and financial lines losses.

¹ Source: Bloomberg, November 18, 2015



Fire & Explosion is the main loss driver behind many of 2015's largest losses.

Photo: Voice of America, Wikimedia Commons

Asia home to largest losses

In terms of loss value, according to estimates, the Tianjin loss is currently more than three times the second largest man-made (non-liability) event this year – a drilling rig fire offshore Mexico.

If Tianjin does remain the largest man-made reported insurance loss in 2015, this will be the third year in a row such an event has occurred in Asia. Similarly, it will be the third year in a row **Fire & Explosion** has been the cause, according to global insurance industry losses tracked by AGCS (2013 was the SK Hynix Fire & Explosion which was estimated to have cost insurers approximately \$1bn. While in 2014, a major fire and explosion at an oil refinery in Siberia was reported to have cost insurers in excess of \$800m+³).

Something connecting all three of these losses is the growing impact of BI as a loss factor. Overall, AGCS is seeing a growth in BI claims, fuelled by increasing interdependencies between companies, the global supply chain and close up just-in-time production methods. As production has shifted east to Asia so have large claims.

² Guy Carpenter & Co news release, Sept 3 2015: "Port of Tianjin Explosions set to become One of Asia's Largest Insured Man-Made Loss Events".

³ AGCS Global Claims Review 2014

Tianjin - a non-damage BI event?

The Tianjin loss is a much more complex non-natural catastrophe loss than anything to have occurred before in Asia. Such a loss event was unexpected, with the explosion's footprint larger than anticipated.

A number of factors make this a more complex loss than the SK Hynix semi-conductor fire, for example, which was the largest man-made loss of 2013, resulting in CBI losses for computer equipment manufacturers in North America.

The Tianjin loss involves more parties and includes local and global insured losses, meaning many policies from many different legal environments. A number of different industries were impacted by the blasts including automotive, maritime, chemicals, food and steel.

Adding to the complexity of the Tianjin loss are issues such as who owns the damaged or destroyed goods at the point in question – the business who has ordered them or the supplier and at what point does the ownership change.

Tianjin is resulting in major direct property damages with significant potential for subsequent BI and CBI losses. However, a number of losses and costs associated with the subsequent interruption of flow in stock and products because the port was closed by the authorities, or because companies are unable to operate production lines due to their workforce being impacted - so-called "non-damage" loss events - may not be covered by insurance.

"Non-damage" BI coverage (*see page 37*) is available to protect businesses from such interruptions but, to date, few companies have purchased what is a relatively new type of insurance. A number of impacted businesses could be picking up such costs themselves.



Physical damage events can also produce non-damage BI costs.

Photo: Voice of America, Wikimedia Commons

Allianz Claims Dashboard

At-a-glance claims data identifying the top causes of business interruption losses for businesses and breakdown of claims by incident, business sector and region. 1,807 claims (including 1,658 base claims) with a total value of **€3.03bn** were analyzed over the 2010-2014 accident years.

Top causes of business interruption losses across all **lines of business***

Lines of business analyzed across the AGCS portfolio:

- Aviation
- Energy
- Engineering
- Entertainment
- Financial Lines
- Liability
- Marine
- Mid-Corporate
- Property



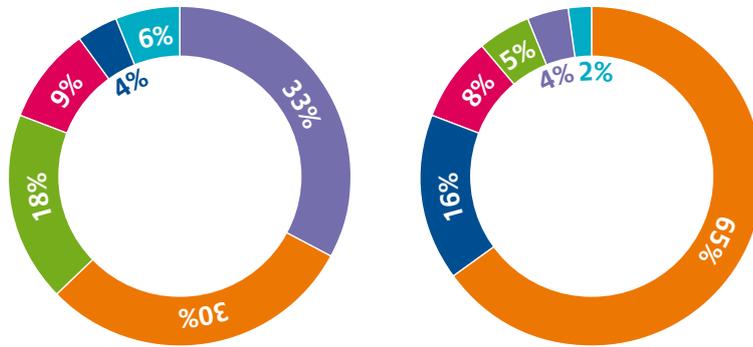
← see page 22

* Top causes of BI losses by value. All losses >€20,000.

Data based on accident years 2010-2014. Base claims only (see box on page 17 for methodology)

Breakdown of business interruption (BI) claims by business sector

Claims Value >€20,000



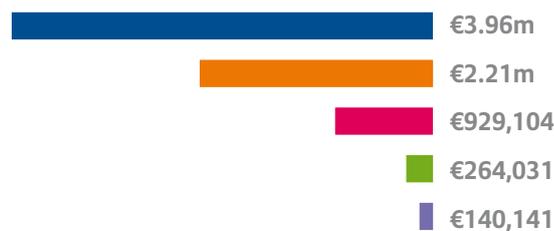
Property is the main driver of BI losses, accounting for 65% of all claims by value.

Mid-Corporate, which covers small- to mid-sized businesses across different industries, including property and liability coverage, receives the most claims.

Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014. Base claims only

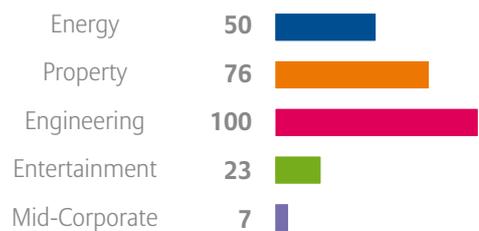
Average value of business interruption (BI) claim per line of business

Claims Value >€20,000



Average claim **€1.02m**

Average of days until notification from date of loss per line of business



Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014. Base claims only.

The average BI claim is now in excess of €1m. The high values at risk in the oil and gas industry are reflected by the high average BI claim value in the energy sector.

BI claims are complex and difficult to quantify. With indemnity periods of at least 12 months, claims can take time to settle.

Notification of a loss to the insurer from a business can take more than 100 days, which reflects the complexity of such cases in industrial environments, especially where triggered by contingent business interruption claims.

Average value of business interruption (BI) claim by cause of loss (selected)



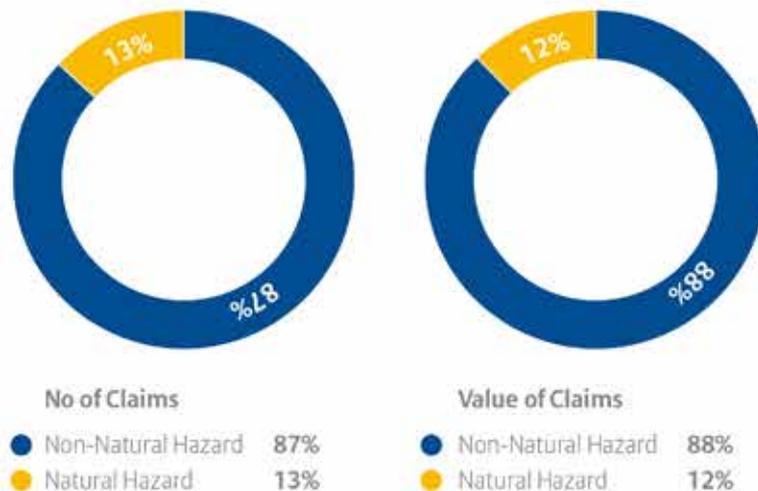
Every Fire & Explosion incident costs **€1.7m** in business interruption losses on average.

Energy platform incidents and strike/vandalism/riot incidents do not occur as frequently but when they do the BI impact is significant.

The BI impact from Theft & Burglary is relatively small compared with other risks.

Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014. *Base claims only*

What % of business interruption (BI) claims result from natural hazards?



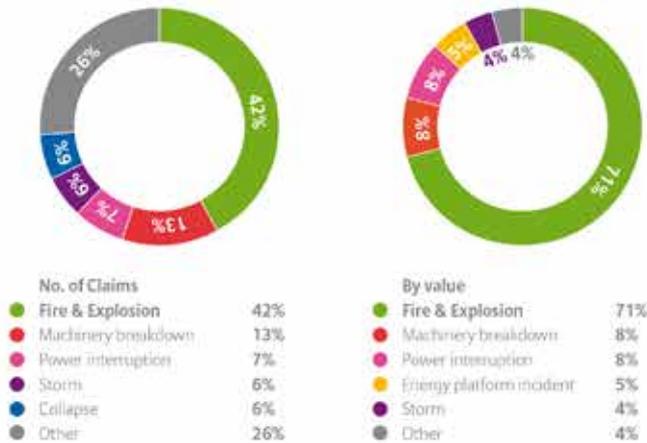
The majority of BI claims originate from technical or human factors not natural catastrophes.

Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014. *Base claims only*

Global business interruption (BI) losses in excess of €20,000: Causes by sector (analyzed portfolio only)

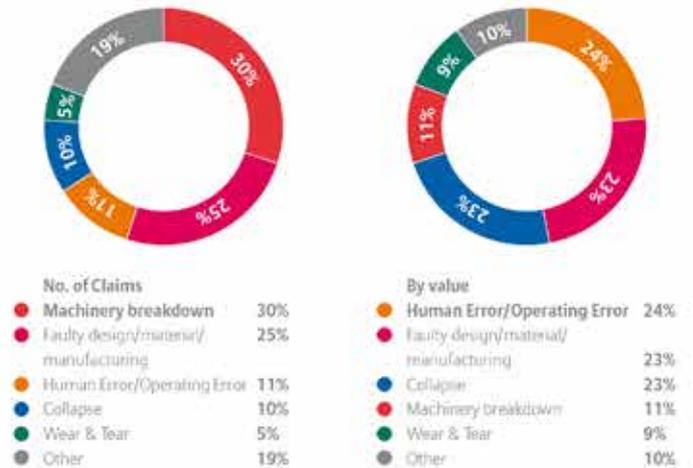
ENERGY CLAIMS

Top causes of business interruption loss



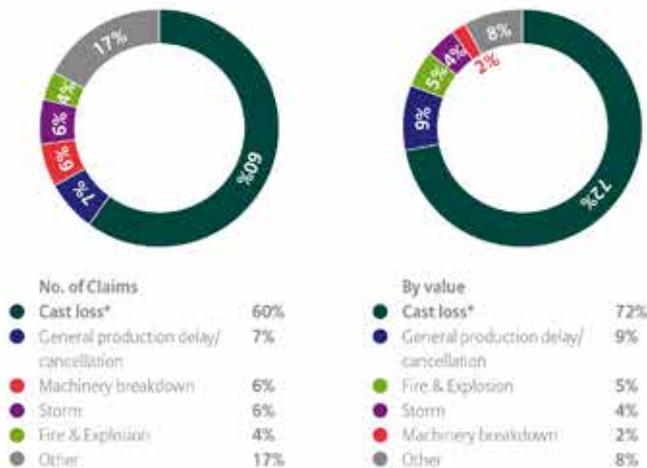
ENGINEERING CLAIMS

Top causes of business interruption loss



ENTERTAINMENT CLAIMS

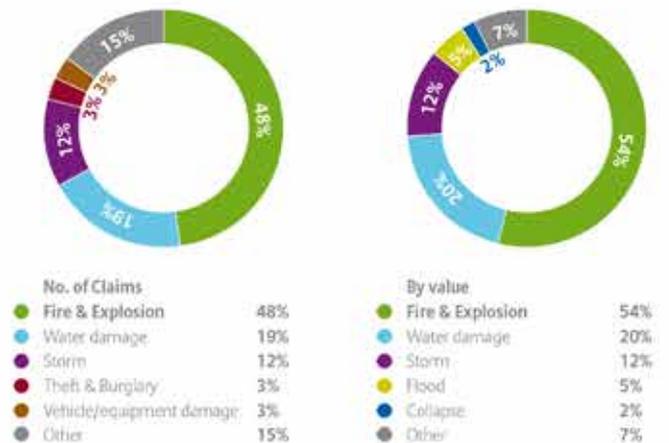
Top causes of business interruption loss



* Cast loss refers to when a cast member or performer is unable to perform.

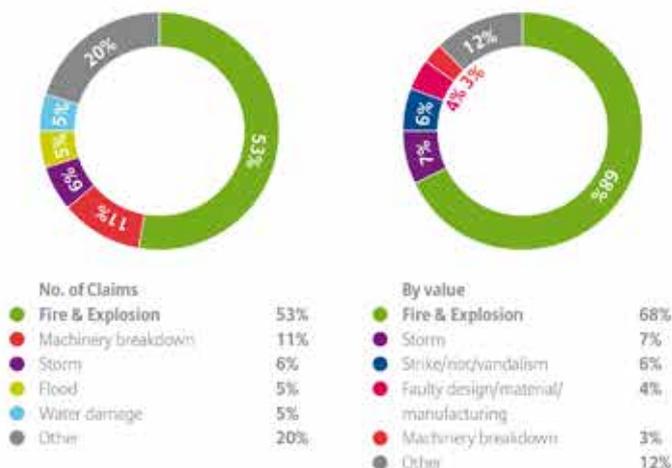
MID-CORPORATE CLAIMS

Top causes of business interruption loss



PROPERTY CLAIMS

Top causes of business interruption loss



The top 10 causes of business interruption (BI) loss for global businesses account for over **90%** of BI losses, with this list dominated by non-natural catastrophe events (**8**).

Fire & Explosion, storm and machinery breakdown occupy the top three positions, based on analyzed claims over €20,000 during a five-year period.

Fire & Explosion accounts for almost 60% of BI losses by value. It is also the most frequent claims driver in the energy, mid-corporate and property sectors.

Human error/operating error is the top cause of BI loss in the engineering sector, while machinery breakdown generates the most related claims.

Source: Allianz Global Corporate & Specialty.

Data based on accident years 2010-2014.

Base claims only.

Although Fire & Explosion is the top cause of business interruption (BI) loss around the globe, there are some differences regionally, the insurance claims analysis shows.

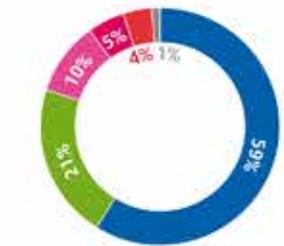
Storm is the top cause of BI loss in the Caribbean & Central America region, accounting for a third of claims by value.

Storm and flood related losses are notable in Asia, reflecting the region's continuing economic development and increasing exposure to natural hazards.

Top causes of business interruption (BI) loss per region (by value)

Claims value >€20,000

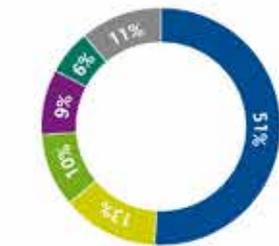
Africa



● Collapse	59%
● Fire & Explosion	21%
● Power interruption	10%
● Faulty design/material/manufacturing	5%
● Machinery breakdown	4%
● Other	1%

Average BI claim in the region
€2.05m

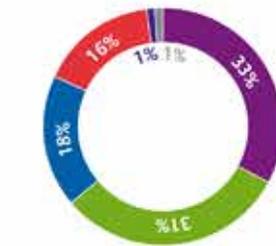
Asia



● Strike/riot/vandalism	51%
● Flood	13%
● Fire & Explosion	10%
● Storm	9%
● Wear & Tear	6%
● Other	11%

Average BI claim in the region
€1.78m

Caribbean & Central America

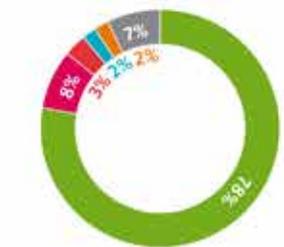


● Storm	33%
● Fire & Explosion	31%
● Collapse	18%
● Machinery breakdown	16%
● Collision	1%
● Other	1%

Average BI claim in the region
€1.26m

Note: Some regions such as Asia or Africa are notable for relatively large single losses which skew the results. In Asia, the results are distorted by one strike-related event, and in Africa, a similar one-off event raises the relative importance of collapse as a loss cause.

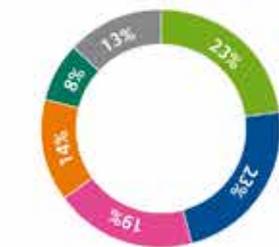
Europe



● Fire & Explosion	78%
● Faulty design/material/manufacturing	8%
● Machinery breakdown	3%
● Snow, ice	2%
● Human Error/Operating Error	2%
● Other	7%

Average BI claim in the region
€1.89m

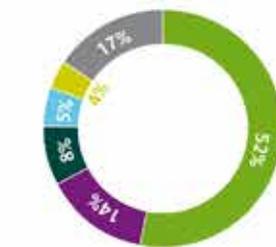
Middle East



● Fire & Explosion	23%
● Strike/riot/vandalism	23%
● Power interruption	19%
● Human Error/Operating Error	14%
● Wear & Tear	8%
● Other	13%

Average BI claim in the region
€3.29m

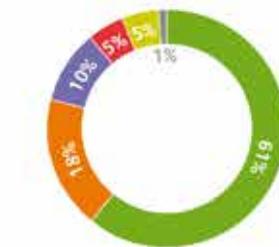
North America



● Fire & Explosion	52%
● Storm	14%
● Cast Loss (Entertainment)	8%
● Water Damage	5%
● Flood	4%
● Other	17%

Average BI claim in the region
€494,495

South America



● Fire & Explosion	61%
● Human Error/Operating Error	18%
● Earthquake	10%
● Machinery breakdown	5%
● Flood	5%
● Other	1%

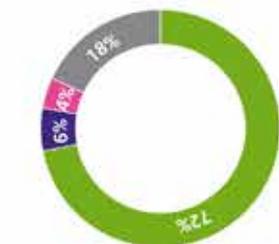
Average BI claim in the region
€2.18m

Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014. Base claims only

Top causes of business interruption loss per country (by value - selected countries only)

