If it is going to take longer than expected

Insurance protection against the financial consequences of delays in construction is available. PAGE 4

Performance guarantees
New cover for LED modules

Natural hazards
Hurricanes defy prediction

Column
Drought – An underestimated risk
Dear Reader,

Major infrastructure projects like bridges, airports and power plants are increasingly being financed privately. This is not without risk for those involved. Insurers are therefore offering principals, banks and investors covers with which they can protect themselves against financial failures resulting from delays in construction.

Yet the risk profile for these “delay in start-up” or “advance loss of profit” covers have in recent years undergone lasting change. This is attributable in part to the extremely rapid pace of technological progress, the climate changes that are becoming apparent and the observation that more and more ambitious construction projects are being realised in hitherto undeveloped areas and regions. This means that insurers need not just technical know-how, but also comprehensive knowledge of the specific building site’s natural-hazard exposure and of the financial background in order to determine the risk-commensurate price and underwrite the risk successfully.

In 2012, our colleagues in Corporate Insurance Partner (CIP) Engineering worked together with international primary insurers and reinsurers, brokers and loss adjusters to bring basic understanding of the nature and function of insurance protection for delays in construction up to the latest level. One of the most important factors here is that insurers, brokers, clients and loss assessors truly communicate with one another and meet each other with trust and openness. Only then can an insurance solution fulfil what is expected of it: to be there when it is needed.

Munich, April 2013

Yours sincerely,

Dr. Torsten Jeworrek
Member of the Munich Re Board of Management and Chairman of the Reinsurance Committee

NOT IF, BUT HOW
Standstill

The timely completion of construction can be endangered by a wide variety of risks, yet a delay in completion or the start of operations may mean substantial loss of revenue for principals and investors. “Delay in start-up” insurance is therefore an important part of risk management.

News
New performance warranty cover for LED

ENGINEERING
Transparency regarding building progress
Understanding how DSU covers work

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Years of drought looming
Peter Höppe warns of a highly threatening natural hazard

Imprint and preview
**SPACE**

**Ambitious plans**

The applications of modern satellites are becoming increasingly complex and sophisticated, the projects ever more technically and commercially demanding. With our tailor-made insurance solutions, Munich Re helps to promote an entrepreneurial and innovative approach in the ambitious aerospace industry.

As one of the pioneers of space insurance, Munich Re has been the industry’s first choice for over 30 years. Its Space Department offers the ideal combination of experienced technical and insurance experts: lawyers, telecommunications and satellite technology engineers, launcher specialists and underwriters make up a closely-knit team that is just as committed to tackling new issues and challenges as the satellite operators and their brokers.

> For further information, visit [www.munichre.com/en/touchspace](http://www.munichre.com/en/touchspace)

**GREEN TECH SOLUTIONS**

**Sometimes there’s wind – and sometimes there isn’t**

Experience in recent years has shown time and again that the strength and duration of wind in individual regions and in individual years or months can sometimes fall far short of expectations. The concomitant decrease in power generation results in reduced turnover, even though operating costs, financing and return targets still have to be met.

To ensure that on- and offshore wind power projects do not slide into financial distress in such low-wind years, Munich Re offers covers against turnover losses resulting from a lack of wind. Operators and investors receive steady revenue from the wind farm and are able to concentrate on growing their business without worrying too much about volatile meteorological data – even in years when the wind is not blowing strongly.

> For further information, visit [www.munichre.com/gts](http://www.munichre.com/gts)

**MALAYSIA**

**New Watkins office**

New Year’s Day 2013 saw the commencement of underwriting at the new Watkins Syndicate office in Malaysia, Watkins Syndicate Labuan Limited. This newly incorporated service company, wholly owned by Munich Re holdings (UK) Limited, was set up in late 2012 to facilitate the placement of business within the region and currently has premises in both Labuan and Kuala Lumpur.

WSLAB will build on the Syndicate’s existing business relationships in Malaysia, particularly within the oil and gas sector, where Watkins has already established a strong presence. As a local reinsurer, the company will also be well placed to identify new business in different classes and provide an integrated product to clients, both in Malaysia and worldwide.

