<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Property Market Overview</td>
<td>6</td>
</tr>
<tr>
<td>Liability</td>
<td>10</td>
</tr>
<tr>
<td>Construction</td>
<td>14</td>
</tr>
<tr>
<td>Terrorism and Political Violence</td>
<td>18</td>
</tr>
<tr>
<td>Political Risk</td>
<td>22</td>
</tr>
<tr>
<td>Claims</td>
<td>24</td>
</tr>
<tr>
<td>Renewables</td>
<td>28</td>
</tr>
<tr>
<td>Biomass</td>
<td>34</td>
</tr>
<tr>
<td>Directors &amp; Officers Liability</td>
<td>38</td>
</tr>
<tr>
<td>People Risks</td>
<td>40</td>
</tr>
<tr>
<td>Supply Chain Challenges</td>
<td>44</td>
</tr>
<tr>
<td>Territorial Focus: Asia</td>
<td>48</td>
</tr>
<tr>
<td>Territorial Focus: North America</td>
<td>50</td>
</tr>
<tr>
<td>Territorial Focus: Australia</td>
<td>56</td>
</tr>
<tr>
<td>Hot Topics</td>
<td>62</td>
</tr>
<tr>
<td>View from the Market</td>
<td>66</td>
</tr>
</tbody>
</table>
INTRODUCTION
Welcome to the 2013 Willis Power Market Review.

It is frequently said that the only constant in life is change and that the pace of change is ever increasing. Someone reading the insurance market updates in this review, however, could be forgiven for thinking that little has changed in the power market over the past few years. And in a way they would be right.

The power sector continues to contribute more than its fair share of claims to the insurance market, and machinery breakdown losses continue to be a concern to underwriters, who continue to struggle to make an underwriting profit from their power book. And yet the hard market that many have been predicting for a number of years has stubbornly failed to materialise, reinforcing the old adage that while lack of underwriting profits might be a necessary precondition for a market hardening, it is not in itself sufficient to bring one into being.

Market capacity has held up well across the main Property, Casualty and Construction sectors, and while there has been an upward rating trend this year in some areas, such as in North America, and conditions have generally become tougher for those companies that have passed losses to their insurers or have significant natural catastrophe exposures, there has not been the sudden withdrawal of capacity, hike in rates and restrictions in coverage that characterise the onset of a hard market. This should be seen as very much to the credit of the insurance industry, which has demonstrated resilience in the face of continuing power sector losses and shown that it is there for its clients for the long term.

It is clearly good news that an industry whose purpose is to provide some form of stability to its customers is itself showing stability, especially when change is continuing apace elsewhere. The economics of liberalised power markets continue to evolve, as renewables increase their share of the market, and regulation and volatile fuel prices cause a shift in the relative costs of different types of generation; in Europe, for example, many Combined Cycle Gas Turbine plants that were designed to operate at baseload are now having to ‘two-shift’, which creates potential new risks. Government responses to the threat of climate change have resulted in legislation that has also affected the generation mix, for example the carbon tax introduced in Australia in the middle of 2012. There is a greater focus on supply chain risks, as technological changes allow both buyers and insurers to map and monitor these risks with much greater detail and accuracy – an example of the increasing role of analytics in the insurance industry. The threat and nature of terrorist attacks on key infrastructure are also evolving. These and other issues affecting the power sector and beyond are discussed in this review.

In the following pages you will find insight from Willis Associates from around the world, including the UK, the USA, Australia and Singapore. We are also delighted that Mike Robertson of Liberty International Underwriters has agreed to provide an underwriter’s perspective on the current state of the power insurance market, and our thanks go to him and to all of those who have contributed to this review.

Graham Knight
Deputy CEO
Construction, Property and Casualty
Willis Ltd London
PROPERTY MARKET OVERVIEW
Machinery breakdown and the associated Business Interruption exposure remain key underwriter concerns.

The Property insurance market for companies in the power sector remains one in which the dynamics of pricing and losses, and supply and demand, combine to create an uneasy state of flux. The market is neither soft nor hard, and the experience for buyers varies depending on their risk and loss profile. However, the power market has shown itself to be resilient in the face of continuing losses in the sector, and there are still options and healthy levels of capacity for buyers of good quality.

LOSSES

Claims are of course one of the fundamental drivers of market conditions, and the good news for property underwriters is that 2012 was a much better year than 2011, which was the second-worst year for insured losses in history. As has been well documented, the extraordinary run of natural catastrophe events in 2011 was the main factor behind the 100%+ combined ratios that most insurers involved in Property and Casualty business posted for the year, and 2012, with one significant exception, was a much more benign year for natural catastrophe losses. As a result, combined ratios for 2012 were, for most insurers, much healthier, with improvements of 3% – 5% fairly typical and some improving by more than 10%, and most major P&C carriers reporting ratios of less than 100%.

However, it is sobering to note that despite this improved picture, 2012 was still the third-costliest loss year for the insurance industry on record. According to Swiss Re, natural catastrophes and man-made disasters cost the insurance industry USD 77bn in 2012 (with economic losses of USD 186bn), compared with USD 126bn in 2011. The main culprit was Superstorm Sandy, one of the biggest ever natural catastrophe losses for insurers - only the 2011 Tohoku earthquake and Hurricane Katrina will have cost insurers more in pure dollar terms (although historic catastrophes such as 9/11 and Hurricane Andrew produced greater losses when converted into 2013 dollars). Largely thanks to Sandy and severe droughts in the USA, over 90% of insured losses in 2012 occurred in North America.
The first two quarters of 2013 were also much kinder to insurers than the equivalent period in 2011, despite over USD 4bn in insured losses from the severe flooding that occurred in central Europe during May and June. These contributed to an above-average quarter for insured catastrophe losses in Q2, but over the first 6 months, according to Swiss Re, global natural catastrophe claims were USD 1bn lower than H1 2012 at USD 17bn, with total catastrophe losses (i.e. including man-made catastrophes) costing insurers USD 20bn, down from USD 21bn in the first half of 2012 and below the average for the past 10 years.

Underlying the headline loss numbers, the power sector continues to exhibit its own dynamics. Total insured losses in the power sector in 2012 were in the region of USD 2bn, of which it is estimated that Superstorm Sandy accounted for between USD 500m and USD 600m. This indicates that the bulk of power claims are not related to natural catastrophe events, and that ‘attritional’ losses are continuing to occur across a wide range of insured assets and exposures, eroding underwriter profitability and increasing treaty costs.

As a result, machinery breakdown and the associated Business Interruption exposure remain key underwriter concerns, with gas turbine technology and the associated upgrades, maintenance and performance particular issues. This is illustrated by the breakdown of losses captured in the Willis Energy Loss Database between different types of equipment, as follows:

**Power Losses 2012 — Main Equipment Types**

Note: This breakdown does not include approximately USD 600m of flood losses recorded in the power sector, for which the main factor is the flood event rather than the nature of the property affected.

2012 and 2013 have seen no new ‘mega’ risk claims (defined as claims in excess of USD 100m) in the conventional power sector, although in March 2013 a fire destroyed four power units at the Vuhlehirsk power station in the Ukraine, killing one employee and hospitalizing another eight; it is understood that the plant was not insured in the international power market. The USD 835m settlement agreed between the nuclear mutual Nuclear Energy Insurance Ltd (NEIL) and Duke Energy in respect of the closure of the Crystal River nuclear plant in 2009 (not included in the 2012 power loss figures above) is also worthy of mention.
POWER MARKET SENTIMENT

The improved combined ratios posted by most carriers in 2012 and into 2013 disguise the fact that for many the operational power sector loss ratios (which are not reported separately) will be worse than the headline numbers across their portfolios. The accumulation of ‘risk’ and natural catastrophe losses in recent years has meant that few insurers that underwrite ‘from ground up’ have returned an underwriting profit over this period, with some power loss ratios reportedly exceeding 200%.

Although pricing mandates and strategies differ between insurers, there is a consensus amongst underwriters that power rates are inadequate, and need to go up. Some market leaders have been pushing for rate increases, and in some cases they are succeeding, particularly where an account has suffered losses or is not perceived to be adequately risk engineered. However, those underwriters who have attempted to recover their losses in the short term with aggressive rate increases have frequently found that they have not received a renewal order at their quoted terms, which is, at least in part, a consequence of the relatively healthy levels of capacity that still remain in the sector (see below). For good risks which can demonstrate superior risk engineering and have a good loss record, the market is still prepared to compete, and underwriters are savvy enough to know that they cannot compete for business by putting up rates.

This general situation is not limited to the London and major European insurance markets. In Australia, for example, underwriters are endeavouring to impose rate increases of between 5% and 10%, notwithstanding that the overall Property market is still reasonably soft. Once broking pressure is applied, and provided the loss experience is good, a flat renewal has to date usually been achievable. Insurers in Australia are not, in general, looking to compete aggressively for the lead position on accounts, but will do so on a selective basis.

The technical underwriters continue to place great store by risk engineering, and one of the trends in recent years is for insurers’ engineers to have a greater involvement, with more site visits and risk improvement recommendations placed on their clients. This may be evidence of a recognition on their part that if there is limited scope to push up rates given current levels of market capacity, focusing on engineering may be a more practical way to bring down loss ratios, through greater loss prevention and mitigation.

In addition to engineering, information requirements generally are becoming increasingly more demanding, with accurate location detail including LAT/LON coordinates a priority. This is partially due to the increased rollout of RMS 11 (which reinsurers use to underwrite their risk), returning modelling reports requiring higher rate increases than expected, but also due to concerns over ‘Tier 2’ natural catastrophe exposure. CRESTA zone breakdowns for large portfolios with numerous assets are a necessity, although no longer sufficient for some underwriters, who require more specific location data.

There is also increased scrutiny on Business Interruption (BI) and in particular Contingent BI (CBI). In light of the unforeseen CBI losses following the 2011 Thailand floods, markets are pushing back on sublimits and further detail is required for named customers and suppliers. In many cases, limits are being reduced for unnamed customers and suppliers.

In light of the continuing number of Machinery Breakdown losses, client retentions and deductible structures are also in the spotlight. Where deductibles have been depressed in soft markets conditions, underwriters are keen to ensure that these now reflect the level of risk exposure. In particular, natural catastrophe retentions and machinery breakdown deductibles for advanced technology are a source of contention between markets and intermediaries.

MARKET CAPACITY

Market capacity for power risks has remained fairly constant in 2012 and 2013, at somewhere between USD 3bn and USD 4bn, with no significant new entries to the market. It should be noted that underwriters will not necessarily deploy their full capacity, and this applies in particular in the case of loss-hit, poorly managed and/or cat-exposed risks, which are finding it harder to secure large programme limits. A few insurers started 2012 by reducing their capacity or line size per risk, due principally to concerns over rating adequacy, losses and natural capacity exposures, but for the most part remained committed to the sector. However, Prosight (formerly TSM) withdrew from the power sector in December 2012.