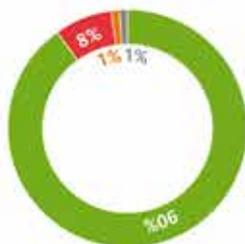
Claims value >€20,000

Canada



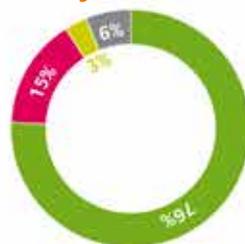
Average BI claim €787,937

France



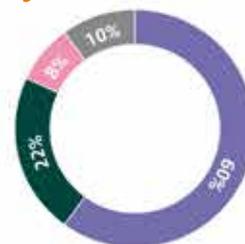
Average BI claim €3.34m

Germany



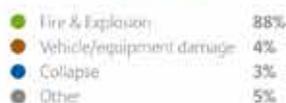
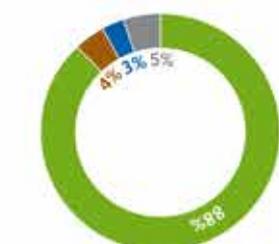
Average BI claim €1.98m

Italy



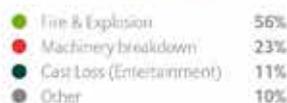
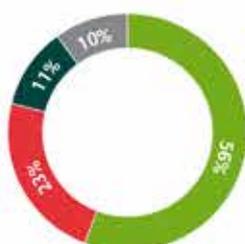
Average BI claim €226,968

The Netherlands



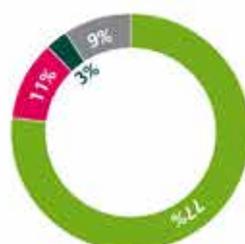
Average BI claim €3.06m

Spain



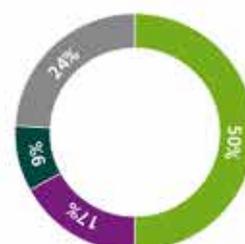
Average BI claim €414,790

UK



Average BI claim €1.97m

USA



Average BI claim €462,672

Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014. Base claims only

Key Statistics: Analysis includes Allianz Global Corporate & Specialty claims and those from coinsurers

Total number of claims analyzed: **1,807** including 149 **very large events*** claims Total number of base claims** analyzed: **1,658**

Total value of claims: **€3.03bn** of which very large events total: **€1.34bn** Total value of base claims: **€1.69bn**

Average claim value of all claims analyzed: **€1.68m** Average value of base claims: **€1.02m**

Countries in which claims arose: **68** Average Euros paid per day: **€1.66m**

Methodology: AGCS has analyzed 1,807 business interruption insurance claims from 68 countries with a total value of more than €3bn, recorded for the accident years 2010-2014, each with a total value after deductible of €20,000 or higher, including all its traditional lines of business (excluding alternative risk transfer business). All claims figures quoted are 100% (not only the AGCS share, but including coinsurers' shares) and exclude deductible (i.e they represent the full payment made). While the losses analyzed are not representative of the industry as a whole, they give a strong indication of the major business interruption risks which dominate industrial insurance.

Very large events* AGCS identified four major events during the analysis period – a US tornado (2011) the Japanese earthquake (2011), the Thailand floods (2011), and Superstorm Sandy (2012), as well as eight other claims which differ relative to normal claims activity in the impacted lines of business. These events totalled 149 claims.

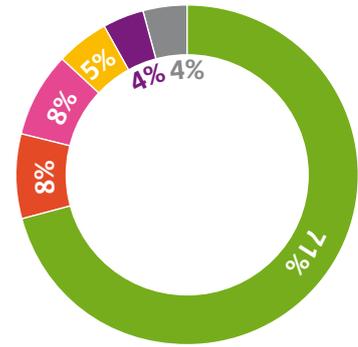
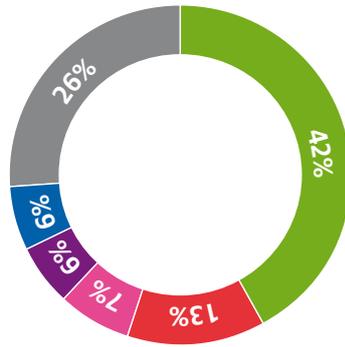
Base claims** All other business interruption insurance claims.

Top causes of business interruption (BI) claims loss: Energy claims (€20,000+)

Fire & Explosion is the top cause of BI loss by number of claims and value

Other top causes of BI loss include machinery breakdown and power interruption

The average energy BI claim costs almost €4m (€3.96m)



No. of Claims		By value	
● Fire & Explosion	42%	● Fire & Explosion	71%
● Machinery breakdown	13%	● Machinery breakdown	8%
● Power interruption	7%	● Power interruption	8%
● Storm	6%	● Energy platform incident	5%
● Collapse	6%	● Storm	4%
● Other	26%	● Other	4%

Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014. Base claims only

In Focus Energy claims trends



Growing exposures and interdependencies mean that complex and costly business interruption losses now dominate many large onshore energy claims.

- BI exposures growing. BI claims severity increasing
- A small partial loss at a large onshore operation could generate a claim in the hundreds of millions
- Interdependencies between companies increasing loss factor, resulting in regional CBI claims if one plant is disrupted
- Likelihood of increasing wear and tear losses due to aging equipment

Business interruption (BI) losses now account for a much higher proportion of large onshore energy claims, a trend that has been particularly evident over the past 12 months.

Of the five largest onshore claims seen by AGCS in the past year, BI accounted for at least 75% of the claims, and in two instances it accounted for 100% of the claim.

“The cost of large energy claims has been rising. Exposures have increased in the wake of larger refineries and petrochemical production facilities, growing interdependencies, and as companies make bigger profits,” explains **David Wilson, Energy Claims Specialist at AGCS**.

BI exposures have also been growing in relevance for the insurance market, as more companies seek to purchase this type of coverage. At the same time a number of new buyers are looking to purchase this insurance for the first time – a recent big change in the energy sector has seen more Russian companies buying BI cover, due to changes in market conditions and improvements in risk quality.

At the same time, existing buyers of BI cover in the US and Europe are now purchasing higher limits.

The increase in business interruption as a proportion of energy claims also reflects higher property damage retention levels by energy companies.

In 2014 the energy industry mutual insurer OIL Insurance¹ increased available limits to \$400m from \$300m for non-Atlantic windstorm damage. This is already resulting in fewer property damage claims for the insurance market, leaving insurers with the more complex BI element to manage.

Impact of loss of production on profits

BI claims are particularly complex for the onshore energy sector, where the cover is seen as essential for many onshore operators, like refineries and petrochemical plants. Quantification of claims can often be a lengthy task.

“The complexity of oil refining and the non-linear relation of profit to throughput (the volume of oil processed) is a notable characteristic of onshore energy claims, and something we do not see in other sectors to anywhere near the same degree,” says Wilson.

The wide range of products produced by the onshore energy sector, the high values involved, the interdependencies and the volatility of commodity prices and currency fluctuations creates a unique challenge, according to Wilson.

Profits at some large onshore operations can be as high as \$6m per day, and indemnity periods purchased by energy companies are typically 12 to 24 months. Therefore, disruption of one year or more can lead to a significant loss, while even a small partial loss could generate a claim in the hundreds of millions of dollars.

“The biggest challenge for energy claims is the calculation of the loss of profits on a partial loss of production,” explains Wilson.

A small percentage loss of production can have a large impact on overall profits, particularly where higher value products are affected. For example, a refinery may be able to restore 75% of production in a short amount of time, but profits could still be 75% down if the remaining disruption hits the most valuable products, he explains.

Wilson recalls a claim in which a damaged refinery and petrochemical plant was able to quickly restore production of petroleum, but profits remained negligible because production of the more valuable polypropylene product was disrupted for many months.



The cost of large energy claims has been rising. Exposures are increasing in the wake of larger refineries and production facilities.
Photo: Shutterstock

¹ Source: Business Insurance, July 29, 2014



Since operations in the Gulf of Mexico have been restored post-Deepwater Horizon, the insurance market has seen a significant reduction in the number of accidents.

Photo: Shutterstock

Fluctuations in exchange rates and commodity prices

Quantification is also complicated by fluctuations in exchange rates and commodity prices over the indemnity period. A recent loss at a Russian refinery saw the fall in oil price offset by the depreciation in the Russian ruble against the dollar.

The impact of a change in the price of oil on a BI claim is difficult to assess. "Refinery profit margins depend on the price of oil versus the price they achieve for their product, and both can vary," explains Wilson.

The price of petrochemical products typically lags any movement in the price of oil. Potentially, a falling oil price may initially boost profits if the price of products remains high, which would mean more, not less, costly BI claims.

Offshore energy claims trends

Offshore energy property damage losses overall over the past year have been relatively benign, reflecting the lack of natural catastrophes globally and absence of major hurricanes in the Gulf of Mexico.

At the same time, safety in the oil and gas sector has improved, and regulation increased, notes **David Wilson, Energy Claims Specialist, AGCS**. In particular, safety has been in sharp focus since the **Deepwater Horizon** fire of 2010.