> For further information, visit [www.watkins-syndicate.co.uk](http://www.watkins-syndicate.co.uk)

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**Annual global average temperature anomalies 1950–2012 with respect to a 1961–1990 base period**

The ten warmest years in the climate record period 1850-2012 were all after 1998. The chart here relates to the period from 1950–2012.

*Source: HadCRUT4, Met Office/Climate Research Unit of the University of East Anglia (2013). 2012 is based on HadCRUT4, the update to HadCRUT3*
LED modules use little power and have a long service life.

**LED MODULES**

**First performance guarantee for LED modules**

Munich Re has introduced ground-breaking insurance coverage in collaboration with the US LED module manufacturer Xicato. This company guarantees the luminous intensity and colour consistency of its LED modules for a period of five years. Under the agreement between the two companies, Munich Re will now assume a portion of the financial risk the guarantee entails.

Despite higher initial costs, LED lights, which have a semiconductor light source, are much less expensive than other light sources because of their longer service life and significantly lower power consumption. Industry studies are forecasting a manifold increase in sales of LED lights in the coming years, as they have highly promising market potential in, for example, the field of street lighting. In addition, many countries around the world have adopted regulations promoting LED lighting due to its ecological and economic advantages over conventional lighting.

Up to now, guarantees on LED modules have essentially covered sudden failure and defects in workmanship for a period of one year. The Xicato warranty backed by Munich Re addresses the market’s need for a five-year guarantee of light source quality regarding luminous intensity and colour consistency.

This innovative solution is the first of its kind in the energy efficiency field and complements Munich Re’s range of performance guarantee covers, which thus far have applied to renewable energy and green technologies.

Thomas Blunck, member of Munich Re’s Board of Management, said, “We are delighted to have concluded the first contract of this kind for LED module technology with Xicato. It puts us ahead of the field again, following the performance guarantee covers for photovoltaic manufacturers we brought to the market in 2009 and our continuous expansion of the product range with comparable covers for other technologies in the renewable energies area. In every case, we relieve manufacturers or investors of part of the risk, thereby facilitating the use of new technologies.”
Construction delays are expensive, but insurable

“Delay in start-up” insurance is an important part of risk management in large-scale, privately financed construction projects. A new market initiative offers a basis for improving cover and client satisfaction.

Christoph Hoch

Building and infrastructure projects like bridges, roads, airports and power plants are challenging technically, organisationally, politically and financially. A wide variety of risks can endanger the scheduled completion of construction, and any delay in completion or the start of operations may entail considerable loss of profit for principals and investors. The worldwide trend toward financing such major projects on a private basis is in part attributable to the financial straits in which public budgets find themselves. This has in recent years given rise to alternative forms of financing such as public-private partnerships (PPPs) that have also received the support of institutional investors, which have meanwhile assumed an important role in project financing.

As a result, the risk situation for parties involved in major construction projects has changed substantially. In response to the altered risk profile, risk-management requirements and not least to pressure from rating agencies, banks and other investors are now taking care to protect their loans as comprehensively as possible.

Rising demand

As a rule, banks insist that delay in start-up (DSU) insurance be acquired to secure future debt servicing after business operations have commenced. According to the International Association of Engineering Insurers (IMIA), the number of insurance policies involving DSU cover more than doubled in the period from 2000 to 2008. The sums insured under these DSU covers also rose extremely rapidly. These sums

Natural hazards, human error and manufacturing flaws are the most frequent causes of construction-delay losses in assembly projects.
insured reflect the high return expectations and short payback periods of the construction projects which are to be protected.

The insurance industry has adjusted to the rising demand and is in a position to make large amounts of capacity available even for peak risks. While ten years ago, large DSU capacities were offered only by specialist insurers primarily in the London market, recent years have seen the number of companies offering capacity increase rapidly. Extensive capacities are now available even in regional markets.

**Demanding product expectations meet with a lack of risk transparency**

Since major construction projects are complex, a lack of transparency can become a problem. If a loss occurs, a variety of factors, including inadequate risk information, a lack of knowledge regarding the make-up of the DSU sum insured and the insurer’s scheduling of the exposure, may coincide with insureds’ mistaken expectations regarding the intent of the cover to yield unpleasant surprises. These uncertainties entail disadvantages for all the parties involved in the project.