The last quarter of 2012 saw renewed interest and increased participation from company markets such as Zurich Global Energy and CV Starr, and the resurgence of AIG, having reverted to their former brand after a few years’ trading as Chartis.

Although the supply of capacity remains relatively plentiful, there are in practice only a few underwriters with the appetite and technical underwriting and engineering expertise to provide market leadership and added value to clients. However, for most buyers with an attractive story to tell, this is sufficient to provide choice and competitive options. Market capacity therefore remains relatively buoyant for the sector, and unless and until there is a significant withdrawal of capacity, competitive pressure for the good risks is likely to continue to frustrate underwriters’ efforts for rate increases across the board.
LIABILITY
The international liability market is well into the seventh year of a sustained soft market. Capacity (as illustrated by the chart below) has risen steadily over the period, and although the capacity curve is levelling out there is more available than most buyers in the power sector want or need to access, which creates the conditions for competition.

"The liability market will eventually have to focus on current underwriting profitability. However, it seems that many underwriters continue to be set growth targets which produce a focus on revenue."

Over the past year the market has put up increased resistance to further cuts in rating unsupported by improving risk factors such as reduced claims or good quality risk engineering information. There is, however, no evidence that any insurer has succeeded in pushing rating up against the general background of overcapacity.

The sustained competitive market has continued in a period of the lowest interest rates seen in living memory and unpredictable overall investment returns. In the past, soft markets have been supported by investment returns that produced a real return and which disguised average combined ratios across the market exceeding 100%. A factor in maintaining some degree of profitability in the sector has been the release of liability reserves by insurers over the past few years. This re-evaluation of reserves has in the main run its course. The end of the mid-year insurer results season has indicated some stress with falling profits being reported by a number of insurers.

It was anticipated that property catastrophes seen over the past couple of years would impact the liability market by triggering the reallocation of capital to take advantage of rising property rates. In reality the market has absorbed the losses with limited impact on property pricing leaving both the property and liability market with capital to spare.

Some commentators anticipate the next move in casualty reserves will be upwards. Their rationale is that long term trends in claims inflation will reassert themselves and pollution and asbestos claims refuse to fade.

The liability market will eventually have to focus on current underwriting profitability. However, it seems that many underwriters continue to be set growth targets which produce a focus on revenue. The relatively benign liability claims environment also continues to reinforce an optimistic view of appropriate rating levels and future reserving levels. The current reality of combined ratios
hovering on the wrong side of 100% indicates that at some point there has to be an upward market correction. It seems, however, unlikely to occur in the short term.

Despite the competitive pressures, underwriters have maintained a focus on risk selection and information. Risks presented to the market with inadequate information or poor claims records will not achieve the best results in terms of terms and conditions, or pricing. This is particularly the case in the power sector where extensions to cover such as ‘failure to supply’ are concerned.

There are areas of the market where capacity is restricted in relation to the demand for limit. For example, the hydro power sector can demand limits of liability up to and in some cases significantly exceeding USD500m. This can push the boundaries of available capacity and impact on pricing particularly on the upper layers of the programme. In these circumstances, there may be scope for opportunistic rate increases.

**Global Liability Capacity**

[Graph showing global liability capacity from 1995 to 2012.]

In common with the market as a whole the Australian liability market is well supplied with capacity, and competition can be intense. There is active participation in the market by both local and international players. QBE and Aegis are major players out of London. The Power Generation sector is particularly competitive, with London insurers playing a major role at primary level. The local markets tend to compete aggressively for excess liability capacity. Liability limits of AUD 300m and upwards are usually easily achievable with rates flat or falling.

The transmission and particularly local distribution sectors in construction are beginning to be a different story. The $1bn Black Saturday bush fire class action hit the courts in March this year four years after the event. The trial is expected to continue into 2014. The Kilmore East fire was started when a power line conductor broke. The ensuing fire cost 119 lives and destroyed 1,242 homes. This and other related actions highlight the exposure faced by insurers in this market. Capacity for distribution networks is tightening. Insurers are also looking closely at their aggregation exposures which will further impact capacity for geographically adjacent exposures. The full impact on insurers appetite in this sector of the market is still emerging but reduced capacity and rising rates seem inevitable.

**NEW MARKETS**

We have seen a number of new players enter the liability market over the past 12 months with an appetite for power exposures.

W R Berkley who took a number of respected underwriters from AIG.

New Lloyd’s capacity includes Amlin and Kiln with Sagicor open for business. C V Starr has raised its profile following Giles Quartly stepping in to replace Darren Jacobs who left to join Zurich in Dubai. Apollo are expanding and began writing liability business in 2013 as Matt Neumann joined from Catlin, where he was previously head of casualty.

The total capacity available from the markets highlighted exceeds USD100m.

**REGIONAL VARIATIONS**

The market is competitive across all regions outside North America. Asia is seeing particularly aggressive competition. Western European insurers are continuing the trend of establishing regional underwriting hubs to access business more directly in Asia and elsewhere.

Singapore and Dubai continue to develop as important underwriting centres for both property and casualty business. Recognising the importance of this trend is a critical factor when developing the marketing strategy for a particular client. Willis (for example) will consider carefully where a specific market should be approached. In many cases it makes sense to use regional markets even where they are represented in London. The local branch may want to develop a relationship with (say) a key regional power generator. This will make them more likely to provide terms that reflect local conditions, and they will also be well aware of both local and international competition. Local presence may also assist in the correct handling of claims supported by local knowledge and resources.
The Power Generation sector is particularly competitive, with London insurers playing a major role at primary level.
CONSTRUCTION
Despite the ongoing global economic volatility, fresh capacity coupled with increased capacity from existing markets has maintained competitive trading conditions (except for certain types of project), and the falling rates that have been the trend over the last 7 years.

Following the unprecedented number and severity of natural catastrophe events in 2011, 2012 saw further natural catastrophes, such as Superstorm Sandy and, prior to that, flooding in UK, Europe, Thailand and Australia, but these events have failed to halt the rise in capacity availability and the supply and demand dynamic. The insured losses relating to these incidents have in general been within the construction market’s modelled expectations. Capacity on a “best of class basis” is estimated to be around USD 4bn globally on a PML basis and is available to most types of power generation projects. During the 2013 renewal season, substantial reinsurance capacity entered the market from investment and financial entities believing insurance to be a better vehicle for investment return.

"The diversity of construction risks and relatively low loss ratios compared to other classes mean that terms and conditions remain extremely competitive."

During 2013 little has changed to affect these trading conditions and significantly the average PML capacity per insurer/reinsurer is USD 85m. Markets continue to decentralise to become more locally and regionally focused, and some markets have multi-access points that brokers can approach to get the best deal for their clients.

Typically, projects such as hydro-electric power plants in remote areas exposed to high natural catastrophes such as earthquake and combined cycle plants involving unproven or prototypical turbine technology continue to be accepted with caution and selectively insured by specialist markets with the appropriate knowledge and appetite. This cautious philosophy results in a reduced number of potential leading carriers and those offering support or follow capacity. Understandably projects with a degree of exposed features do not attract the total market capacity.

The power and metals sectors have been responsible for some of the largest recent non-catastrophe construction losses, with a number of large testing and commissioning related losses in the US and Middle East. The Delay In Start-Up (DSU) element of these losses (where insured) can be responsible for a disproportionately large part of the claim, and it is therefore this aspect of cover which is currently receiving the most scrutiny from the major international carriers, before other factors such as technology, location and natural catastrophe exposure of the project under consideration.
Despite this and apart from a couple of exceptions, the construction market generally continues to deliver very positive underwriting returns. The diversity of construction risks and relatively low loss ratios compared to other classes mean that terms and conditions remain extremely competitive, and competition amongst carriers for projects which engage recognised levels of loss control and risk management remains very high.

The strong results posted by many markets underwriting construction risks continue to be a major reason for the competitive trend, and are likely to do so for the foreseeable future. ‘Mega’ or ‘super’ projects exceeding values of over USD 10bn continue to stretch the market capacity, although these projects will more than likely reduce in frequency if the emergence of gas extraction from shale using the fracking process continues to develop, potentially reducing the need and therefore demand for liquefied natural gas, which accounts for many mega projects.

Turbine technology continues to evolve from the specialist manufacturers where output from a single gas turbine generator is now reaching 375 megawatts whilst also meeting requirements for efficiency, reliability and environmental compatibility providing potentially better returns on investment.

These unproven or prototype machines will remain a priority focus of careful attention of insurance underwriters who remain adamant that insurance should not replace a manufacturers’ warranty and their responsibilities to the design of the product and their obligations to provide adequate and site comparable testing facilities. Underwriters require such manufacturers to continue to show successful continuous operational hours and that their warranties are in place prior to or from first firing of the unit before they are accepted which is a major criterion in an attempt to obtain any form of Defects and Maintenance coverages.

Environmentally based renewable projects such as wind and solar are accepted with enthusiasm (unless the technology is unproven) and often an aggressive underwriting approach with more capacity available than is required apart from in natural catastrophe zones, particularly earthquake.

These renewable projects with limited PML exposures are relatively easy to insure due to this abundance of capacity, although similar concerns over increasing power output with individual wind turbines being developed to produce 7 to 8 megawatts receive the same attention to detail before wider defects and maintenance coverage is provided. The renewable industry is limited in loss history and young in claims experience, but new found exposures such as foundation cracking in offshore wind shafts and the ever-changing design of blade technology to increase performance consistency is resulting in a cautious approach in a sector where prices are extremely competitive.

Combined Construction and Operational policies are also growing in popularity where funding continues to grow. Other forms of power such as Hydroelectric projects involving significant civil works and Nuclear, which are inevitably the subject of uncertainty and significant technology challenges, receive special attention from insurance underwriters. Global terms and conditions for Hydro and Nuclear remain more consistent with underwriting practices in the market treat these industries with industrial consideration.

It seems likely that any future market change will be stimulated by forces outside either the construction market or the wider insurance market. The continued fragile nature of the international financial markets is likely to have the most notable impact. Economic uncertainty, political unrest in the Middle East, the continuing financial troubles in the Eurozone and the modest growth displayed in the world’s largest economies could eventually impact insurers’ results and bring about a review of the terms and conditions they are prepared to offer. The timing of such change is very difficult to predict, and in the short-to-medium term the profitable elements of a carrier’s portfolio could even see some further price softening before any wholesale market change.

In conclusion therefore, more of the same is forecasted for 2014 and beyond, with little or no change to the market conditions. Fuelled by trillions of dollars in Asia, Latin America and Africa, market leading reinsurers remain unchanged but the capacity enjoyed by many other “supporting” or “follow” markets keep these conditions extremely favourable to buyers.
Markets continue to decentralise to become more locally and regionally focused, and some markets have multi-access points that brokers can approach to get the best deal for their clients.
The key events in 2012 included:

- Arab Spring had become the buzz word for uprisings against oppressive regimes throughout the Middle East and North Africa.
- The Terrorism Market stepped in to provide Stand Alone wider coverage which ensured there are no gaps in cover between the ‘All Risks’ and Terrorism and Sabotage policy.
- In respect of certain territories, ‘All Risks’ insurers were either restricting their coverage for SRCC perils with sub-limits, or excluding them completely.
- Political Violence insurers became more restrictive in the way they offered capacity to certain territories, and Lloyd’s reclassified Political Violence perils together with War thereby reducing aggregate capacity available for each of the syndicates.