"Since operations in the Gulf of Mexico have been restored, the insurance market has seen a significant reduction in the numbers of accidents post-Deepwater Horizon," says Wilson.

However, there have been a number of large property damage losses recently in the offshore energy construction sector.

Safety concerns led to the abandonment of the newly-constructed Yme oil platform in the North Sea, resulting in a reported claim¹ against insurers of \$1.3bn towards the end of 2014. Meanwhile insurance industry losses relating to mooring problems with Chevron's Gulf of Mexico Big Foot oil platform have been estimated at being in the region of \$300m+ (see *AGCS Loss Atlas* on page 8).

€3.96m

Average cost of energy business interruption claim

¹ Source: Upstream Online, September 24, 2014

Increasing interdependency

Interdependencies between companies are another contributing factor. For example, in the Middle East clusters of refineries and petrochemical plants often supply each other with products. So if one plant – such as one that produces an important fuel additive used by others – were to suffer a disruption, it would have a knock-on effect on neighboring plants.

Interdependencies can also result in complex contingent business interruption (CBI) claims. In 2008, a ruptured gas pipeline and subsequent explosion at a processing plant on Varanus Island, Western Australia, caused a major disruption to the region's energy supply, affecting refineries, construction, mining and leisure industries.

"We have seen a number of energy CBI claims caused by a lack of supply due to damage at the supplier's premises," says Wilson.

More recently, insurers have been notified of potential CBI claims after damage to a gas plant disrupted supplies to a number of petrochemical plants in the Middle East.

"Knowing your customers and suppliers and ensuring that this information is passed to your insurer will ensure you have the appropriate cover. Many companies have filed a claim, only to find that they do not have adequate CBI cover," Wilson adds.

Cyber exposures are another potential cause of property damage and BI claims. There are fears that a malicious cyber-attack against a refinery or petrochemical facility could result in a fire or explosion

Main causes of business interruption losses

The main causes of BI for onshore energy in recent years have been fire and explosions, often linked to a leak of hydrocarbons related to maintenance problems or faulty equipment.

Natural catastrophes are another major cause of BI claims in the energy sector. However, no major hurricane losses have significantly impacted the Gulf of Mexico since Hurricane Ike in 2008.

Cyber exposures are another potential cause of property damage and BI claims. Although an emerging peril, fears are that a malicious cyber-attack against a refinery or petrochemical facility could result in a fire or explosion.

"Compared with the past, BI claims are increasing in severity and as a proportion of the overall claim," says Wilson, who predicts that such claims will continue to grow.

"There are still many mega-projects in construction, such as liquefied natural gas (LNG) plants in Australia, as well as aging refineries in the US and Europe. With fewer new refineries planned, there is a likelihood of increased wear and tear, and insurers are already seeing a number of losses due to aging equipment," he concludes.

CLAIMS BEST PRACTICE:

Impact on risk assessment and claims settlement

The increased relevance of business interruption (BI) claims in the energy sector in recent years has seen insurers and brokers take steps to improve clarity of cover and stronger definitions, according to **David Wilson, Energy Claims Specialist, AGCS**. There has also been a move to use forensic accountants that are energy specialists, he says.

AGCS, in particular, has increased its focus on pre-contract inception risk assessment, involving energy engineers to get a better understanding of the risk. There is also more information-sharing between the AGCS claims department and insureds.

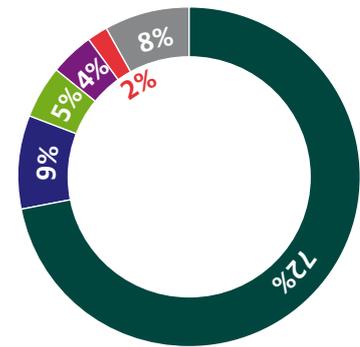
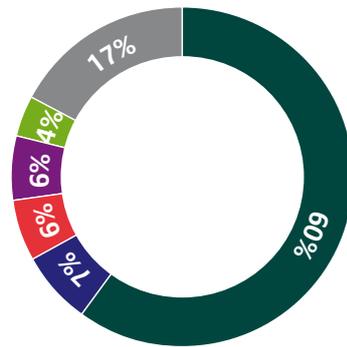
"We have been placing more underwriting focus on BI with a view to learning from claims experience. Claims teams now get more involved in pre-risk assessment," he says.

Top causes of business interruption (BI) claims loss: Entertainment claims (€20,000+)

Cast loss is responsible for 60% of insurance claims received

Weather is an important loss driver. In addition to storm, flood and snow and ice, even volcanic eruptions have resulted in BI losses

The average entertainment BI claim costs €264,000



No. of Claims		By value	
● Cast loss*	60%	● Cast loss*	72%
● General production delay/cancellation	7%	● General production delay/cancellation	9%
● Machinery breakdown	6%	● Fire & Explosion	5%
● Storm	6%	● Storm	4%
● Fire & Explosion	4%	● Machinery breakdown	2%
● Other	17%	● Other	8%

*What is cast loss?

Cast loss refers to when a cast member or performer is unable to perform.

Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014. Base claims only

In Focus Entertainment claims trends

The two most significant business interruption losses are due to a cast member/performer being unable to perform and extra expenses related to other circumstances preventing production, such as property damage. But digital technology, visual effects, extravagant live events and other trends are changing the industry.

- By far the most prevalent cause of interruption is an illness or accident to a cast member
- Injury to a major star can delay the production, leading to multi-million dollar claims
- Proliferation of visual effects means interruptions can bring expensive claims
- Live events is fastest growing area of industry but increasing complexity brings new interruption risks



Claims settlement for live events is less traditional than cast member/performer nonappearance
Photo: Jim Digby, Linkin Park, Frankfurt Festhalle, 2015

Two different contingency coverages make-up typical BI protection in the entertainment sector. The first is cast member coverage under the film/television production package, or performer nonappearance under the live event contingency package. This cover provides indemnity for additional costs incurred due to production interruption, postponement or cancellation due to accident, illness or death of a declared cast member/performer.

“Some productions can have a \$200m budget with daily operating costs running between \$400,000 to \$500,000,” explains **Ian Galloway, Entertainment Claims Specialist at AGCS**. “So any interruption is costly.”

The second time element coverage involves extra expense for other circumstances that could interrupt scheduled production, usually related to property damage to facilities or equipment or actions of a civil authority that prevent access to property or facilities.



Entertainment insurance covers a broad portfolio of risks including Hollywood blockbusters, independent films, music tours, festivals and other live events
Photo: Shutterstock



Live event risk management is a specialist topic of consideration
Photo: Shutterstock



Upgrading old equipment is the most challenging and expensive aspect of the claims-handling business
Photo: Shutterstock

BI losses due to cast member illness or accident

By far the most prevalent cause of interruption claims in the entertainment industry is an illness or accident to a cast member.

“Extensive medical background checks of all declared talent is standard in the underwriting phase,” explains Galloway. “However, potentially more risky stunt activity and scenes involving pyrotechnics or car chases require extra scrutiny by risk engineers trained in live effects.”

To illustrate the importance of coverage against performer illness or accident, consider the example of a major star filming overseas who broke a bone that required extensive surgery and recovery. Since the person was the principal cast member featured in almost every scene, the show literally could not go on. Significant costs accrued as a result of delay and a large claim in the many millions was settled with the studio.

Another example occurred in the death of two cast members working on different films. In one case, no interruption was suffered because the performer had completed filming and post-production work and only slight changes to the script were required. The death of the other performer, however, delayed the schedule since they were the principal talent, requiring significant re-shoots.

“Claims paid in that case were substantial,” says Galloway.

Visual effects

The biggest change with film and television has been the proliferation of visual effects and technical requirements that change from shoot to shoot.

Galloway explains: “Underwriting complex, computerized visual effects is challenging, to say the least.

“In the past, visual effects were added during post-production and didn’t impact shooting. These days, effects are integral to principal photography. Risks are high due to financial impacts of visual effects.”

Typically, studios contract with third party companies that employ scores of technicians to take daily scenes and apply effects. A film’s shooting timeline takes into account this activity and factors production delay into the contractual obligations a studio has to third party vendors. An idle visual effect shop is a significant and expensive delay.

“The principal cast member of one recent action movie, for example, broke a bone and delayed shooting for a considerable amount of time,” says Galloway. “The back-end obligations the studio owed to the visual effects shop were considerably more than shut-down costs.”

Technology – the new Hollywood star

5

Number of
entertainment BI
claims resulting
from theft &
burglary

From a claims handling perspective, the most challenging issue facing the industry today is keeping up with fast changing technology. Upgrading old equipment is the most challenging and expensive aspect of the business. In the last 10 to 15 years, the industry has transitioned from analog to digital. Most old equipment needs replacing. Digital medium is easier to work with, less labor intensive and insusceptible to decay or x-ray destruction.

“Ten years ago one of the most prevalent types of claims was film negative accidentally destroyed by airport x-ray machines,” Galloway says. “Such claims are practically unheard of today.”

Also, footage shot digitally can be viewed on set almost immediately to check for quality, allowing for immediate reshoots while all cast, equipment and sets are in place, reducing increased costs for later reshoots.