**Adequate information optimises insurance protection**

If the necessary information is made available, everyone benefits; if the underlying data are jointly discussed, understood and agreed, insurers are then in a position to assess and underwrite the risks professionally and appropriately. It is generally the case that as the level of decision-making certainty increases, transferring risk becomes more cost-effective and (re)insurers tend to have more risk appetite. After all, this also enhances the continual availability of insurance solutions, particularly in the case of adverse loss development.

If one were to place insurers’ risk and loss models on a spectrum (see diagram) extending from the “realm of risk” at one end to the “realm of uncertainty” at the other.
How does insurance for delays in the start of operations work?

In the industrial insurance market, this type of cover is known as delay in start-up (DSU) or advance loss of profit (ALoP) insurance. It is purchased in combination with the corresponding property insurance (construction or erection all-risks insurance).

A DSU cover is triggered if the insured project sustains insured physical damage during the insurance period, and the resulting disruption of the project schedule delays the originally planned beginning of the principal’s business operations.

As in a traditional business interruption cover, the insurance benefit is limited to specific items and sums which were specified beforehand and include, for example, fixed costs, interest payments and the net profit lost. Also indemnifiable are additional expenses incurred to avert or minimise loss (increased cost of working, ICOW), for example, for purchasing semi-finished products or leasing additional construction machinery. By contrast, a DSU policy provides no cover against delays resulting from events involving no physical damage or against cost types which were not specified when the policy was concluded or which are explicitly excluded under the policy.

While the insurance industry offers a number of different cover variants, all DSU policies have certain features in common. For example, the amount indemnifiable is invariably subject to the actual loss sustained, which must be substantiated by the insured. Further, coverage is determined by the agreed sum insured and by a maximum indemnity period, both of which should be commensurate with the construction project’s exposure.

Actuarial modelling by insurers is rendered more difficult by the great differences between projects and the continuously changing framework conditions. Depending on what country, what type of project and what project specifics are involved, insurers may be exposed to numerous risk elements which are still considered to be “unmodelled exposure”.

In the international construction industry, the term engineering, procurement and construction (EPC) refers to a general contractor or construction manager contract (design/build contracts or those similar to contracts for work and services).
Losses cast shadows

DSU losses differ considerably in scope from the material losses that can occur in large-scale projects. An average of 6.5% of all DSU policies sustain a loss. Project policies involving DSU cover have often been underestimated due to the relatively low frequency of DSU losses thus far, but their frequency is on the rise.

Apart from natural hazards, the main factor triggering project-related claims in recent years has been construction delays requiring DSU indemnities. In 2009, the International Association of Engineering Insurers (IMIA) published a long-term study which yielded the following results:

- The number of DSU covers doubled in the period from 2000 to 2008. The sums insured under these covers also rose substantially.
- Half of all DSU covers were concluded for the erection of power plants and for building construction projects.
- The main causes of loss in construction projects are natural hazards (40%), while in erection projects, human error (19%) and manufacturers’ faults (17%) lead the list of causes.
- While in the year 2000 the average DSU/ALoP claim amounted to €3.4m, by 2008, the average had risen to €6m.

In the last 24 months, large and very large losses in engineering have reached a new dimension, particularly due to DSU. As far as DSU covers are concerned, it has become apparent that the parties involved in contracts often have different ideas regarding both the basic nature and the scope of the insurance cover. This state of affairs should not become the general rule.


An international group of primary insurers, reinsurers, brokers and forensic accountants joined together in early 2012 to form the London Market Working Party, in order to restore greater harmony to all the interest groups’ expectations, requirements and levels of knowledge regarding all the phases of a complex construction project. This project was sponsored by the London Engineering Group and the IMIA. Corporate Insurance Partner (CIP) Engineering played a major role in formulating the results of this London working group.
Transparency promotes better relationships

Alan Purbrick, CEO of Capital Consulting International (CCI), talks about professional progress monitoring, which provides transparency of true project progress at monthly intervals as construction proceeds. It allows comments and decisions to be made in 'real time', including discussions on mitigating any delay and manages expectations of the involved parties.