"Violent attacks are now politically and financially motivated. Western companies are often critical to a region’s energy needs and tend to get targeted on a frequent basis."

The risk of Terrorism is now no longer restricted to your average suicide bomber or car bombs or truck bombs. Osama Bin Laden may be gone but the seeds of dissent sown by Al-Qaeda and its supporters continue to foment violence globally. The terror organisations of today are well funded, well equipped and extremely well trained.

Although it may seem that the primary aim of terrorist organisations is to maximise human casualties by targeting retail outlets and city centre locations, they have also attacked infrastructure targets where rather than directly cause physical injury to people, the aim is to cause lengthy disruption to local economies, communities and businesses.

Violent attacks are now politically and financially motivated. Western companies are often critical to a region’s energy needs and tend to get targeted on a frequent basis.

Terrorist attacks in the last 18 months throughout the world have included:

1. The Turkish company Botas which operates oil pipelines between Turkey, Iraq and Iran has been a target for numerous years by the Kurdistan Worker Party. In the period between February and October 2012 the operator suffered 16 different losses due to acts of terrorism, amounting to losses of around USD 31m (approx.)
2. Between January and June 2012 the FARC rebels in Colombia launched around 80 attacks to oil pipelines, electrical towers and other energy infrastructure.
3. On 15 October 2012 around 30 armed elements tried to take over the Azito Thermal Power Plant in Yopougon district of western Abidjan, Ivory Coast. They disarmed the guards protecting the facility and managed to damage one of the turbines that was responsible for 15% of Ivory Coast’s total electricity production.
4. On 16 January 2013 Al-Qaeda-linked terrorists affiliated with a brigade led by Mokhtar Belmokhtar took over 800 people hostage at the Tigantourine gas facility near In Amenas, Algeria. One of Belmokhtar’s senior lieutenants, Abdul al Nigeri, led the attack and was among the terrorists killed. After four days, the Algerian special-forces raided the site, in an effort to free the hostages. At least 39 foreign hostages were killed along with an Algerian security guard, as were 29 militants. A total of 685 Algerian workers and 107 foreigners were freed. Three militants were captured.

Another peril which has not been at the forefront of many clients’ minds is looting and theft directly following an event of terrorism or violence. This coverage may be excluded from ‘All Risks’ policies, but is a real threat to all sectors. After long periods of unrest, parts of a country can effectively descend into anarchy, and this removes restrictions on looting and pillaging. Anywhere can be a target because looters will take anything of value, whether that be food, fuel, computers, vehicles or mobile phones. Clients in various parts of Africa are particularly susceptible to this sort of threat, and recently we have seen widespread looting in the DRC, Mali and the Central African Republic. In these parts of the world coverage for looting should be included, by using the Hiscox Political Violence Wording.

**INSURANCE MARKET DEVELOPMENTS**

The biggest market move for Political Violence arena is the introduction of XL Syndicate in Lloyd’s that will start writing PV risks with effect from 1 May 2013. Stephen Ashwell, formerly at Hiscox, is heading up this unit. Other former Hiscox underwriters have also joined XL such as David Guest (to be based in Singapore XL Branch), Daniel O’Connell and Adam McGrath to be in Lloyd’s along with Stephen.

David James, formerly in charge of running the PV outfit at Ascot, is the new active underwriter at ANV Syndicate, which will start writing PV business in 2013 Q2.

Chris Kirby, who was Class Underwriter for Terrorism and Political Violence at Inter Hannover’s London office, has joined International General Insurance (IGI). He will be working with Craig Curtis (also previously at Inter Hannover) as his deputy. IGI were not previously players in the PV market, and are bringing USD15M of new capacity, which is due to grow to USD30M later in the year.

**UNDERWRITING PHILOSOPHIES AND OUTLOOK**

In spite of the spate of attacks in the Power and Energy sector in the last 24 months, markets remain competitive and supply of capacity remains stable. However, rates have gone up and securing a ‘flat renewal’ is now considered a good result.

Appetite for risks in the energy sectors remains healthy and regions that do not have a reason for concern (for example Qatar, Oman, or Norway) enjoy a high level of competitive rating and ample capacity. For parts of the world where there is more uncertainty, underwriters remain cautious and look for underwriting information that goes beyond the standard ‘proposal form’ related questions of security. Insurers now want to understand the workers – management relationships, trade union activity, the company’s corporate responsibility culture etc. Higher deductibles are sought in areas where reinsurers feel that local insurers should shoulder some of the responsibility rather than transferring the entire risk to the international market.

Coverage outside the perimeter fences (e.g. pipelines, oil wells and on-shore oil rigs) is still available albeit with an insistence of either sub-limits or higher deductibles. Recent events have shown that in spite of security measures, attacks are easily and successfully mounted by well trained and determined attackers.

Realistic buying capacity per program remains in excess of USD 1bn. For SRCC and PV related perils this differs from region to region and individual case scenario. As mentioned in the previous review, Lloyd’s imposed new restrictions on the amount of PV and War that syndicates are authorised to write – and in certain territories, demand for this wider coverage far outweighs supply. This is leading to high rates which do no necessarily reflect the nature of the risk but instead represent a shortage of capacity. Territories affected by this include Israel, Lebanon, Thailand and Kenya.

Clean renewal business can expect flat rates or in some cases a slight reduction but overall the rates remain stable. Loss impacted business however attracts heavy rate increases with a possibility of reduction in coverage and imposition of sub-limits.
After long periods of unrest, parts of a country can effectively descend into anarchy, and this removes restrictions on looting and pillaging.
POLITICAL RISK
The civil unrest in the MENA region following the Arab Spring, recent expropriations in Argentina and Bolivia, the Sovereign Debt Crisis and the on-going recession in the Eurozone all serve to illustrate that political risk in all its forms continue to pose a very real risk to companies investing in emerging and, increasingly, developed markets.

"Downward pressure on financial returns of insurance companies has meant a shift within the insurance industry into more profitable specialised lines such as political risk insurance."

Add to this heady mix of liquidity issues and capital constraints facing financial institutions which has meant that access to financing has become more difficult. This has all served to heighten risk awareness and perceptions of political risk amongst investors and underlined the fact that investors are not always in the position to take into account unanticipated events in their current risk mitigation strategies.

Whilst claims continue to filter in from prior years, the claims activity over the last 12 months has been relatively benign with few new notifications to the market. The civil war in Syria continues but it is understood that the market has little or no exposure. The same can be said of Mali, although the unrest threatens to destabilise neighbouring regions. Pricing for political risk therefore remains relatively static across the board.

Capacity, meanwhile, has increased with the entrants of some new players such as Canopius and XL, whilst others have managed to increase the existing tenors and line sizes. With the property and casualty market remaining soft coupled with a prevailing low interest environment, there is a downward pressure on financial returns of insurance companies which has meant a shift within the insurance industry into more profitable specialised lines such as political risk insurance. This has brought an influx of new capacity to the market and the resultant increased competition has kept pricing at a stable level despite the huge losses it has incurred since the financial crisis.

To conclude, the political risk market remains robust and demand continues to increase. The drivers for this growth are the growing global political instability, the increasing spectre of resource nationalism and also the requirement by banks to utilize PRI in order to obtain capital relief as a consequence of Basel II and its successor.
We have previously written in this review about losses over USD 100m, characterising them as ‘mega’ claims. It seems that these losses continue to occur at a frequency of roughly two per year.

In recent times the power underwriting sector has had more bad years than good, and knowledge and information are vital to insurers to help them in selecting the right risks and retentions. That same knowledge and ability to model risk is equally important to buyers, be that a power company or their captive.

For example, a run of all power losses in the Willis Energy Loss Database (WELD), indexed to current values (a sample of some 1,221 separate events) shows that 519 of these losses, or about 43%, were individually under USD 5m. (See the first graph below, which bands losses.)

If one were underwriting this class, it may seem logical to set a deductible at USD 5m, which would eliminate 43% of the losses by number, and this would certainly save the claims world some work. However, it is also important to look at how much money is involved in the 519 losses that would have been avoided with a USD 5m deductible.
The second graph shows the total cost in each price band. The first two bands which include the 519 losses up to USD 5m each loss have a cumulative total value of about USD 1.4bn out of a grand total for the sample of just over USD 25bn. This amounts to a little under 6% of the total amount paid out for the sample. In other words 43% of the losses by number represent just under 6% of the total cost of claims.

So where should an insurer look for the best place to commit capacity?

The “working” or “primary” layers are the areas which attract most of the premium, perhaps up to 70% for some programmes (depending on factors such as loss experience, EMLs, total limit bought, and natural catastrophe exposures). So what share of total claims would have been paid in, say, a primary USD 25m layer?

Writing in this area might therefore seem to be attractive if it is receiving significantly more than 27% of the programme premium – until we factor in the first USD 25m of all the other claims, which would of course fall into a primary USD 25m layer.

1,017 of the losses, or 83% of the total sample by number, are in the sub-USD 25m category, and they account for USD 6.77bn of the total claims recorded, or 27% of the grand total of USD 25bn. Writing in this area might therefore seem to be attractive if it is receiving significantly more than 27% of the programme premium – until we factor in the first USD 25m of all the other claims, which would of course fall into a primary USD 25m layer. This brings the total share of losses falling into such a layer up to around 50%.
A similar analysis of losses exceeding USD 100m, which might reasonably be considered to be in the catastrophe area, shows that there were 45 such losses, amounting to USD 10.4bn of total cost. In other words 3.6% of claims by number gave rise to 42% of total cost. If one takes out USD 4.5bn, representing the share of these losses that would fall within a USD 100m layer, 23.6% of the total cost of claims will have fallen to insurers sitting in excess of USD 100m – with the important caveat that this basic analysis assumes that these claims will all have been fully insured, which in practice will not have been the case.

We have previously written in this review about losses over USD 100m, characterising them as ‘mega’ claims. It seems that these losses continue to occur at a frequency of roughly two per year. Whether or not insurers and risk managers are aware of the extent to which this small number of losses impacts upon the premium pool for the power sector is an open question, but WELD certainly allows these parties to conduct their own modelling using a significant sample of losses and to arrange their affairs accordingly should they choose to do so.

**THE WILLIS ENERGY LOSS DATABASE**

For many years the Willis Energy Loss Database (WELD) has provided the Oil and Gas industry with the benchmark reference point for energy loss modelling. The subscribers include many of the world’s leading energy companies as well as all the major insurers, many captives and the occasional academic.

There are currently more than 17,000 oil and gas related losses recorded on WELD, making it the by far the largest such database of its kind. Several years ago, in response to demand from insurers and policyholders, Willis started collecting Power Industry losses to supplement the Oil and Gas records.