“There’s no question digital is better,” says Galloway. “But equipment upgrades from analog to digital represent extensive studio expense.”

The most impactful trend as a result of frequent upgrades is that in the event of property damage insurance coverages repay the cost of lost or damaged older equipment. Claimants expect upgrades to digital equipment, which is obviously much more expensive.

Weather is important claims driver

Weather-related claims are a frequent loss driver. But the impact of weather on a production can be highly subjective. Many claims are made because a production was delayed due to clouds or rain on a given day.

“Most insurers don’t cover the suitability of photographic conditions,” explains Galloway. “These are normal events. Imminent perils due to high winds or lightning are different and are considered extra expense contingency coverage.”

An idle visual effect shop is a significant and expensive delay

Live event risks

Live events are among the fastest growing areas of the industry. Ranging from outdoor amphitheater or small venue shows to sold-out stadium concerts, including music festivals like Lollapalooza, which takes place in six countries across three continents, live event risk management is a specialist topic of consideration.

Claims settlement for live events is less traditional than cast member/performer nonappearance. During concerts crowds can become aggressive, especially as they “mosh” to get as close to the stage as possible or pack together tight enough to allow “crowd surfing” to occur.

The occupant load on the main floor can overwhelm the most aware security team. At the same time venue owners, managers and security personnel face a number of risk exposures onstage and backstage. Electric wires, ropes, pulleys, temporary sets, and a multitude of other elements can make the area frequented by performers among the most risky areas of a venue.

With live events, the single highest insurance concern is the quality of the singing voice. Performers in a live setting can still sing with a broken leg, but not with laryngitis. The former might not trigger a claim; the latter likely would.

CLAIMS BEST PRACTICE: The importance of claims reporting

When an accident or incident occurs, reporting the claim as soon as possible is key, according to **Ian Galloway, Entertainment Claims Specialist at AGCS.**

“We have a wealth of experience on our claims handling team,” he explains. “But we need to work immediately with our insured to begin mitigation.”

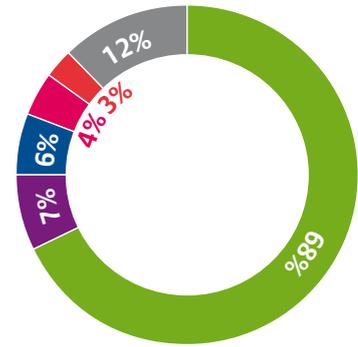
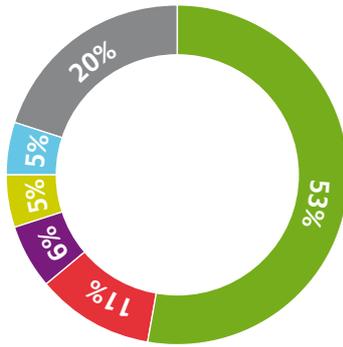
He continues: “An example of this would be an injury to a cast member. If given enough warning, we can look at the schedule and see if rearranging scenes will work, for example, shooting the ones in which the cast member doesn’t appear. That can be the most cost effective solution to shutting down production altogether.”

Top causes of business interruption (BI) claims loss: Property claims (€20,000+)

The top five causes of BI loss account for 88% of all claims by value

Strike/riot/vandalism is the third top cause of BI by value but generates relatively few claims by number

The average property BI claim is €2.2m



No. of Claims		By value	
● Fire & Explosion	53%	● Fire & Explosion	68%
● Machinery breakdown	11%	● Storm	7%
● Storm	6%	● Strike/riot/vandalism	6%
● Flood	5%	● Faulty design/material/manufacturing	4%
● Water damage	5%	● Machinery breakdown	3%
● Other	20%	● Other	12%

Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014. Base claims only.

The manufacturing shift to some Asian locations exposes assets to more natural catastrophes and less mature risk management
Photo: Shutterstock



In Focus

Property & Engineering claims trends

The shift of manufacturing to China and South East Asia, increased interdependencies, just-in-time production and diminishing stock are resulting in larger business interruption and contingent business interruption claims.

- Increased interdependencies can significantly affect the cost of a major nat cat or loss event
- Hailstorms can have significant BI impact, particularly in industrial parks
- BI claims are likely to increase further in future with the growing relevance of non-damage events
- The “Internet of Things” and increasing automation is influencing and impacting supply chains

The primary drivers for increasing BI losses have been the growth in complex global supply chains and increasing concentrations of risk, as companies, products and processes become more specialized.

“Over the past five to 10 years, BI claims have been becoming ever-larger with growing interdependencies,” says **Joachim Hufenreuter, Property Claims Specialist, AGCS**.

The global drive for efficiency has seen supply chains become highly- integrated, throughout their length, as well as locally and internationally.

Adding to the problem has been the shift of manufacturing to China and South East Asia, where assets are exposed to natural catastrophes, and where risk management and asset protection are still maturing.

In addition, the growth in political instability – or in some countries, political violence – creates increasing potential for BI and contingent business interruption (CBI) losses, often from unexpected directions, highlighting the need for effective risk management where suppliers are exposed to such risks.

Bottleneck vulnerability

Bottlenecks are a particular issue, while just-in-time production and a lack of stock buffering increases vulnerability, with many companies holding only enough stock to maintain production for a few weeks or even days.

“The noticeable increase in interdependency can be evidenced in the growing complexity and size of property insurance claims,” says **Raymond Hogendoorn, Property and Engineering Claims Specialist**.

“This, together with, increased purchasing of BI and CBI cover have resulted in a significant rise in BI losses,” he says.

CBI demand rises

The past five years in particular have seen a rise in CBI losses, where a company suffers a financial loss that is “contingent” on that of another.

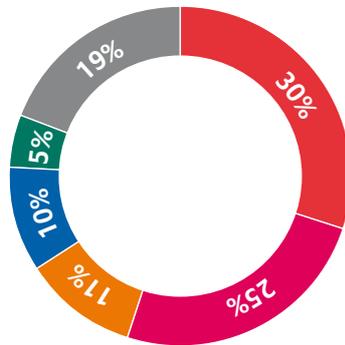
Many automotive and electronics companies in Europe and the US suffered losses when suppliers in Japan were unable to produce vital components following the 2011

Top Causes of Business Interruption (BI) Loss Engineering claims (€20,000+)

Technical and human issues are responsible for the top five causes of BI loss in the engineering sector

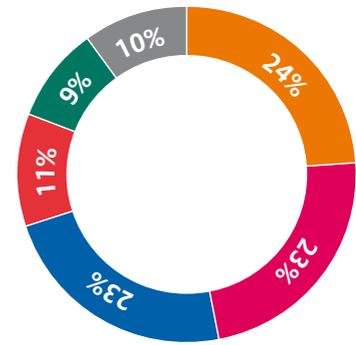
Human error and operating error accounts for a quarter of all claims by value. Machinery breakdown generates the most number of BI claims

The average engineering BI claims costs €929,000



No. of Claims

● Machinery breakdown	30%
● Faulty design/material/manufacturing	25%
● Human Error/Operating Error	11%
● Collapse	10%
● Wear & Tear	5%
● Other	19%



By value

● Human Error/Operating Error	24%
● Faulty design/material/manufacturing	23%
● Collapse	23%
● Machinery breakdown	11%
● Wear & Tear	9%
● Other	10%

Source: Allianz Global Corporate & Specialty. Data based on accident years 2010-2014. Base claims only

Tohoku earthquake and subsequent tsunami. Similar losses were experienced by global companies later in the same year when widespread flooding affected clusters of manufacturers located in Thailand.

“Five years ago CBI cover was seen as an add-on. Now many clients view it as a necessity,” says Hogendoorn.

Impact on loss totals

With increased interdependencies, BI and CBI losses can significantly affect the total cost of a major natural catastrophe or other loss event.

For example, the Tohoku earthquake and tsunami alone led to some 150 claims notifications for AGCS. Reflecting the growth of interdependencies, the vast majority of notifications were from companies located outside Japan that were not directly impacted by the disaster.

Less well documented is the impact hailstorms can have with regards to BI losses. A recent hailstorm in 2015 in Australia caused many warehouse roofs to collapse due to the weight of hail and rainwater – there was no windstorm influence. Due to the concentration of many

businesses in the impacted industrial park, insurance industry losses in what represented a relatively small district totaled in excess of \$100m.

While natural catastrophes can cause massive disruption to supply chains, smaller events can also generate large BI and CBI losses. For example, an explosion at a chemical products manufacturing plant in the Netherlands in 2014 had a ripple effect, generating losses for suppliers and customers up and down the supply chain. Many companies relied on the plant for certain plastics products and were suddenly faced with the higher costs of sourcing the products in the open market.

Supply chain disruption also played a part in the fire at the SK Hynix semiconductor factory in Wuxi, China, in September 2013, which was reported to have cost insurers around \$1bn (see page 7), not including potentially higher CBI losses. The cost of the claim reflected the time and expense of restoring specialist “clean rooms” used in the production of semi-conductors, as well as CBI losses suffered by the plant’s US customers.