What kind of information is provided by a pre-policy underwriting report?

CCI carries out an initial "sense check" of the baseline or contract programme. This will highlight any inherent risks that we identify and also the care that has gone into preparing the programme. It will also highlight the key milestones and activities to enable a successful monitoring protocol to be put in place.

Does CCI's work consist of desktop analysis only or are site visits part of the programme?

This depends. The monitoring system is set up to operate as a desktop system to keep monitoring costs within an acceptable limit. The information is transferred electronically every month in native file format, then CCI Timetrax analyses it and we generate reports. However, we do attend site, often at the beginning of a project, to understand the physical limitations of the project and collect the initial data. Furthermore, we also work with insurers' own risk engineers.

What would be CCI’s input to the claims handling process in the case of a DSU loss?

CCI is the world leader in terms of DSU claims evaluation. The biggest problem we face in carrying out the claims analysis is currently the lack of information. By utilising the Time-trax monitoring systems we will already have the information in place in order for us to carry out a full evaluation of any claim.

What are the major challenges in progress monitoring?

Simple - getting the accurate information in native programme files. The earlier the protocol is set up for getting the information in the correct format, the easier it is to get. At the start of most projects all parties are working together in a spirit of cooperation. This is the time to make sure that the insured agrees to providing the programming information. In most cases the information is generated by the contractor, so it is important to have already convinced the insured to make sure his contractor will provide the programmes in native file format. We advocate putting clauses within the insurance policy specifically setting out the information required and what format it should be in.

Another objective of the working group was to achieve transparency regarding the make-up of DSU sums insured, which are based on the principal's investment and/or financing model. Using a tool-based application, it is now possible to model the loss of profits to be expected in a given project by distributing the total sum insured among the various revenue and cost types. Determining the proper sums insured allows insureds to procure insurance protection commensurate with their projects’ revenue-generating capability. In turn, the new level of transparency affords insurers greater modelling certainty and allows them to offer a product that can be adapted as

A new level of information certainty offers more flexible insurance solutions

To start off with, the team summarised the intent and basic principles of DSU cover in concise, readily understandable language in order to ensure that all the parties involved in insuring large-scale projects share a fundamental understanding of how this cover works. This paper is addressed primarily to risk managers, CFOs and banks.

Capital Consulting International (CCI) is a specialist practice providing claims consultancy consisting of timeline delay analysis, project monitoring, quantum support and litigation support. www.capitalconsultingint.com
needed to suit clients’ requirements. As intermediaries, insurance brokers can offer both parties to such contracts significant added value in every phase of the project.

And after the risk has been written, the greater depth of information also affords the option of adjusting the sums insured over the medium term. In the event of loss, adequate information is also a prerequisite for handling claims more smoothly, more rapidly and more fairly. In other words, the insured receives the appropriate indemnity sooner.

It is necessary that representatives of the insurer accompany and monitor the progress of construction work throughout the project. Processes that are critical for timely completion can be identified promptly during the construction phase in the form of a “critical path”. This information makes it possible to adjust the period of insurance, should it become necessary. Moreover, the contracting parties are in a position to judge at a very early stage how any material damage that occurs may lengthen the construction phase. All in all, the new level of transparency offers great advantages to all the parties involved in the various phases of the project.

Keeping pace with expectations

While the London Market initiative represents an important step forward, DSU insurance remains a challenge for the insurance industry. Certainly, covers for construction delays resulting from material damage will continue to be offered in the future. Yet the extremely rapid pace of technological progress, the emerging climate changes and the increasing construction activity in hitherto undeveloped areas and regions are causing lasting changes in the risk profile for property and particularly for construction-delay covers.

Principals’ and investors’ expectations regarding the realisation and insurance of their large-scale projects are also continuously rising. This means that insurers no longer need just technical know-how, but also comprehensive knowledge of the specific natural-hazard exposure and of the financial background in order to determine a risk-commensurate price and underwrite the risk successfully.

One of the most important factors is that insurers, brokers, clients and loss assessors truly communicate with one another and meet each other with trust and openness. Only then can an insurance solution fulfil what is expected of it: to be there when it is needed.