As at the start of 2013, with help from a wide variety of sources, there are now in excess of 1,000 power losses recorded in WELD.
RENEWABLES
The growth of renewable energy continues to gather pace globally as countries look to offset their carbon emissions and bow to pressures to produce clean energy. Although the global financial crisis and subsequent lack of available capital does appear to have had an impact on this pace of growth (2012 saw an 11% dip in investment compared with 2011 at USD 268.7bn invested), it continues to be a sector which is growing rapidly and remains high on the agenda of governments, power producers, banks and investors. Having held the titles of biggest renewable energy producers (onshore and offshore) Europe and North America have found themselves challenged heavily by Asia, South America and Africa in 2012-13, with China topping the world leader board with 26% of the world’s renewable energy (75,564 MW). This trend seems set to continue with countries like India, South Korea, Brazil and South Africa setting significant growth targets in Renewable Energy, with many of these countries developing engineering, manufacturing and construction capabilities to utilise locally and export across the world.

"Having held the titles of biggest renewable energy producers (onshore and offshore) Europe and North America have found themselves challenged heavily by Asia, South America and Africa in 2012-13."

**WIND ENERGY**

As one of the cheapest of the renewable energy technologies, it is not surprising that much of the growth seen in 2012-13 has been in the wind energy sector. Wind power is growing at the rate of 30% annually, with a worldwide installed capacity of 282,482 megawatts (MW) at the end of 2012. The cost of wind energy has fallen over the years as the technology has matured. Historically, the costs per produced kWh for new turbines have fallen by between 9% and 17% for each doubling of installed capacity.

**Onshore Wind**

2012 was again a strong year for the growth of onshore wind, with over 45 GW newly installed globally. The explosive growth of wind power in China continues to impress, with China’s newly installed capacity accounting for 35% of the growth in 2012, according to Bloomberg New Energy Finance.

However optimism for the future is tempered due to the wavering policy commitments in the west. The sustained economic crisis in Europe has put clean energy subsidies under the microscope as politicians are pressured to put their fiscal houses in order. Germany’s energy shift away from nuclear power could be seen as a vote of confidence in renewables but has sent electricity costs surging. While the UK remains a global leader, the availability of suitable greenfield locations is shrinking. New growth areas in Europe are most likely to come from the east. Romania has been steadily growing its onshore wind capacity over the last several years and is home to Europe’s largest wind farm. Poland has the policy mechanisms in place to see sustained growth for the coming years.

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1 Bloomberg New Energy Finance
www.guardian.co.uk/environment/2013/jan/14/clean-energy-investment-fell-2012
2 GWEC Global Wind Statistics 2012
3 European Wind Energy Association – EWEA via RES Group
The US was second only to China in wind power capacity installed in 2012. This growth looks set to be checked in 2013 due to uncertainty surrounding federal incentives such as the Production Tax Credit (PTC). While the PTC was eventually renewed by congress, it is unclear whether its relatively short renewal period will spur new construction as it has in the past.

The date-certain cut off points for incentives such as the PTC in the US or Renewable Obligation Certificates (ROC) in the UK has led the insurance market to develop products to protect projects from missed deadlines following an insurable property loss. Such product development benefits the wind industry but is in need of continued refinement if we are to see increased demand in the insurance marketplace.

Construction and Operational All Risk coverage for onshore wind continued its softening trend in 2012 with onshore wind insurers competing for market share and the emergence of new entrants. Markets tend to be open to wording and coverage enhancements in order to differentiate themselves from the competition. Improvement by manufacturers has seen a reduction in defects and resulting claims. While technology improves, some manufacturers are seeking to protect themselves by limiting the scope of their warranties in negotiations with developers. This is an area that needs to be watched closely by developers and their insurance advisors, particularly as turbines increase in size, as the effects of bigger blades turning bigger rotors could lead to unforeseen events.

The majority of claims continue to be of low severity in comparison to traditional forms of power generation. Lightning strikes continue to nag wind farm owners as they are frequent and often below deductible levels. Major claims, such as the Kahuku Wind-Energy Storage facility in August 2012 (reported to be a USD 25m+ loss) have put many renewable energy insurers on edge. However this loss has put the wind-battery storage concept under the microscope, particularly given the numerous islands across the world looking to become 100% sustainable, rather than onshore wind itself.

Onshore Wind looks set to continue its growth trend, with South Africa, Brazil, Eastern Europe and Australia consenting large projects to be built over the next five years, and significant heavy industry companies entering the turbine supply market to rival the established turbine suppliers that currently dominate the sector.

"Lightning strikes continue to nag wind farm owners as they are frequent and often below deductible levels."
Offshore Wind

At the end of 2011, there were 53 European offshore wind farms in waters off Belgium, Denmark, Finland, Germany, Ireland, the Netherlands, Norway, Sweden and the United Kingdom, with an operating capacity of 3,813 MW, and by the end of 2012 5 GW of operating offshore wind had been achieved. This growth in offshore wind across Europe continues at a pace with the 2020 target of 40 GW creeping closer. By 2020, offshore will make up 28% of the annual wind energy market (currently 9%). Annual investments in European offshore wind power are expected to increase from EUR 2.8bn in 2011 to EUR 10.4bn in 2020, with a further €85 billion of investment predicted between 2021 – 2030.

This does not include US and Asia (Japan, China, India, South Korea, Taiwan) with a further EUR 30 - 40 billion of investment predicted to 2020.

The insurance industry continues to play a vital role in the offshore wind industry, and any participating insurer should be treated with the same level of importance and privy to the same level of information as any other financing party involved on the project, from banks through to shareholders. This is because the insurer is there to provide contingent funding, and in the event of certain perils affecting the project it is the insurers who will step in to fund the rectification works to ensure the project’s completion or continued operation.

Historically the renewables insurance sector has been a limited marketplace, dominated by one or two ‘lead’ insurers, but this picture is changing and new capacity, experience and engineering knowledge is entering the marketplace. This is reducing premium pricing for construction and operational projects despite the loss trends continuing during construction. Asian insurers are also emerging in the offshore wind insurance market, following Asian heavy industry companies into the European supply chain, and in the offshore investments taking place more frequently (for example, Marubeni recently purchased a 49% stake in Gunfleet Sands Wind Farm).

This changing marketplace is a positive step for the offshore wind market as it should drive down costs through competition, but it is essential that developers and operators understand the importance of partnering through an experienced insurer in the offshore wind sector, as they do not want to be with an insurer who is ‘learning’ when they have a claim.

As the construction of offshore wind farms has continued, and increased, so has the frequency and pattern of claims. The frequency of cable losses remains the most common claim (80%) experienced during construction, but the focus has shifted from unsuitable equipment and vessels that were deemed the root cause, to cutting corners to save costs under contract. While focus on cables has never been higher during pre-construction discussions and planning, the offshore decision making and deviation from plan allows for mistakes to occur. The latest construction projects have had their share of cable looping, cable cutting, vessel-caused damage and cable installation faults over the winter, and left many wondering what needs to change for this trend to improve. The obvious (and quick) solution is for insurers to continue to increase deductibles for cable works, but this only puts further stresses and strains on weak contractor balance sheets rather than address the problem. Each developer will take a different stance, but those engaging early with contractors and marine warranty surveyors, challenging installation scopes at the tender stage and utilising their own experienced personnel on board are starting to see the rewards.

* The European offshore wind industry key 2011 trends and statistics

Source: EWEA
Weather and associated delay costs are playing a huge part in increasing the claims that do occur offshore. As the bottleneck for suitable vessels tightens even further the cost to hire vessels increases, driving up the cost to remedy the damage. In the event that bad weather causes delay in remedying the damage, insurers are paying the associated waiting charges, driving up claims 30-40% in some cases, which is unsustainable. Long term vessel reservation agreements and owned vessels allows far greater certainty for developers and insurers, particularly as offshore wind develops outside of Europe for the first time and demand increases – it will be these projects that do have vessel cost and availability certainty that insurer’s favour.

With the demand on offshore wind projects to get larger and further from shore, the development of larger wind turbines (6 MW +) continues. Many of the projects in construction and the final planning stages still seem to favour the proven technologies, but larger turbines appear to be the choice for many projects pencilled in for 2015 onwards.

Clearly this larger technology has a steep development curve to climb in a short period, particularly if investment and insurance is to play its part, but those that succeed will potentially widen the wind turbine supply chain market and therefore hopefully drive down costs. However the larger turbines will bring with them increased associated costs and supply chain concerns that the manufacturer, developers and insurers need to address before any issues occur. Insurers will not be the financial support for research and development of this new technology and will expect robust warranties and extensive testing (onshore and offshore) prior to providing coverage and therefore choosing the right turbine, with certification, warranties and an established maintenance strategy and base, will be crucial for all parties including insurers.

The outlook for growth in Offshore Wind is positive, particularly with the development of the offshore wind sector in Asia, Eastern Europe and US over the next 5-10 years but the trends seen to date and the issues outlined in this section must be addressed by the industry. The challenges suffered across the majority of the offshore wind projects built to date in Europe mean that developers need to show ‘lessons learned’ - in particular the cable losses need to become an issue of the past and the new larger turbine technology needs to have a positive impact on the turbine supply chain. If this can be achieve insurance can start playing a real part in reducing the cost of offshore wind.

The outlook for growth in Offshore Wind is positive, particularly with the development of the offshore wind sector in Asia, Eastern Europe and US over the next 5-10 years.

SOLAR

The Solar Industry (commercial Solar Photovoltaic and Concentrated Solar Power Plants) has been restrained by perceived high installation costs, supplier consolidation, technology concerns, and in particular political uncertainty for investors in respect of subsidies. This has led to 2012 being a tough year for Solar Energy companies and many suffering heavy losses. There has also been some high profile casualties in 2012 and the first half of 2013, after these companies rapidly grew production capacity which outstripped demand and prices dropped across the globe.

Despite this negative trend, global installed PV capacity surpassed 101 GW in 2012, according to data published by the European Photovoltaic Industry Association (EPIA). Between 30 and 32 GW was connected to the grid and made operational globally in 2012, roughly the same amount added in 2011, which was itself a boom year. In 2012, the top three European PV markets were Germany (7.6 GW), Italy (3.3 GW) and France (1.2 GW). Outside of Europe, the top three markets in 2012 were China (between 3.5 and 4.5 GW), the US (3.2 GW) and Japan (2.5 GW). Forecasts for another 30 GW of solar are predicted for 2013, but with further significant consolidation predicted by IHS iSuppli Market Intelligence, who say that the number of PV suppliers is expected to plunge by 70% in 2013.

Solar Photovoltaic (PV)

Solar PV continues to be the main technology of choice for Solar Energy and an important part of the energy strategy for many countries, investors, generators and suppliers. Despite political uncertainty and perceived lack of long term government commitment, many investors continue to invest and develop Solar PV projects.