150

Number of claims notifications for AGCS from the Tohoku earthquake. The vast majority were from companies located outside of Japan.

Causes of non-damage BI

BI claims are also likely to increase further in future with the growing relevance of non-damage BI.

The risk of widespread non-damage BI was clearly demonstrated by the Eyjafjallajökull volcanic eruption and ash cloud in 2010, which closed airspace across swathes of Northern Europe. However, there are many such scenarios that could give rise to large business interruption.

“Perils such as a cyber-attack, strikes and industrial action, infectious disease outbreaks, power outages, and even solar storms, could potentially cause large losses for companies without damage to property,” Hufenreuter explains.

Non-damage BI is an emerging risk and there is growing demand for insurance cover from AGCS clients, according to both Hufenreuter and Hogendoorn.

“I expect to see an increase in non-damage BI claims in the future as insurers look to meet the increasing demands of businesses,” says Hogendoorn.

Awareness of the potential for cyber- and technology-related BI claims, in particular, has been increasing and is likely to become a feature of insurance claims in the not-too-distant future.

Despite a limited claims experience, insurers are now beginning to offer such coverage, according to Hogendoorn and Hufenreuter.

“We are already seeing the increasing influence and impact of the **“Internet of Things”** and increasing levels of automation in supply chains,” says Hogendoorn.

“Technology can bring many benefits but it also brings security concerns and the risk of yet greater interdependency and a reliance on technology.”



Photo: Shutterstock

CLAIMS BEST PRACTICE: “Hesitation can have implications down the line...”

In contrast to the majority of property damage claims, business interruption (BI) claims are complex and difficult to quantify. With indemnity periods of at least 12 months, large BI losses can sometimes take around one and a half years to settle, according to **Raymond Hogendoorn, Property and Engineering Claims Specialist, AGCS**.

“Settling BI claims is not an exact science. They take time and expertise to settle, and consideration needs to be given to the commercial relationships that exist between clients and their suppliers and customers.”

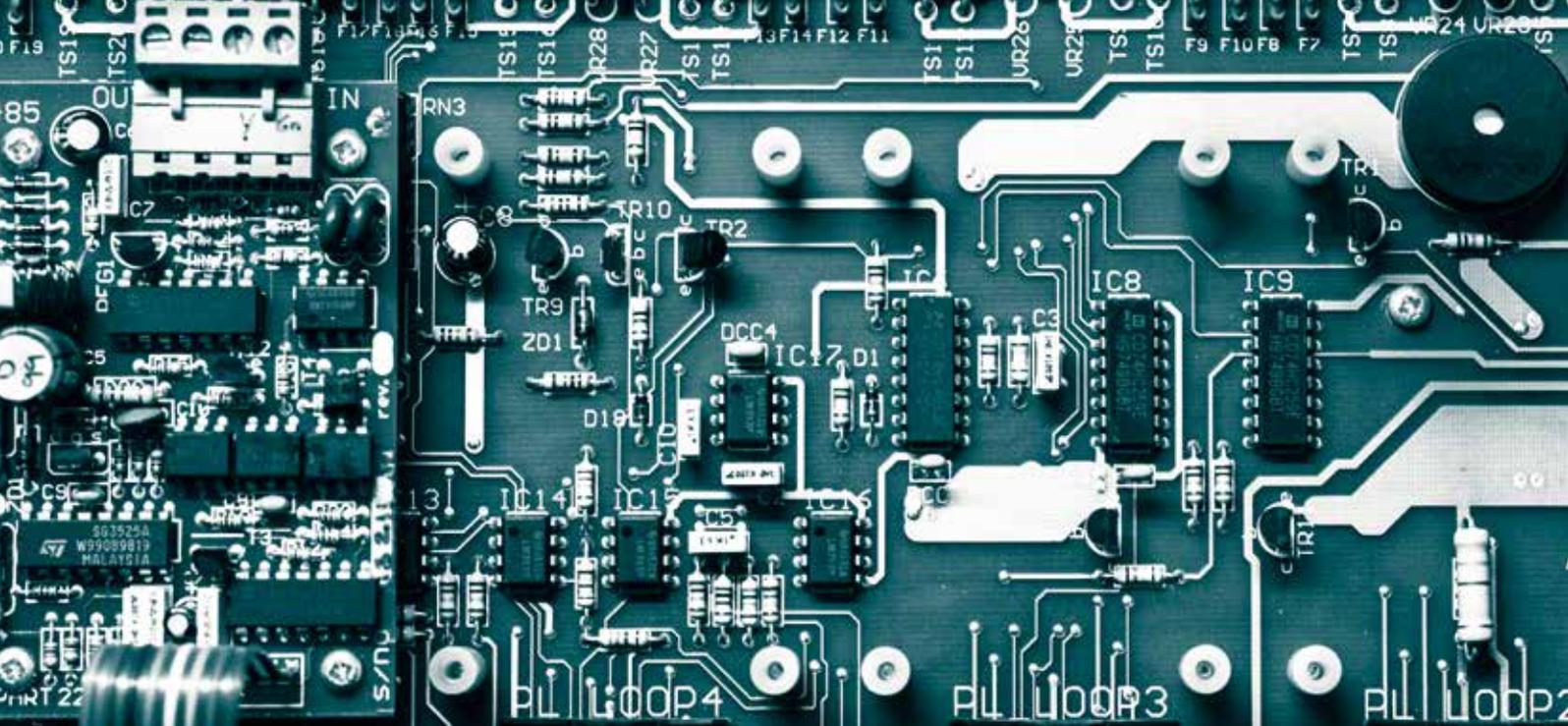
Making the right decisions at the right time is critical with BI claims. Policyholders will face tough decisions after an event that can greatly affect the cost and recovery time of any disruption to business.

“Hesitation on the part of a client can have implications down the line. They need to know what mitigation measure to take, and what their insurers will pay for. So for large complex claims we have a rapid deployment team, and will sit with the client and help them make informed and quick decisions,” says Hogendoorn.

Joachim Hufenreuter, Property Claims Specialist, AGCS advises companies to plan ahead and establish an emergency taskforce to manage key BI loss scenarios.

“If you develop an emergency plan pre-loss, and know who to involve in a task force, it can save time and cost when it comes to a major incident, like a fire or a flood, for example,” he adds. “It has been shown that companies that are able to actively manage a BI event significantly reduce the time it takes to restore operations.”

Awareness of the potential for cyber- and technology-related BI claims is increasing



Cyber incidents have become part of the daily news.

Photo: Shutterstock

Future trends

The effects of interconnectivity and interdependencies are of growing concern, and play an important role in many risks now appearing on the horizon, such as climate change, cyber, pandemics and power outages.

- ➔ BI and CBI significant drivers behind the increasing severity of very large property losses. More losses are 100% BI and CBI
- ➔ BI exposures greatest for sectors with concentrations of risk in single locations – automotive, semi-conductors, power and petrochemical plants
- ➔ Merger of physical and digital worlds raises potential security risks and will further increase complexity
- ➔ More awareness of risks linked to increasing interconnectivity and interdependency, and how they can be managed, is needed

Interconnectivity of risk is growing day-by-day, as technology, globalization and social change create a complex web of relationships and interdependencies.

This trend can be seen in longer, more complex supply chains, the global impact of major natural catastrophes and financial crises, as well as in cyber space, with the rise of social networking and the **“Internet of Things”**.

Today, individual companies and whole industries are now interconnected, reliant on their suppliers for key components or ingredients, services and utilities. For example, this year saw some 34 million airbag units recalled in the US due to a fault associated with just one supplier.

Integration and connectivity have many benefits such as driving innovation, efficiencies and better service. But they also come with risks, particularly if interconnectivity continues unabated, without consideration for the risk-related consequences.

“There needs to be more awareness and understanding of the risks linked to increased levels of interconnectivity and interdependency, and more consideration given as to how we manage them,” **explains Michael Bruch, Emerging Risks Specialist, AGCS.**

More 100% BI losses

Over the past five to 10 years, insurers have witnessed the effect of interconnectivity on claims, with increased business interruption (BI) and contingent business interruption (CBI) losses.

BI now typically accounts for a much higher proportion of the overall claim than was the case 10 years ago. It is estimated that a significant percentage of large commercial losses associated with the 2011 Tohoku earthquake and tsunami in Japan and floods in Thailand, were for business interruption for example, according to **Volker Muench, Property Underwriting Specialist AGCS**.

“The severity and frequency of BI claims appears to be increasing,” says Muench.

“BI and CBI are significant drivers behind the increasing severity of very large property losses. We increasingly see losses that are dominated by BI or CBI, and with the growth of cyber and other potential ‘non damage BI’ causes of claims, 100% BI property claims are possible,” he adds.

In addition, as complexity increases, so does the potential exposure for these types of non-damage BI losses – a risk for which the insurance industry has recently developed a variety of bespoke solutions.