>> More information on Munich Re’s range of engineering services at www.munichre.com/touch-engineering
Construction projects are simply complex

Markus Heiss, Forensic Accountant with Matson Driscoll & Damico (MDD*), explains why greater transparency from the outset accelerates claims settlement.

Why is a delay in start-up (DSU) policy not an “off the shelf” product?

Large-scale construction projects cannot be standardised as the construction conditions, financing and risks vary too widely. Where DSU cover is concerned, we are finding that the parties involved in construction projects have increasingly divergent expectations. Frequently, there is misunderstanding regarding the policy’s actual scope of cover. In addition, it is often not possible to simply extend an existing cover. Delays in construction projects may have the most widely differing causes and occur at different points in time. The objective is to analyse these mutual dependencies. If a loss occurs, the response of the project’s management is enormously important. Is it necessary to stop the project entirely or can one reduce the damage to the overall project by taking other measures? In this context, clear, concise communication is needed – from everyone involved.

What benefits does progress monitoring afford?

First off, it supports forensic accountants as, in the event of a claim, they are able to calculate the losses more quickly and clearly. This, in turn, helps the insured because the claim will be settled and paid more rapidly. The important thing is for the insured to agree right at the beginning of the project that a third party will continually monitor and follow up on the project’s planning and development. Many insureds are reluctant to make their data available for monitoring, but tend to forget one thing: in the event of a claim, the data will have to be made public anyway.

How can the financing of a construction project be “translated” for the insurance contract?

One good tool is the model just developed by the “London Market Working Party”, which succeeded in making the model as simple and compact as possible. Entering the financing figures in the insurance contract involves relatively little effort.

What data from the insured are particularly important for correctly adjusting a DSU claim?

In order to analyse a DSU claim appropriately, we need, among other things, turnover figures, the profit and loss accounts, the prices for raw materials, contract provisions and market and competition data. Of course, the last of these are more difficult to obtain, but a claim can have a substantial effect on an enterprise’s market shares. If, for example, a product’s delivery time is delayed by six months as a result of damage which occurred in the course of the project, the customer awaiting the delivery may switch to a competitor for this period of time and remain tied to the competitor for the ensuing months. The project would therefore be affected not only by the six-month delay and direct consequences such as contract penalties, but also by the disrupted customer relationship. It is often the case that, although the financing plan is set up when the project begins, it is not followed up as the project progresses. Without appropriate monitoring, however, a DSU policy cannot be adjusted properly. For example, external factors could cause the margin to develop more positively than was assumed. The policy should then be adjusted so that, in the event of a loss, the insured is not underinsured.

*MDD provides first- and third-party economic loss/damage quantification services under insurance cover or litigation support services, including expert witness testimony in courts, arbitrations and mediations throughout the world. www.mdd.com
Hurricanes defy prediction

Scientific assessments had predicted that 2012 would be a year of below-average hurricane activity, but it turned out to be just the opposite. While forecasting hurricanes remains a difficult task, taking protective measures and preparing properly can certainly help to avert or reduce damage.

After making landfall on the New Jersey coast on 29 October 2012, Sandy proved to be one of the most devastating tropical cyclones ever to hit the northeast coast of the United States.
Over the June to November season – the period during which 97% of all hurricanes occur – the National Hurricane Center (NHC) reported nineteen named tropical storms, ten of which reached hurricane strength. The number and intensity of these storms, 40% above the NHC’s recorded 1981–2011 median, exceeded most projections.

A number of smaller losses were observed during the 2012 hurricane season. Storms such as Hurricane Ernesto and Tropical Storm Debby caused significant damage in and around the Gulf of Mexico, while Property Claims Services (PCS) estimates Hurricane Isaac’s impact on southern Florida in late August to have cost the industry US$ 1.2bn, even after taking into account the National Flood Insurance Program (NFIP). By far the most destructive of these storms was Sandy, which made headline news around the world and caused insured losses in excess of US$ 25bn.