Over the last few years, the insurance market for Solar PV has been dominated by local market competition for market share. This competition has driven down pricing and deductibles and widened coverage to the extent that some of the traditional renewable energy insurers have decided to not compete and be selective about both the projects they underwrite and the terms they offer on them.
However as local market insurers have continued to suffer losses across their solar energy portfolios, pricing and deductibles have started to stabilise with only a few pockets of local market dominance still persisting.

In respect of claims trends, generally lightning damage is the highest severity type of claim experienced by insurers, and theft (particularly of copper cables and panels) is the highest frequency claim experienced by insurers. Theft has become a major issue for European developers and insurers, particularly in Southern Italy. The panels and copper cables are considered highly attractive to thieves, especially in rural locations with limited security. This huge surge in theft losses has caused some insurers to pull out of the Italian solar market, not cover cable theft or significantly increase deductibles, while others have required strict security upgrades including double layer perimeter fencing, CCTV, motion sensors, 24 hour guards (required to carry out a site walk around hourly) and concrete cable joint boxes. This has gone some way to reducing the number of theft claims, but in certain areas the ‘inside job’ remains difficult to eradicate and some insurers are subrogating against the security as an extreme measure.

**Concentrated Solar Power (CSP)**

Concentrated Solar Power has not developed across the world at the same rate as Solar PV but is becoming more popular in the US, Spain, Africa and the Middle East. CSP remains a ‘high risk’ technology for insurers compared with the traditional PV array. This is because while the risks associated with PV are typically lower value items spread across a large area, CSP has a number of high value, long lead time items meaning a large Physical Damage loss (and the resultant financial loss) is a major concern and realistic risk for insurers. The 18-24 month lead times on steam generators, transformers, steam turbines, heat exchangers and boilers, means that coupled with their high value, a loss or failure could result in a major loss for insurers. For parabolic trough CSP technology, the insurance market has seen individual losses excess of USD 15,000,000 for heat exchangers, and suffered a number of fires due to poorly cleared land, and turbine failures resulting in single claims excess of USD 6,000,000.

Power tower technology has not been as widespread as parabolic trough technology (approximately 10 across the world) but still contain a number of bespoke items with long lead times. The design also means that these expensive items are located at the top of the power tower, making them vulnerable to elements such as lightning and high winds.
Biomass is increasingly coming to the fore in energy provision, based on multiple types of feedstock, ranging from municipal solid waste, to wood industry waste, to construction waste, to use of non-food stock agricultural products. Given the volatility of cost and availability of finite materials such as oil and gas, and the need to reduce carbon emissions to slow down climate change, biomass offers a viable alternative to more conventional fuels.

**BACKGROUND**

An increasing number of power stations around the world have been switching to biofuels, with approximately 72 GW of capacity installed by 2011. A report this year from Navigant Research predicted that worldwide biomass power generation capacity could grow to 129 GW by 2020. There is a growing trend in the power industry to convert existing coal-fired power plants to burn what are generally considered to be more environmentally-friendly fuel types, such as biomass and natural gas, encouraged by government incentives and legislation, particularly in Europe, to promote carbon neutral forms of generation – although, as noted below, whether such conversions are environmentally beneficial in the round remains controversial.

In the UK, for example, full biomass conversion attracts Renewable Obligation Certificates (ROCs) and Renewable Levy Exception Certificates (LECs) for every MW produced fired on biomass that can be traded. Biomass, in common with other low-carbon generation types, is exempt from the carbon floor price, an emissions tax on the electricity generation sector which was implemented in the UK with effect from 1 April 2013. This was introduced at a price of GBP 16/tonne of CO₂ and is to rise incrementally in future years, and should encourage coal-fired generators to convert in whole or part to biomass by making it more profitable than fossil-fuelled generation (notwithstanding currently low coal prices and the capital costs of unit conversion).

However, in July 2013 it was reported that the UK government was turning away from its policy of subsidising UK power stations to generate electricity from burning wood, proposing to cap subsidies for bespoke biomass burning plants at 400 MW and end such subsidies altogether by 2027. The BBC reported the Energy Secretary as saying that biomass was a temporary solution to meet climate change targets while renewable energy systems were being developed, and not a long-term answer to the UK’s energy needs.

*A report this year from Navigant Research predicted that worldwide biomass power generation capacity could grow to 129 GW by 2020.*
In August 2013 the Tilbury B power plant was closed by its owners after the government ruled that a project to convert it to biomass was ineligible for its low-carbon support mechanism. There must therefore be a question mark over the long term future of biomass generation in the UK.

In the USA, biomass projects are being developed in response to work that has been done by the US Government to decrease consumption of oil in the United States. In 2005, Congress tasked the Environmental Protection Agency (EPA) to “promulgate regulations to ensure that gasoline sold or introduced into commerce in the United States, on an annual average basis, contains the applicable volume of renewable fuel.”

This in turn led to the Renewable Fuel Standard (RFS), becoming effective on 1 September 2007. This raises the requirement for the amount of renewable fuels to be used in gasoline in the United States from 8 billion barrels in 2008 to 36 billion by 2022.

In order to encourage the development of alternate biofuel projects, the EPA has created the Renewable Identification Number (RIN) system to police the use of biofuels in blending with petroleum based fuels. Anyone who is registered with the EPA can buy and sell RINs, which means that RINs function as a currency, and markets for the sale of RINs by Biofuel developers are now available.

Financing these projects has been difficult for many developers due to the new technology being utilized, and in some cases the marginal cost savings against petroleum-based fuels, even with the additional income from RINs. This has resulted in many Biofuel developers to modify their projects so that waste heat from the project, or surplus synthetic gas from the process can be used to fuel power generation equipment on site.

The power sales from these projects qualify as renewable energy and give the developers additional revenue streams from Federal and State incentive schemes. The sale of the power is generally done through a Purchase Power Agreement with a local Utility. The sale of this power is normally easily arranged as the local utility can take credit for the renewable source power against the State mandates they are subject to, in terms of percentage of power derived from renewable sources. This gives the Biofuel developers sufficient margin to make their projects cost competitive with traditional petroleum based fuel suppliers, so it is a win/win situation for them and the off-takers of the power produced.

**OPERATIONAL CONCERNS**

Although conversion costs can be expensive, utilities already have the core facilities sited with water supply and transmission lines established. Converting existing facilities can often cost less than installing the emissions control systems required to keep an antiquated coal plant running.

From an underwriting perspective, understanding the different exposure dynamics created by the use of Biomass and the process of conversion is vital in this growing class of insurable asset. For example, the wood fuel feed rate for a given heat input is about twice that of coal on a weight basis, and more than four times that of coal on a volume basis. In addition, wood fuel quality varies more than coal quality, thus effective tuning of automatic combustion controls is important considering the heightened volume and weight of the fuels used, particularly when the combustion temperatures typically average 1700°-1900°F (927º–1038ºC). Co-ordinated steam-turbo generator and boiler control has an anticipatory feature (feed-forward demand to the main steam pressure controller) to maintain boiler steam conditions; temperature, pressure and flow for a given electrical load automatically adjusting fuel and air demand. Biomass firing requires additional primary and secondary air due to the increased mass of fuel to be combusted, thus maintaining the correct percentage of excess air for complete combustion of the biomass carbon content to carbon dioxide.

Operators must pay close attention, and periodically adjust feeders to maintain even fuel distribution, adjusting the ratio of over-fire to under-fire air, considering that wood combustion requires more excess air and more over-fire air than coal combustion.

Another prominent exposure which requires effective risk mitigation is adequate aeration of the biomass fuel when in storage; indeed one of the biggest problems currently faced with biomass-fired plants lie in the handling and pre-processing of the fuel source. Inadequate aeration of the biomass is liable to increase the propensity for fire. Thus, it is important that generators can effectively communicate risk mitigation processes surrounding this area to their insurers, and also that carriers fully understand the exposures in these areas.

Unfortunately, there have been a number of high profile instances which have led to further scrutiny:

- A fire occurred in a fuel storage area at a plant in Tilbury, United Kingdom, then the world’s largest biomass power station, barely two months after commissioning. This caused extensive damage to two of the three units.
- Another 590 MW coal-to-biomass power station in Belgium also suffered a major fire.
- A Danish utility closed biomass operations at a plant in Copenhagen following a fire in the conveyor system.
Notwithstanding these incidents, it appears that Biomass will play an increasingly prominent role in energy provision over the coming decades. The rationale is multifaceted, from government incentives to switch, to utility decisions to reduce cost dependency on traditional raw inputs, to the heralded environmental benefits of Biomass – although on this last element there is some controversy.

**ENVIRONMENTAL CONCERNS**

As long as Biomass is regarded as a renewable fuel source, the development of Biomass fuelled stations can be expected to become more and more prominent as we move further into the 21st Century. However, there has been some noted opposition to the development of this industry.

Some environmental activists claim that the increasing use of biomass will lead to further deforestation, as the demand for feedstock increases. However, the industry is not yet at a level where competition currently exists. Even so, as more and more power companies switch over, the demand for feedback will have a multiplier effect on supplier industries as demand increases. Power companies need to be mindful of their corporate social responsibility and be sure to source their feedstock from environmentally sustainable areas. Should this not be the case, the increasing use of biomass could be environmentally counter-productive. In addition, it will remain power companies’ responsibility to protect biodiversity when utilising biomass fuel.

Biomass is generally considered to be ‘carbon neutral’, although this is not universally accepted. Importing biomass from the other side of the world (such as UK power stations using wood pellets shipped from the USA) produces emissions from transportation.

Not only this, but as the world’s population continues to grow, the increasing use of biomass for power generation could lead to competition for arable land and water between the needs of food production and the power industry.

**SUPPLY CHAIN ISSUES**

Since the biomass market depends on internationally sourced fuel, management of supply chain issues will feature prominently.

There are two key issues that influence the entire biomass supply chain: existence of biomass markets and supply logistics. These can be further chunked down into various supply chain nodular concerns. For instance, crop selection and sustainability will heavily influence the supply of biomass, as will climatic conditions. As these issues become more prevalent, effective management is vital. Climate change, which has the potential to influence the feedstock’s quality and moisture content, will provide testing conditions for the resilience of the Biomass supply chain.

An example of international biofuel supply can be seen in the growth in wood pellet manufacturers in North America to meet growing international demand. North America has a large supply of wood feedstock, either from forestry operations, or the wood waste from lumber manufacturing. This provides a cost-effective feedstock to manufacture wood pellets for use in the converted coal stations.

Wood pellets have been used as a heating source for home furnace use, but many of the existing plants are now retrofitting to enable them to produce the wood pellets that can meet the Btu standards required for use in converted coal plants.

Newer technology is to create highly efficient biomass-to-energy chains through torrefaction of the wood feedstock, in combination with densification through pelletising or briquetting of the product. This makes it easier to transport the replacement fuel and store it, and the BTU value of the finished fuel is higher than convention wood pellets.

**INSURERS**

The insurers providing coverage for these projects are basically those in the Energy sector as the risk profiles of these Biofuel projects transitions over the downstream energy and power generation sectors.