Power blackouts for weeks

While not an identifiable emerging risk in itself, the effects of interconnectivity are of growing concern, and play an important role in many risks now appearing on the horizon. For example, interconnectivity is a key component of cyber risk, major power blackouts, climate change, solar storms and pandemics, to name just a few perils.

Interconnectivity is also driven by a growing reliance on technology and increasingly integrated infrastructure. For example, in 2014 a steel mill in Germany was damaged in a cyber-attack.

Power infrastructure, for example, was once localized and isolated, but today, energy supply and distribution are far more integrated and span entire continents. As a result of increased interconnectivity, a solar storm or a cyber-attack on a power grid could result in country-wide blackouts lasting days, or potentially weeks, with a multitude of knock-on effects, explains Bruch.

Asia accumulations pose challenges

Whereas a large fire or explosion may once have only impacted one or two companies, today, property losses increasingly impact multiples of companies. This was clearly seen in 2013, when a fire at the Chinese SK Hynix semiconductor plant stopped delivery to many electronic equipment manufacturers in North America. Also, large natural catastrophes cause significant interruptions as well. This has been evidenced in the 2011 Japanese earthquake and Thai floods, where hundreds of AGCS clients filed claims, the majority of which were located far away in the US and Europe.

The growing incidence of large losses in Asia are of particular concern, as manufacturing and outsourced services have migrated to China, India and other high growth markets in South East Asia, where assets are exposed.

A recent study by AGCS marking the 10th anniversary of Hurricane Katrina: **“Hurricane Katrina 10: Catastrophe Management And Global Windstorm Peril Review”** predicted that natural catastrophe losses across Asia are expected to rise exponentially in future. Eight of the 10 most exposed locations for storm surge and wind damage are expected to be in Asia within the next 50 years.

The recent explosion at the port city of Tianjin in China is another case in point. The loss has been predicted by many commentators to become the largest man-made loss suffered by Asia.

Establishing accumulations of BI risk are difficult because accurate information on suppliers, such as location and values, are often not available, or easily accessible, explains Muench.

“With the complexity of production and supply chains, huge amounts of data are required to analyze the risk, and even then there are high degrees of uncertainty over potential losses,” he says.

“As an industry we need to pick up on claims trends and become more meaningful. At present, insurers are suppliers of short-term liquidity to companies, but we need to find new solutions and meet clients’ BI needs,” Muench continues.

The industries most exposed

BI exposures are greatest for sectors with high levels of interconnectivity, values, complexity and concentrations of risk in single locations and technical processes, such as automotive, semi-conductors, pharmaceutical, power and petrochemical plants.

Supply chains and interdependencies are now so complex they are almost impossible to manage – a major car manufacturer may have to manage some 50,000 to 70,000 different suppliers. Yet a major loss at a critical supplier's plant could potentially generate losses as high as \$1bn to \$2bn in the automotive sector alone.

Pharmaceutical claims can also involve high values, and are very complex – for example a fire at a research and development facility could set back the release of a product, although calculating lost profits is challenging given uncertainties in the product approval process.

EMERGING BI RISK IN FOCUS:

Increasing reliance on technology

One of the most challenging aspects of interconnectivity is technology, and the increasing trend to connect systems and devices via networks.

"The 'Internet of Things' is likely to be revolutionary, bringing the physical world together with the digital world," predicts **Michael Bruch, Emerging Risks Specialist at AGCS**.

The integration of digital and physical technology (already seen in driverless cars, drones, smart cities and factories, 3D printing etc.) brings many potential benefits, such as increased efficiency, greener technology, reduced maintenance, increased service levels and a lower risk of human error.

For example, 3D printing can make customized products more efficiently, explains Bruch. This could reduce dependencies on key suppliers as well as potentially reduce business interruption times – bespoke replacement parts could be made quickly onsite, he says.

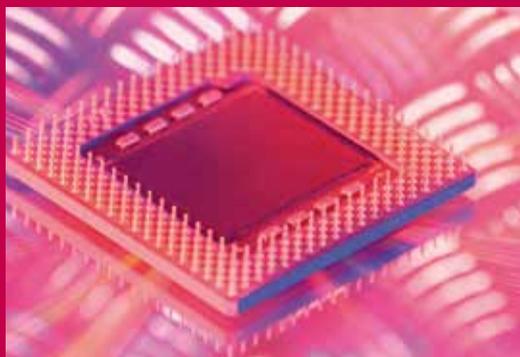
However, the "Internet of Things" also brings potential risks.

"The merger of the physical and digital worlds – of manufacturing with IT hardware and software – raises potential security risks, and could further increase complexity and intensify the reliance on technology," says Bruch.

New technologies are also being introduced more frequently and faster. "What once took decades now happens in just years," says Bruch, who notes that smart phones and tablet computers have become universal in a matter of years, while the telephone took almost 100 years to reach saturation point.

As a result, insurers are increasingly taking on more complex risks, such as prototype or entrepreneurial risks.

For example, insurers have helped absorb some of the risks of evolving green technologies, such as wind turbines. Business has looked to insurers to help with the uncertainties inherent in operating in new territories, including natural catastrophe and political risks in high growth markets.



Integration of digital and physical technology poses risks as well as benefits.

Photo: istock

Taking steps to reduce supply chain risk

However, since the severe supply chain disruption in the aftermath of the Tohoku earthquake and Thai floods in 2011, companies with complex supply chains have taken steps to reduce supply chain risks.

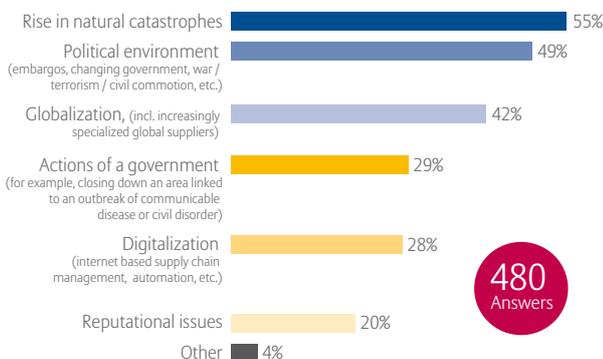
Over the past five years, some large companies have shifted from a predominantly procurement-driven view of supply chain risk to one that brings together management disciplines to overcome the risks. Companies are also using a much broader array of “early indicators” to pick up on potential problems with suppliers. For example, companies monitor not just the financial rating of a supplier, but look at inconsistencies in product quality as an early warning signal for financial problems. Another example is that companies monitor competitors of their suppliers to see development or problems within the industry environment of their suppliers.

However, as the world becomes more interconnected, there is a strong argument that the potential risks need to be met with more coordinated risk management, explains Muench.

“While we can learn from past experience and large losses, there needs to be pro-active steering of risk management policy. This is as much a political task as a business task,” says Muench.

“Without more proactive and joined-up risk management, the BI and CBI loss components will continue to increase for large impact losses,” he predicts.

What will be the top trends increasing the threat of BI in future?



Source: Allianz Risk Barometer 2015, which surveys over 500 risk managers and experts. Figures represent a percentage of all eligible responses. More than one answer selected.

1 Source: The Guardian, July 8, 2015
2 Source: Digital Trends, July 8, 2015

EMERGING BI RISK IN FOCUS: The cyber threat

Cyber incidents have almost become part of the daily news over the past 12 months. However, many cyber-attacks are not communicated for reputational reasons meaning this risk is still underestimated. Business interruption exposures are becoming ever more significant, with a number of recent incidents impacting sectors such as **telecoms, manufacturing, transport, media and logistics**.

For example, hackers took French broadcaster TV5 off air in April 2015, affecting 11 TV stations, social media, websites and email. In June 2015, hackers grounded 10 planes belonging to a Polish airline (LOT) after a denial-of-access attack blocked the sending of flight plans.

Of course business interruption can also be caused by technical failure or human error as well, as demonstrated by two high-profile recent examples.

Stocks worth \$28trn in total were suspended for three and a half hours during July 2015¹ on the New York Stock Exchange, with authorities reporting that the glitch was not due to cyber terrorism or criminal activity.

During the same month 4,900² United Airlines flights were impacted due to a “network connectivity” issue.

The impact of cyber business interruption, triggered by technical failure, is something which is frequently underestimated by businesses relative to cyber-attacks.

Any interruption of the process chain – even for a minute – can cause a severe business interruption, impacting the balance sheet of a company.

Increasing digitalization is one of the top trends businesses believe will impact the BI landscape in future

3D printing could reduce business interruption and supply chain risk, making it easier to produce replacement parts that might take weeks or months to deliver

Case study:

Business interruption at UCB's Farchim facility



The explosion occurred at an electricity connection inside the building

Photo: UCB



When an explosion inside the UCB plant in Switzerland completely destroyed a building and interrupted its manufacturing process, the global biopharma manufacturer was left facing a significant loss in income. UCB Risk Manager, Eric Fumière, discusses his experience in getting business moving again.

What is manufactured at the UCB Farchim facility?

Eric Fumière: UCB's new state-of-the-art facility at Farchim, Switzerland, manufactures the active pharma ingredient (API) for a globally marketed arthritis medicine. It is a reserve facility for a third-party provider and employs about 350 people.