Classifying storms

A tropical storm with wind speeds exceeding 118km/h is classified as a hurricane, although storms which fall beneath this standard can still cause significant losses. The NHC categorises hurricanes using the Saffir-Simpson scale, which works on the basis of wind speed and ranges from Category 1 (“will cause some damage”) to Category 5 (“catastrophic damage will occur”), with major hurricanes being classified as Category 3 or above. However, the destructive potential of any given storm depends not only on its intensity, but also on its path. Of the nineteen named storms which formed during the 2012 Atlantic season, only one, Michael, reached major hurricane status. Despite being more powerful than Sandy, Michael’s impact was negligible, as it never made landfall, and the NHC reports no damage caused.

The Saffir-Simpson scale is not without its flaws. As a measure of hurricane severity, it has been said to rely too heavily on maximum wind speed – which may not be an indicator of overall intensity – and ignore aspects such as storm size, which has a great impact on storm surge. In 2006, meteorologists Chris Hebert and Bob Weinzapfel developed the Hurricane Severity Index (HSI) as an alternative. The HSI allocates points based on size and wind force up to a total of 50, a system which its developers claim provides a more accurate picture of a hurricane’s destructive potential. For example, whilst Ike (2008) and Alicia (1983) were both Category 2 hurricanes, the damage caused by Alicia (calculated in 2006 US$) was considerably lower due to its smaller size, and the HSI places them at 28 and 20 respectively. Sandy, for comparison, had a maximum HSI of 22.

The course of a hurricane

The term “hurricane” is specific to the North Atlantic Ocean and certain areas of the Pacific. In other regions, these storms are referred to using different terminology, and categorised according to slightly different scales. However, the circumstances of their formation are common across all tropical ocean regions. As moisture evaporates and rises from warm water, clouds form into clusters of increasing size and density. Atmospheric convection within these clusters gives rise to storm cells, which may combine to form tropical storms. Seen from above, these storms resemble huge rotating wheels of cloud, with water vapour bubbling outward from the centre as warm air rises to the top of the central column and cools again.

Many hurricanes never make landfall, instead dissipating as they move over colder waters. And those that do hit the coast, while losing energy and momentum, often leave substantial amounts of destruction in their wake. As long as they remain over waters of 26°C or higher or in areas where the surrounding winds vary only slightly regardless of altitude, however, they will continue to increase in size and wind speed as they draw moisture from the warm surface of the ocean.

Hurricane Sandy

Higher-than-average sea surface temperatures made the 2012 season particularly conducive to tropical storms. However, there were a number of additional factors which made Sandy particularly unusual.

One factor was a phenomenon known as the Fujiwhara effect. This refers to the interaction of two cyclonic systems in close proximity, causing them to ‘orbit’ each other and perhaps to coalesce into a single storm. As Sandy moved north, it merged with an extratropical weather system from the west and headed straight for the coast of New Jersey, a westerly course relatively unusual at these latitudes. In addition, Sandy’s relatively slow speed and low central pressure produced record storm surges, i.e. unusually high water levels resulting from sustained hurricane winds, which coincided with the spring tide, causing massive amounts of flood damage along the east coast.
The Gulf of Mexico

The Gulf of Mexico is an area of particularly high hurricane risk. Its warm sea temperatures and typical low wind shear during the windstorm season, coupled with its position in relation to certain meteorological phenomena such as the intertropical convergence zone, make it a very hospitable environment for tropical storm systems – a fact which has a huge impact on the local offshore energy industry. With approximately 4,000 fixed installations, 72,000 km of pipelines, and 50,000 oil wells in the area, the potential for industry disruption is huge. In 2005, for example, Hurricane Rita destroyed 69 platforms and damaged 32 more, and caused a commercial insured loss of approximately US$ 3.5bn.

It is essential for insurers to remain at the forefront of their industry, both technologically and in terms of the products they offer, in order to offer the best possible service to their customers. The Watkins Syndicate Energy Department, which is headed by award-winning underwriter Dominick Hoare, boasts one of the industry’s strongest portfolios in Gulf of Mexico windstorm cover and related areas. For more details, please contact James.Grainger@mrunderwriting.com.

The effects of Sandy

While wind is the primary hazard associated with tropical cyclones, part of the destruction caused by Sandy was actually the result of secondary hazards, such as fire and flood. Hurricanes tend to lose wind velocity as they move over land, and in Sandy’s case, damage caused by windblown debris was focused for the most part in coastal areas. Further inland, some properties were damaged by trees that had been uprooted or branches that had been torn off by the storm.