**CONCLUSION**

Despite some negative publicity and an apparent cooling, at least in the UK, of government support, use of biomass as a source of power generation seems set to increase, and thus it is vital that the insurance industry is ready to offer adequate solutions to its clients, whilst understanding the different exposure dynamics associated with this asset class. With continued investment in this sector, biomass is likely to become one of the more prominent power generation industries in the 21st Century.
DIRECTORS & OFFICERS LIABILITY
Power and energy companies are progressively venturing further afield to bring electricity to under-developed regions and source the raw materials they require to keep their businesses growing. Casting such a wide net frequently involves journeying into particularly volatile areas, the potential risky nature of which was illustrated by the attack in January 2013 on the Tiguentourine Gas Plant in Algeria, where several BP employees were held hostage and some killed by alleged Al-Qaeda members. Events such as these, as well as the explosion at the Macondo oil well in which 11 oil refinery platform workers were killed, demonstrate that the risk of personal injury and even death among employees is always prevalent. As a result of this heightened risk of personal injury, much emphasis is rightly placed by many employers on the health and safety of their workforce and others.

It is not only the big energy companies that are exposed to these risks. In 2011, four miners were killed in an accident at the Gleision Colliery in Wales. Following this disaster, the UK Crown Prosecution Service instituted a prosecution both against the company for corporate manslaughter under the Corporate Manslaughter and Corporate Homicide Act 2007, and against its former management on four charges of gross negligence manslaughter. Should things go disastrously wrong despite all the precautions taken, it is important for directors and senior managers to be able to obtain legal representation for themselves at an early stage in the context of the many investigations which often commence in the aftermath of a serious incident, particularly in light of the news that the number of corporate manslaughter cases opened by the Crown Prosecution Service (CPS) has risen 40% from 45 in 2011 to 63 in 2012.

The threat for individual directors is that they will find themselves legally called to account for the adequacy of the company’s health and safety procedures and for apparently failing to provide a safe place of work for their employees. This is where the coverage position on many D&O policies starts to get murky. The problems often relate to establishing the trigger for cover. Many D&O policies contain so-called corporate manslaughter extensions, but the majority of these provide cover only for defence costs in connection with prosecutions for “corporate manslaughter”. In other words they do not provide cover for the crucial and earlier investigation phase of the process.

To make matters worse the policies often define this term by reference to the Act or similar legislation anywhere in the world. Since the Act doesn’t itself provide for prosecutions against individuals, a definition in these terms is not ideal. Moreover, since the laws in different countries on this question will differ from those of the UK, a definition in these terms is especially unhelpful for companies with international operations.

The final trap for the unwary is the bodily injury and death exclusion, which sometimes is not dovetailed with the corporate manslaughter extension, thereby making the policy intent ambiguous at best.

The difficult waters confronted by directors are therefore readily apparent. The following D&O coverage tips are subsequently worth considering:

1. Does the policy provide any cover for investigations relating to bodily injury or death?
2. Is the cover for defence costs sub limited (i.e. worth less than the full limit of the policy)?
3. Is the definition of corporate manslaughter accurate and sufficiently broad to pick up any incident giving rise to bodily injury or death?
4. Is any reference to relevant legislation “anywhere in the world” couched in broad enough terms?
5. Has adequate thought been given to the interaction between any affirmative cover offered in this area and the relevant exclusion which is invariably found in these policies?
6. Have you considered an “all risks approach” to this question which addresses all these problems by not seeking to be prescriptive as to the cover offered whilst making it clear that all defence costs and investigation costs are covered up to the full limit whether the incident concerns bodily injury or death or not?
PEOPLE RISKS
Just as the construction and maintenance of a cost effective and resilient power supply chain demands a broad view with local solutions, so too does the understanding and management of the risks to which its components, particularly its people, are exposed. In the unstable world that has emerged since the implosion of the Soviet Union, accompanied by the backbeat of ‘globalization’, the by-products of uncertainty and confusion are seen in a multiplicity of threats to the interdependent networks that constitute a power supply chain beyond the ever-present spectre of natural hazards. A worrying number of them present a direct challenge to employers’ capacity to demonstrate a credible duty of care to their employees.

**DUTY OF CARE AND THE RISKS TO PEOPLE IN THE POWER INDUSTRY**

Political tensions founded, for example, on poverty, ideology, ethnicity, contested borders and competing resource claims compromise stability on land and sea. At the points of interaction between human beings their politics and their economies the threat landscape becomes more complex. Many frontier or developing economies are situated within fragile state structures or ‘ungoverned space’ which may amplify challenges to enterprise.

Where a state is unable to secure borders, maintain a monopoly of violence, tax its citizens, provide systems of justice and personal security or meet public expectations of core service delivery this creates an environment that nurtures unresolved political tensions, and may promote conflict - either internal or at often porous borders. Such states can be a natural haven for crime, corruption, extortion and the fomentation of terrorism.

When they occur within fragile or ‘crisis’ states, the associated symptoms of terrorism, sanctions, popular uprisings, power shortages, famine and war become significant drivers of and threats to power facilities and people.

Dealing with them is rarely simple, not least because of an often inadequate understanding of the exposures being faced by their people. A wide range of hazards also threaten the continuity of supply – in particular natural catastrophes, political and security risks and economic insolvency. Indeed, distant events can have crippling knock-on effects along the power supply chain and may strike with little or no warning. All of these issues make the effective deployment of risk management strategies particularly challenging.
Risks to an organisation are driven by two factors: The threats to the security of their people or business activities present in and shaped by the environment in which they work, and the people themselves – the nature of their activity, the resources they deploy, their behaviours and the way they are perceived by those in the arena of activity. These last factors also shape the threat landscape itself and their employees’ exposure, as any experienced corporate social responsibility (CSR) or security consultant will agree.

There are numerous potential threats to travellers, local staff or expatriates in an increasingly ‘connected’ but contrastingly diverse World. Fundamental to duties of care and the management of the risks that people may encounter is an awareness and understanding of the social, political and economic context followed by realistic mitigating measures built upon this understanding.

As such, there are a numerous ways of understanding threats, current and future, which are elaborated within three generic but pertinent threat examples, below:

- **Kidnap and Extortion:** Kidnap is a criminal activity. In helping clients to understand their exposure, Inform draws on data from a breadth of sources to determine, where possible, the locations, nature and targets of the kidnap or extortion threat. Trends and patterns can then be established allowing mitigation advice to be revised according to country, region or town. Modus operandi are interpreted allowing fore-warning of a re-shaped threat to be given. Where there exists organised crime or local conflict over, for example, land rights or self-determination, these dynamics are monitored and their impact analysed in order to shape preventative or protective strategies.

- **Political Violence:** Where there is popular dissent that challenges the legitimacy or actions of governments, parties or ethnic groups, violence may erupt at any stage as has been seen across North Africa and parts of the Middle East since 2010. This violence may deliberately target companies or organisations who do not share the same interests as the perpetrators of violence, for example, the April 2012 riots aimed at Chinese oil extraction in E. Niger. More likely is that people become caught up in the collateral effects of violence, perhaps trapped or unable to access the essentials for survival including medical assistance. Local staff may also be forced to take political positions or be unable to get to work. In such cases, an understanding of politics, religions and the socio-economic drivers of violence (e.g. unemployment and subsidies) is as important as understanding the key political actors and the social fault-lines. In such cases the interpretation of the social and political economies, underpinned by historical understanding, allows the construction of scenarios on which contingency, evacuation, communications, CSR and financial plans can be based.

- **Terrorism:** The character of terrorism is in constant flux. The incidence of small scale attacks globally is increasing whilst the risk of terrorist ‘spectaculars’ against large buildings or concentrations of people remains. Whether attacks on oil workers in the Niger Delta or the shooting of aid workers in Somalia the intent to strike fear among the population is common to all. An understanding of the precise time, place and nature of terrorist action is one of the most elusive. However, a more general understanding of the likelihood and manner of attack can be usefully based on an assessment of the capacity of and opportunities presented to any group wishing to do harm to an organisation or individual. This will involve knowledge of all past incidents, gaps in governance presented by increasing state fragility; technical advances in weaponry and links to organised crime (including drugs trafficking and/or kidnap). The changing capacity and geo-strategic intent of nations that might support terrorism should also be monitored. At the local level, the geography around residences or facilities, the trustworthiness and contentment of staff and guards and cyber-vulnerability are all important factors to be analysed.

It is important to note that employees inside an organisation, if disgruntled or coerced by rival businesses, disenfranchised politicians, cartels or terrorists may play a critical part in the projection of threats, verbal or physical against their employer or ex-employer. Indeed, it can be argued that within the ever-expanding domain of extortion cyber threats it is people, as much as technology, which are able to provide key information that may increase vulnerability to attack.

These examples illustrate but a handful of the threats to which inexperienced or over-confident travellers, expatriates or local staff may be exposed. The understanding of these threats (in order to introduce preventative or mitigation measures) is complex but critical to the management of People Risk and the maintenance of duty of care.
Political tensions founded, for example, on poverty, ideology, ethnicity, contested borders and competing resource claims compromise stability on land and sea.
SUPPLY CHAIN CHALLENGES
Power generation tends to be large and complex in terms of the operations involved, and a logical approach is required to supply chain risk assessment to provide companies with an early and cost-effective understanding of potential threats to their supply chain.

Delivering power is more complicated than ever, driven by:

- Existing regulations that are complex, combined with uncertainty on future new rules that may emerge.
- Ageing and sometimes inadequate infrastructure.
- Growing demand for energy from the customer base.
- Increased governmental focus on exploring alternative energy sources.

An effective and integrated risk management approach to the supply chain strategy of power companies is essential to achieving operational excellence by keeping critical equipment online and raw material costs to a minimum. Recent surveys have indicated that whilst natural catastrophe ('nat cat') related perils are still the greatest cause of supply chain interruption, other non-damage related risk drivers, such as logistical disruption due to adverse weather conditions and IT failure at the supplier site, cannot be ignored.

A relatively recent element of supply chain risk for power companies derives from the trend of converting some conventional fuelled power stations to operate on bio-fuel (as discussed elsewhere in this review). Two key phases need to be considered in this approach: the construction phase in relation to the power station conversion to enable biomass generation and, secondly, the operational phase which is focused on the production and transportation of the fuel.

One of the biggest cost drivers for conventional and renewable power generation is the fuel supply chain. More specific challenges include:

- Highly volatile commodity markets – commodity prices vary widely depending on offer and demand, and political conditions.
- Time-consuming transportation management – different modes of transportation with complex procurement and shipment contracts plus many parties involved in the process.
- Complex inventory management.

In today’s volatile business and social climate, organizations face a variety of risks: operational, financial, and strategic, to name a few. Managing these risks effectively, is critical, specifically in light of the growing corporate governance compliance required by many power companies, namely, the obligation to proactively identify, review, manage and monitor emerging and significant risks to their business strategy.
Sourcing strategies for biomass fuel supply are focused on geographical regions where the raw material can be cultivated and processed at the best possible price. These production sites may be located in remote corners across the globe and as a result may be exposed to nat cat risk as well as the risk of logistical disruption. Whilst effort has gone into the streamlining of the supply chain, maintaining delivery of high volumes of biomass fuel will be critical to assure the required power output levels. One disruption can have a major detrimental effect in terms of business interruption and additional cost of working.