What happened to cause the loss?

Eric Fumière: The explosion occurred at an electricity connection inside the building. The entire basement was destroyed. Fortunately, there was no loss of life or injuries to employees in the vicinity. However, there was significant physical damage. As to why the accident occurred, we are not certain. It is still under investigation.

How did UCB work with Allianz to resolve the loss?

Eric Fumière: This was the largest, most costly accident ever for UCB. This product represents €50m in monthly sales. From the first time we were allowed into the accident site, AGCS claims managers and Allianz Belgium representatives were there with us. They prearranged for clean-up and testing specialists to check and recalibrate the equipment. Their fast response saved us downtime had we been forced to contract with a crew separately.

How did the insurance claims settlement process work?

Eric Fumière: Allianz was flexible throughout. Knowing that electricity network experts are limited in Switzerland, they quickly contracted with and retained local parties who Swiss courts later would be comfortable working with: a brilliant strategy and a huge advantage for us. In the final analysis, we suffered severe property damage and we needed a fair and supportive partner.

We were pleased with the settlement process and how Allianz took control in the critical first hours while making strategic decisions for well down the road, which only now are beginning to come into play at litigation. Although they were with us from the beginning, Allianz Belgium leveraged its property and casualty colleagues to step in, giving us tremendous peace of mind. I'm happy to say we continue as long-term partners today.

From a risk management and loss prevention perspective, what lessons have been learned from this accident?

Eric Fumière: We learned many lessons. For example, that the electricity network should be located *outside* of the building. It seems elementary but the fact that ours was located inside means the initial explosion caused heavy damage even before the fire. Had it occurred offsite, while it would have inconvenienced short-term production, it wouldn't have been disastrous. Another lesson learned was that the room where the electricity network was located should open to the *outside*. The only door in our room opened to the *inside* and debris blasted into the remainder of the building rather than towards the outside. Had an external door been available only the room would have been damaged.

We now have an external electricity network, situated well away from the building, as well as a secondary source of electricity in case we need to power one down for any reason.

The AGCS view

Raymond Hogendoorn, Property and Engineering Claims Specialist, AGCS, says: "Cooperation between market management, underwriting and claims was the most important factor to effectively settling the UCB Farchim claim. The process was very successful thanks to the full transparency of both parties. We also were able to build a level of trust with their local people and Eric very quickly, as our claims team, led by Erik de Saegher of our Belgium office, visited them right after the incident.

"With crisis management claims like this one, decisiveness is key," he adds. "Decision-makers must come together and start talking as soon as possible after the event because fast claims settlement is all about good communication and relationship-building."

He also stresses that for smoothest operations, claims work should start long before an event occurs. "It's about preparing businesses for the worst," he says. "Identifying potential weaknesses up front and putting procedures in place to protect them. And then regularly reviewing and revising the procedures if necessary. Preparedness is crucial to mitigating increasing losses so the business can get back up and running as quickly as possible."

Overview: UCB

UCB is a multinational biopharmaceutical company headquartered in Brussels, Belgium.

The company focuses primarily on research and development activities specifically involving medications centered around epilepsy, Parkinson's, Crohn's diseases and rheumatoid arthritis. Its efforts are focused on treatments for severe diseases treated by specialists, particularly in the fields of central nervous system (CNS) disorders (including epilepsy), inflammatory disorders (including allergy) and oncology. UCB has facilities in over 40 countries worldwide.

Conclusion:

Managing business interruption and supply chain risk

Pre-loss and post-loss risk mitigation can be effective in reducing the overall financial loss from business interruption.

Business interruption (BI) and supply chain risk has been ranked as the top peril facing global businesses for the past three years in succession, according to the **Allianz Risk Barometer**, which surveys over 500 risk managers and corporate insurance experts from more than 40 countries.

This is not surprising given trends such as growing urbanization and interconnectivity are increasing the potential for higher financial losses resulting from BI.

And while modern supply chains may be flexible and cost-efficient, they are also more vulnerable to disruptions.

While insurance (*see box on page 37*) can provide protection from some of the losses caused by business disruption, dependence on it alone is not enough. Coverage for financial losses does not take account of a loss of market share or a decline in share price. The impact of such blows can be even more devastating to a business than the direct financial losses stemming from an incident. Although AGCS has observed many global businesses are rapidly maturing in terms of BI and supply chain risk awareness and management, there is still room for further improvement.

Pre-loss claims meetings

Pre-loss claims meetings between insurers and businesses are increasingly important. They enable both parties to establish a claims protocol – a clear procedure of what to expect, what to do and how to communicate in the event of an incident.

Business continuity: lessons learned?

For example, although lessons have been learned in the wake of major loss events such as the Japanese earthquake and the Thailand floods four years ago about the need to diversify production and purchasing to different companies and locations, manufacturers can still be caught out by the closure of critical suppliers.

Business continuity management remains a gap in many multinational companies' supply chain risk management programs.

Interdependencies between suppliers can be a big unknown and many businesses still do not have alternate suppliers. Businesses need to spend more time examining their potential contingent business interruption (CBI) and supply chain risk exposure. Business continuity planning should be an integral part of any company's procurement and selection process.

Analysis of production processes

There is an increasing need for businesses to analyze their production processes accordingly.

Collaboration between different areas of the company – such as purchasing, logistics, product development and finance – is necessary in order to develop robust processes which identify break points in the supply chain. Supply chain performance management analysis can enable early warning systems to be created.

A detailed risk assessment of their supply chain risks can help businesses identify and plan an effective response that is integrated in their overall business continuity plan.

Business interruption insurance protection

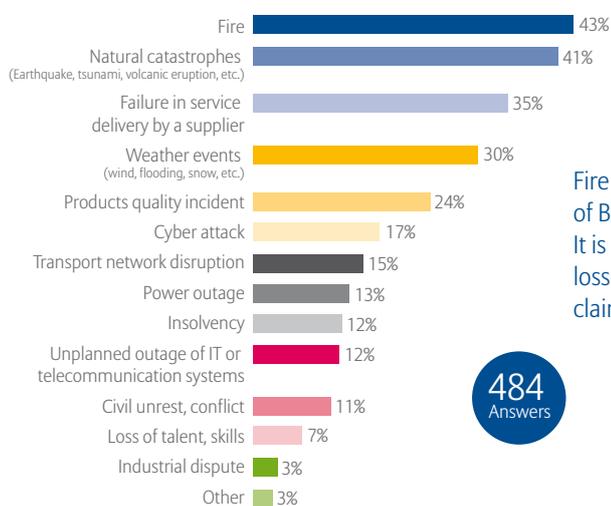
Business interruption insurance protection comes in many forms:

Standard Business Interruption: covers the loss of income that a business suffers after a physical damage at the same facility.

Interdependency: covers the loss of income when a direct physical loss at one of the insured's facilities disrupts operations at another facility.

Contingent Business Interruption: covers the loss of income of an insured when a supplier or a customer suffers a physical loss resulting in disruption of the insured's own business.

What major causes of BI do companies fear most?



Fire is the number one cause of BI companies fear most. It is also the top cause of BI losses, according to insurance claims analysis

Source: Allianz Risk Barometer 2015, which surveys over 500 risk managers and experts. Figures represent a percentage of all eligible responses. More than one answer selected.

Non-damage BI events

Many of the major causes of BI identified in the **Allianz Risk Barometer** as being of concern to businesses relate to the rising impact of non-physical damage events such as the impact of a **product quality incident (24%)**, a **cyber-attack (17%)**, **civil unrest (11%)**, **loss of talent 7%** and particularly **the impact of failure in service delivery by a supplier (35%, ranked 3rd)**, reflecting the added complexity of BI risks.

Non-damage BI is becoming a much bigger issue, as companies look to protect against an increasing range of exposures, such as strikes, a government authority closing down an area linked to an outbreak of disease, or civil commotion and/or riots.

AGCS has an insurance policy that extends BI and CBI coverage to core non-damage scenarios including utility service interruptions, labor strikes, insolvency of suppliers and transport operators or actions taken by civil and military authority – such as closing air space because of a volcanic ash cloud or cordoning off areas.

More and more BI claims resulting from such events are expected to result in sizable financial losses.

Business continuity management remains a gap in many multinational companies' supply chain risk management programs

Impact of BI on the claims function

Higher value, more complex and interconnected claims will require claims handlers to acquire new skills and knowledge, and make better use of technology and analytical tools in the future.

Insurers need to learn lessons from losses and give feedback to businesses in order to inform loss prevention measures.

Businesses want feedback and the ability to benchmark their own claims experience. Data and analytics are becoming increasingly more important and can help insurers and businesses to get to the root cause of losses.

Insurers will also need to co-operate more, both internally and externally. Departments within insurers need to work closer, while claims, risk consulting and underwriting need to engage with businesses from an early stage to help get a better understanding of the risk.

Claims managers will also need new skills and expertise to combat the growing complexity of claims.

The development of more complex BI and CBI incidents means insurers will need to add more expertise to these types of claims.

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