Storm surges, by comparison, caused devastation along a narrow, but long strip of the coast. As well as the obvious building water damage and contents losses, which included extensive ruin to galleries and art storage facilities in the Chelsea district of Manhattan, the area also experienced power outages, loss of data and IT infrastructure, and massive disruption to public transport. Meanwhile, wind and storm surge damage to the neighbourhood of Breezy Point in Queens was exacerbated by a blaze which destroyed over a hundred homes. While the full cost of Sandy has yet to be determined, current industry estimates place total US economic losses at around US$ 50bn.

The financial impact of any given hurricane will depend largely on its location. One reason that the cost of Sandy was so high was that New York represents a very high concentration of insured assets in a relatively small area. In New York’s financial district, for example, not only were many buildings damaged, but their closure represented significant economic losses. Risk Management Solutions (RMS), a market leader in the modelling of catastrophe risks, estimates that between 10 and 15 million square feet of office space was affected by the catastrophe.
Moving forward

We cannot prevent hurricanes from happening. We can, however, prepare for them. Improvements in infrastructure, such as New Orleans’ new flood defences, can help safeguard assets and populations in the long term; meanwhile, increasingly accurate hurricane forecasts allow us time to evacuate high-risk areas. While long-term predictions entail substantial uncertainties, short-term forecasting has in recent years greatly reduced the risk of fatalities. Forecasting could become all the more important in the decades ahead as changes in our climate cause sea levels to rise, increasing in turn the risk of storm surge damage – which, as recent events have shown, can have serious consequences.

Financial safeguards are absolutely crucial. Without business interruption loss cover, for example, many of the smaller companies affected by Sandy would never have recovered. Similarly, without the protection afforded by hurricane insurance, disruption to oil and gas operations in the high-risk Gulf of Mexico would be devastating. In a world where we are still very much at the mercy of nature, it is vital to prepare ourselves for the future.

>> More in-depth information on this topic can be found in the 2012 Munich Re publication “Severe Weather in North America” available to clients on our client portal connect.munichre.com

>> You can find more information on natural hazards at www.munichre.com/natural hazards

The ten costliest hurricanes for the insurance industry

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Region</th>
<th>Total losses*</th>
<th>Insured losses*</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>25–30 Aug. 2005</td>
<td>Hurricane Katrina, storm surge</td>
<td>USA: LA, New Orleans, Slidell; MS, Biloxi, Pascagoula, Waveland, Gulfport</td>
<td>125,000</td>
<td>62,200</td>
<td>1,322</td>
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<tr>
<td>24–31 Oct. 2012</td>
<td>Hurricane Sandy, storm surge</td>
<td>Bahamas, Cuba, Dominican Republic, Haiti, Jamaica, Puerto Rico, USA, Canada</td>
<td>65,000</td>
<td>30,000</td>
<td>210</td>
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<tr>
<td>6–14 Sept. 2008</td>
<td>Hurricane Ike</td>
<td>USA, Cuba, Haiti, Dominican Republic, Turks and Caicos Islands, Bahamas</td>
<td>38,000</td>
<td>18,500</td>
<td>170</td>
</tr>
<tr>
<td>23–27 Oct. 1992</td>
<td>Hurricane Andrew</td>
<td>USA: FL, Homestead; LA; Bahamas</td>
<td>26,500</td>
<td>17,000</td>
<td>62</td>
</tr>
<tr>
<td>7-21 Sept. 2004</td>
<td>Hurricane Ivan</td>
<td>USA, Caribbean, Mexico, Colombia, Venezuela</td>
<td>23,000</td>
<td>13,800</td>
<td>120</td>
</tr>
<tr>
<td>19-24 Oct. 2005</td>
<td>Hurricane Wilma</td>
<td>USA, Bahamas, Cuba, Haiti, Jamaica, Mexico</td>
<td>22,000</td>
<td>12,500</td>
<td>42</td>
</tr>
<tr>
<td>20-24 Sept. 2005</td>
<td>Hurricane Rita, storm surge</td>
<td>USA: FL, Keys; LA, Lake Charles, Holly Beach, Cameron, New Orleans; MS; TX</td>
<td>16,000</td>
<td>12,100</td>
<td>10</td>
</tr>
<tr>
<td>11-14 Aug. 2004</td>
<td>Hurricane Charley</td>
<td>USA, Cuba, Jamaica, Cayman Islands</td>
<td>18,000</td>
<td>8,000</td>
<td>36</td>
</tr>
<tr>
<td>22 Aug.-2 Sept. 2011</td>
<td>Hurricane Irene, storm surge</td>
<td>USA, Canada, Caribbean</td>
<td>8,500</td>
<td>6,000</td>
<td>55</td>
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<tr>
<td>1-9 Sept. 2004</td>
<td>Hurricane Frances</td>
<td>Bahamas, Turks and Caicos Islands, Cayman Islands, USA, Canada</td>
<td>12,000</td>
<td>5,500</td>
<td>50</td>
</tr>
</tbody>
</table>