**SOLUTION**

Power generation tends to be large and complex in terms of the operations involved, and a logical approach is required to supply chain risk assessment to provide companies with an early and cost-effective understanding of potential threats to their supply chain, the type of threats, the potential size of these threats and where they currently exist. In order to effectively understand risk within a streamlined supply chain, a top down approach is required.

Furthermore, an important ingredient needs to be added to drive improved risk identification and assessment; this relates to the close collaboration required between the procurement department and group risk function. The combination of knowledge around supply chain operations and historical losses, coupled with an understanding of the effective risk assessment techniques, will greatly enhance the chances of understanding the key risks drivers and implementing the most appropriate and effectively resourced risk management strategies.

Different options need to be considered for a top-down risk assessment. The complexity of power generation companies usually calls for a pilot approach. This allows the methodology to be developed and implemented across an important supply chain, which has been assessed as a value driver for the business. Such a supply chain could include supplies of coal to conventionally fired power stations, or a vertical technology such as the supply of wind turbine parts that will be used in the construction and operation of off-shore wind farms.

The identification and geocoding of supplier sites that cover production and processing is the next important step. This provides the basis to undertake initial risk mapping, looking at suppliers that could be affected by nat cat risks and as well as non-damage related perils, particularly in relation to sustainability and green credential risks such as water usage and carbon footprint.

Once areas of concern have been identified within the selected supply chain, a detailed Business Interruption analysis can be undertaken to understand the revenue effects following the loss of a key supplier. This information will provide the basis for reducing risks in the supply chain by supporting decisions on buffer stock strategies, dual-sourcing, supplier buy-out and risk transfer. Depending on the size of the calculated exposure, the risk transfer could be focused on traditional supplier insurance (contingent business interruption), non-traditional products which are stand-alone and focused on non-property damage, capital markets products or more efficient use of the company’s captives.

Overall, mitigation of supply chain risk and ensuring continued business performance for power generation companies is ensuring a balance is achieved between risk retention, risk transfer and physical mitigation of risk in the supply chain.
ATLAS
Willis has developed ‘ATLAS’, a unique new real time system, to deliver a consolidated and transparent view of an organisation’s risk and assets. This can be an effective tool for mapping of power generation companies’ supply chain risks.

ATLAS allows users to analyse and mitigate risk through active management of their global, regional or national supply chain dependencies and exposure to natural and man-made hazards. It provides portfolio and asset mapping with a high degree of accuracy, enabling key risks and their potential impact to be measured and managed.

ATLAS has been designed with the following goals:
- To be the fastest and simplest way for users to stay informed about what’s most important to them.
- To provide an intelligent risk information network built for and calibrated by the users themselves, allowing them to integrate their own risk information into the system.
- To arm users with up-to-the-minute GIS tagged information (such as live alerts and tracking of storms, earthquakes and other weather events) through tailored social media feeds and early alerting protocols.
- ATLAS provides a portal to a global network of industry trained and experienced risk engineers, in partnership with scientists and institutions, from a range of disciplines, using data from Earth observation satellites to monitor global and regional changes in the environment.

This allows data to be visualised in many ways, to reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts that enable users to respond to risks and developing events in a highly coordinated and cost-effective way.

The complexity of power generation companies usually calls for a pilot approach.
TERRITORIAL FOCUS: ASIA
Asia has witnessed increasing demand for electricity in recent years, with Governments responding by issuing bids for licences to construct and operate Independent Power Plants. This increased demand has been most evident in South East Asia and China to date, a dynamic perhaps not seen in other regions across the globe. The Asian Power Market meanwhile remains well capitalized and is more than capable of meeting this increased demand. Indeed, capacity on offer continues to increase, with potential new entrants looking to Asia to meet their revenue budgets in the future, together with some notable regional power markets looking to substantially increase their capacity offering on selected “target” accounts.

2012 was a benign year for natural catastrophe losses in Asia, the only natural catastrophe event of any real magnitude, Superstorm Sandy, having no significant impact on the Asian market. This is in stark contrast to 2011, when 60% of global natural catastrophe losses were in the Asia Pacific region, a significant part of those relating to the flooding in Thailand.

On top of that, 2012 saw a slight improvement in year on year attritional risk losses, and when combined with a “cat-free” year, Insurers enjoyed improved results for the most part in the region.

"2012 was a benign year for the Asian market in terms of natural catastrophe losses, the only natural catastrophe event of any real magnitude, Superstorm Sandy, having no real effect in Asia."

Insurers will have been able to get their power book to break-even point and in some cases where superior “risk picks” made, would have enjoyed a return to profitability for the first time for over five years.

However, whilst 2012 was certainly a better year for Insurers, there still remains concern over the regularity of attritional Machinery Breakdown losses across the region with notable examples in Malaysia, Pakistan, Indonesia, Thailand, and South Korea (for example). These losses serve to keep insurers focused on maintaining adequate technical rates with upwards adjustments on those accounts with losses and this is set to remain a focus point in 2013.

Insurers would certainly like to see rates improve further, but with the continued availability of capacity in the region the reality seems to be that a flat rating environment is the best that can be achieved. Only a whole-scale withdrawal of local capacity from the power market will allow for a truly hard market...but as yet there is no sign of any such development.

Whilst flat rates for 2013 then appear to be the general expectation, there are always exceptions. Any risk that has suffered a loss is likely to attract rate increases. The extent will depend on the quantum of loss or losses suffered and also the relative rate the Risk concerned compared with others of a similar type across the region.

One characteristic of the power market in Asia is the wide rating spread still evident. There are some risks out there that appear well rated against others which are considered by some insurers still to be well below the technical minimum required. There may be room in certain specific instances for nominal downward rate movements, but these will be exception rather than the norm.

Some commentators point to possible downward corrections in territories such as Thailand following the significant increases secured in 2012 following widespread rate corrections. However Thailand is generally perceived by underwriters as a territory historically underpriced even before any flood load was considered in 2012. Together with continued attritional losses in 2012 market sentiment is that any reduction will be strongly resisted.

2013 renewals to date bear testimony to the above, with renewal rates widely reported as being flat so far. This trend looks set to continue through 2013 in the absence of any market changing event and consequent withdrawal of capacity from the Asian market.
Power market review October 2013

Hurricane Sandy in late 2012 has had a significant impact on insurers, with a number of fairly significant losses occurring to distribution systems located in the northeast.

There have been some significant changes in the Utility and Power Generation insurance market over the last several months, with a number of significant losses and run of moderate losses impacting insurers’ balance sheets.

The number of machinery breakdown and associated business interruption claims at power generation plants have been on the rise, which together with a few catastrophe peril losses led many insurers in the first quarter 2013 to aggressively seek rate increases at renewal, and also to tighten the terms and conditions being offered. In the second quarter 2013 we are still seeing rate increases, but on a more selective basis due to the competitive capacity available in the market, but are still seeing a tightening of the terms and conditions being offered.

These losses have occurred across the board in terms of generation type, a change from recent years in which the bulk of losses were seen in the combustion gas turbine sector. There have been a run of frequency type claims rather than a few major losses that make the six o’clock news. Given the time line to secure spares or replacement parts, it is the business interruption component of the losses that have the biggest impact on insurers.

Hurricane Sandy in late 2012 has had a significant impact on insurers, with a number of fairly significant losses occurring to distribution systems located in the northeast. The majority of the damage was sustained from storm surge damaging substations and switchyards located near the coast and susceptible to storm surge. Insurers now have adjusted their storm surge and ensuing flood analysis data from a previous ‘one in five hundred year’ event, to a ‘one in a hundred year’ event, which is making their catastrophe models much more punitive.

In addition, Contingent Business Interruption losses arising from Hurricane Sandy have been fairly significant and causing insurers to look carefully at the coverage they are prepared to provide in this area. Other increased costs are being seen in the opening and closing costs for internal repairs to machinery, and lack of spare parts being readily available under long term service agreements.
In another dynamic, insurers are now challenging the valuation of assets more, and many have developed internal valuation guidelines for most types of power generation assets. Several Insureds are now looking at having independent valuations carried out to ensure they are not being overvalued by insurers’ valuation system.

In the first quarter 2013 rates were rising in general by 5% for clean accounts up to 20% for accounts with loss experience (and greater if the loss experience is significant.) Deductibles are also being looked at closely, particularly the waiting period for business interruption losses, and we are seeing significant increases for those accounts with any loss frequency. In the second quarter the rate increases were generally flat for clean accounts, and up to 15% for accounts with loss experience. Deductible levels are still being closely looked at in the second quarter 2013.

Insurers are looking very closely at the catastrophe peril exposure, via extensive modeling as noted above, and this is resulting in many insurers reducing their available capacity for catastrophe peril exposed assets. We are now seeing insurers looking to impose aggregate limits for windstorm exposure, which in the past has been generally available up to the full policy limit, but to date have been able to push this off.

Some markets are exiting the Utility and Power Generation sector either in part by only writing non-catastrophe exposed assets, or completely for certain types of power generation assets. However, there is still significant domestic North American capacity available, estimated at over $3 billion for the right accounts, although this drops off significantly if the risk has extensive loss experience or catastrophe peril exposure. Key markets include Associated Electric & Gas Insurance Services (AEGIS), Ace (StarrTech), AIG, Chubb, Liberty International, Munich American, Swiss re IRI, and Zurich.

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**CASUALTY**

**Primary General Liability**

There are a limited number of markets willing to write primary Utility and Power Generation risks, and the lead markets are ACE, AIG, Chubb, Liberty Mutual, Travelers and Zurich. Many of the Utility and Power Generation companies take a self-insured retention of $1 million, so that the overall available market to insurers is fairly limited and this has kept other insurers with a limited risk appetite out on this segment.

In the Power Generation sector there has been generally good loss experience, with losses mainly being in the area of property damage to third parties and a few personal injury claims. In the Utility sector, loss experience has been far greater with a large number of electrical contact claims occurring, which coupled with increased court awards have led to some insurers having very poor results.

Rate increases have been in the 5% range for accounts with poor experience, but clean accounts have seen renewals with flat rates. Some insurers have looked for increased self-insured retentions to reduce the impact of losses.

**Excess Liability**

There are a larger number of insurers willing to write Umbrella Liability and excess layer liability insurance for the Utility and Power Generation sector. However, the industry mutual’s Associated Electric Gas Insurance Services (AEGIS) with $35 million of capacity, and Energy Insurance Mutual (EIM) with $100 million of capacity have a large market share of this sector. Other markets include Ace, Chubb, CV Starr, Endurance, Arch, Liberty Mutual, Munich American, Travelers and Zurich.