*US$m, original values

OUR EXPERT

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The year 2012 was marked by a series of catastrophic droughts, Munich Re's NatCatSERVICE registering no fewer than 26 loss-related events in all. The main event (with a 40-year return period) was the major drought in the US Midwest, which caused agricultural losses totalling billions of dollars. Meanwhile, Russia, the Ukraine and Kazakhstan, all of which account for a significant proportion of the world's cereal production, also experienced extremely dry conditions. World cereal prices spiralled following disastrous harvests in the regions concerned. According to an analysis by the KfW banking group, prices rose 17% to unprecedented levels in July alone. Some products, such as corn, were subject to even more dramatic increases, with prices rising by 25%.

Harvests in agricultural export regions like Texas and Russia had already been affected by drought in 2011 and 2010. In 2010, Russia experienced unprecedented heat and drought, prompting the government to impose a temporary export ban to safeguard domestic food supplies. The 2011 famine in Somalia was also triggered by a severe drought.

NatCatSERVICE data show a clear long-term trend towards more droughts. The incidence of droughts has doubled from ten loss-related events worldwide in the 1980s to roughly 20 in recent years.

Droughts differ from natural hazards such as storms and earthquakes. They develop gradually and may last months or even years. They are therefore less “spectacular” and deemed less newsworthy than tornadoes or flash floods, and we often become aware of them only when they have caused a famine or a dramatic hike in food prices on world markets. Thus, keeping accurate records of drought data in natural catastrophe databases is a challenge.

“Droughts will be one of the most catastrophic natural hazards in coming decades.”

Munich Re sponsored research by a geography Masters student into ways of improving our NatCatSERVICE drought records by basing them on more objective data. Clear criteria were established for determining the duration of an event and the losses. All 500 drought events registered in the database since 1980 have been re-assessed, and we now have an even better basis for providing high-quality reports on drought losses and loss trends.

This will be even more crucial in future. In its 2012 report on extreme events (SREX), the Intergovernmental Panel on Climate Change (IPCC) predicted more heatwaves accompanied by droughts in many parts of the world. By mid-century, heatwaves that now have a 20-year return period are likely to occur every two to three years in the US Midwest and central Europe, and as much as every one to two years in Southeast Asia. Thus, droughts will be one of the most catastrophic natural hazards in coming decades, posing a huge threat to world food supplies.

The situation will be further aggravated by the fact that the global population will have grown to some nine to ten billion by mid-century and demand for animal-based foods will increase in countries with rapidly growing wealth, such as China. Agricultural production will have to be stepped up and more land will be needed to meet the growing demand. However, more intensive production will mean the agricultural sector is more susceptible to the increasingly variable weather conditions and similarly to increasing development of farmland in regions ill-suited to agricultural production.

The recent droughts and their implications for food prices are therefore to be seen as precursors of a phenomenon that will be increasingly prevalent in coming decades. Appropriate preventive measures include climate protection, steps to curb population growth, using more resistant types of crop and reducing meat consumption.
Renewable energies

The growing focus on renewable sources of energy, in combination with sustainability targets and government incentives, has prompted increased interest around the globe in investments in onshore, renewable technologies. Whether wind, solar or biomass, these technologies often introduce complex risk exposures which require specialised risk management and insurance solutions.

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