In addition to the loss experience noted above, the Utility sector has also experienced a number of wildfire claims in recent years, which have impacted insurer’s loss ratios. AEGIS had stated they would be looking for double digit rate increases on their book at the next series of renewals, but this has modified a bit, with clean accounts generally seeing single digit increases. This is due to a significant increase in the frequency of electrical contact claims, and significant increase in the size of awards being granted by the courts.

Commercial markets are a little better with an flat renewal for clean accounts, and an average increase of 5% for accounts with loss experience. But with AEGIS leading the way we may see commercial insurers taking a slightly harder line as well. EIM will likely follow the AEGIS lead and look for larger increases, as they tend to be the next layer above AEGIS on many programs.

Overall capacity available is in excess of $2 billion, but if there is a wildfire exposure the available capacity drops to around $1 billion.
WORKERS COMPENSATION

Many Utilities have self-insured programs, many through AEGIS and EIM, with excess Workers Compensation above the retention. In some States the required insurance is for Statutory Limits, in which case the program is fronted by a market that has the capacity to provide such limits. Typically Liberty Mutual that has an arrangement with AEGIS and EIM. Other markets active in this space are AIG, ACE, and Zurich.

Loss experience has not been good in recent quarters and we are seeing rate increases ranging from 5% to 15% depending on the individual loss experience.

Utility risks are treated carefully by insurers due to the potential for large aggregation losses, such as at a nuclear power plant if targeted by terrorists. In these cases there is a limited market for Workers Compensation insurance.

For Power Generation accounts where there are normally limited numbers of employees at any one site, the coverage is more readily available.

EXECUTIVE RISK

Over the last several years the Utility and Power Generation sector has experienced very good loss experience in the Directors and Officers Liability and associated lines. There is fairly good competition for this business and significant capacity to meet the needs of most buyers. Rates have been flat to -10% depending on the risk.

CAPTIVES

Several Utilities and Power Generation accounts have utilized captives as part of their risk management structure. These include single parent captives, but the majority are rent-a-captive facilities with segregated cells. The captives are used for a range of coverages such as deductible buy-downs, primary casualty coverages to protect larger retentions, owner-controlled insurance programs, and supplementary insurance for Transmission and Distribution assets which are largely uninsured. With the expected premium increases in the liability sector we are beginning to see another round of interest in captive utilization.

RENEWABLE ENERGY

The market for renewable energy continues to be competitive, particularly in the solar sector. The loss experience has been good and markets are looking to increase their market share. Large levels of capacity are available from insurers, with some insurers having USD 500m plus of capacity available for renewable energy risks not located in a catastrophe peril zone.

Where there is catastrophe peril exposure the underwriting falls more in line with the approach noted above for conventional power generation assets, and deductible and rate increases apply. Many of these projects are only practicable with the federal and state incentives being provided, so the business interruption is extended to include coverage for lost incentives in the event of a fortuitous loss.

In the solar sector OEM warranty coverages are now available from several insurers, which take the 25 year warranty provisions off the balance sheet of the OEM onto the insurer’s balance sheet. Willis has now launched a cover available from Munich Re that provides Insurance against reduced yield incorporated into the property program, with policies of up to five year terms available. The reduced yield coverage is invoked if the annual yield falls short of its forecast yield (determined on the basis of a qualified yield assessment) by more than 10%. Reduced yield can be due to global irradiation less than forecast, defects in the plant (material faults), unusual wear and tear or soiling of the plant or its components, internal malfunction of modules and electronic components (inverters), or grid disconnects by the off-taker.

\[ \text{Liability rate increases have been in the 5% range for accounts with poor experience, but clean accounts have seen renewals with flat rates.} \]
Beginning in 2007, what has been described as an “insurance crisis” unfolded for US utilities, particularly those in the Western US, and their insurers. California State fire investigators determined the Witch Creek, Guejito and Rice fires – which collectively destroyed more than 1,200 homes and 600 outbuildings – were started by power lines. In the aftermath of the 2007 fires and resulting losses, wildfire insurance capacity for utilities was estimated to have shrunk by 66%.

In fact, losses and increased premiums drove the three major California-based utilities to collectively petition the California Public Utilities Commission to request the creation of a wildfire balancing account, which is a regulatory means to pay uninsured costs as they are incurred and subsequently recover the costs in rates. The utilities cited a “lack of sufficient insurance” as a primary reason for the petition. As of today, their application has been suspended before the commission and the utilities are still seeking a sufficient means to address what they deem is a lack of available insurance.

“Due to the fire losses sustained in 2007 and an increasing awareness of inverse condemnation, reinsurers in 2009 have either refused to provide wildfire liability insurance or have severely limited the amount offered,” Sempra Energy’s former risk manager Maury De Bont stated in testimony in front of the CPUC.

**Inverse Condemnation**

Prior to the 2007 Southern California wildfires, inverse condemnation was a little known legal avenue for recovery by individuals claiming that their property had been damaged by governmental entities or public utilities. Under the constitutions of California and United States, inverse condemnation provided that a property owner may be entitled to payment of “just compensation” for the taking or damaging of private property for “public use.” This may be true even when the taking or damage is the unintended result of the design, construction, maintenance, or operation of a public project. (U.S. CONST. amend. V; CAL. CONST. art. I, §19; see also Bunch v. Coachella Valley Water Dist., 15 Cal. 4th 432, 435 (1997); Holtz v. Superior Court, 3 Cal. 3d 296 (1970))

Because this right of inverse condemnation is constitutionally based, the property owner need not prove that the entity was negligent or that the incident giving rise to the damage was foreseeable, as might be required in a tort lawsuit. Demonstrating a cause-and-effect relationship between the public project or utility’s actions and the incident giving rise to the damages may be all that the property owner needs to prevail. Traditional tort defenses, including governmental immunities and comparative negligence, may not be available to defendants in an inverse condemnation lawsuit. The property owner’s recovery may include the cost of repair, compensation for diminution in value, attorney’s fees, expert fees, and other categories of damages.

**Insurer Response**

Insurers responded to the 2007 Californian losses and their increased awareness of the principle of inverse condemnation by restricting capacity for claims arising from wildfire. Several other commercial carriers went as far as implementing a complete exclusion of wildfire loss in their policies. AEGIS, the utility industry mutual which previously offered ‘per occurrence’ policy limits up to USD 35m with few aggregate limits for most causes of loss, implemented a USD 70m general policy aggregate and a USD 35m wildfire aggregate limit. Moreover, AEGIS instituted wildfire aggregates as low as USD 17.5m for some California utilities.
UTILITY RESPONSE

Utilities have responded by investing more resources towards their loss control programs including enhancing overhead line inspection programs, wooden pole inspection and treatment programs, vegetation management procedures and shortened cycle-trim criteria, raptor and vermin protection enhancements, and altering their downed wire procedures in high risk areas.

There are some utilities that have begun performing sophisticated aerial LiDAR inspections of their T&D systems to provide precise vegetation clearance data. Others are evaluating the use of satellite remote sensing using infrared to assess forest health management such as determining drought conditions, fire fuel mapping, fire risk estimation, fire detection, and insect infestation mapping along their T&D corridors.

Whatever means your utility is employing to manage wildfire risk, one thing for certain is that the key to obtaining the best possible outcome as respects wildfire cover is to communicate early and often with prospective carriers. In addition to providing detailed information on the types of loss control employed, utilities should be armed with maps of their T&D systems, details on the number of miles of T&D near wild land areas, details on the contractual provisions that exist with any vegetation management and T&D maintenance vendors, your latest operational data relating to reliability of the T&D network (statistics such as SAIDI, SAIFI, etc.), your policies or procedures as respects the use of automatic line re-closers, as well as any procedures for re-energizing lines during periods of high wildfire threat.

By proactively sharing your utility’s loss control programs and the details of your company’s wildfire exposure and risk assessment, you can best manage the insurance market outcomes you will obtain.

In the aftermath of the 2007 fires and resulting losses, wildfire insurance capacity for utilities was estimated to have shrunk by 66%.
TERRITORIAL FOCUS: AUSTRALIA
7 February 2009 will be forever recorded as one of the darkest days in Australia’s history and has been dubbed “Black Saturday”.

On this day, 173 people were killed, over 400 were injured and 2,000 homes were lost in the southern state of Victoria covering an area in excess of 4,500 square kilometres.

The state of Victoria is not alone in enduring the risk of bushfires, with South Australia suffering what became known as the “Ash Wednesday” bushfires back in 1983 that killed 28 people in that state as well as another 47 in Victoria.

BUSHFIRE LIABILITY INSURANCE
HOW MUCH COVER IS ENOUGH?

LIABILITY PROGRAMME CONSIDERATIONS AND STRUCTURES

Australian based power companies should make sure that they have a programme that ideally includes the following components;
- Public Liability
- Products Liability
- Failure to Supply
- Bushfire Liability
- Electromagnetic Frequency
- Errors and Omissions/
  Professional Indemnity

Depending on the specific organisation and their profile, some may elect not to cover all of these components, but in the case of an organisation that provides Transmission and Distribution services it is important that Bushfire Liability is considered.

Markets generally have looked very hard at their Bushfire-exposed accounts and many offshore markets such as the Lloyd’s and other London markets have undertaken a rationalisation of their Australian book of business in order to control their aggregate exposure to a single event. In some cases, they have reduced their capacity on some Transmission or Distribution clients since the 2009 Victorian bushfires.

As with most Liability exposures, the hardest element to place is at the Primary level and in the case of Bushfire Liability, this is below AUD 100m.

The key question then becomes “how much do I buy?”
Many organisations rely on benchmarking and/or some form of indexation method based on their historical purchasing arrangements and/or court settlements, such as industry average limits purchased or a percentage applied to the previous year’s limit purchased.

However, a better approach is to conduct appropriate modelling and analysis in order to understand the region(s) at risk for which the organisation is supplying transmission and/or distribution services.

The following gives a compressed version of such an analysis and modelling approach, dispensing with a number of analytical aspects for the sake of brevity.

**AUSTRALIAN BUSHFIRES LAST 10 YEARS INVOLVING DEATHS**

<table>
<thead>
<tr>
<th>NAME</th>
<th>LOCATION</th>
<th>HECTARES BURNED</th>
<th>DATE</th>
<th>PEOPLE KILLED</th>
<th>DAMAGE SUSTAINED</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003 Canberra bushfires</td>
<td>Canberra, Australian Capital Territory</td>
<td>160,000</td>
<td>January 2003</td>
<td>4</td>
<td>Almost 500 homes</td>
</tr>
<tr>
<td>2003 Eastern Victorian alpine bushfires</td>
<td>Victoria</td>
<td>1.3 million+</td>
<td>January – March 2003</td>
<td>3</td>
<td>41 homes</td>
</tr>
<tr>
<td>Tenterden</td>
<td>Western Australia</td>
<td>2.1 million+</td>
<td>December 2003</td>
<td>2</td>
<td>Tenterden Town Hall and 5 houses</td>
</tr>
<tr>
<td>Eyre Peninsula bushfire</td>
<td>South Australia</td>
<td>145,000</td>
<td>January 2005</td>
<td>9</td>
<td>93 homes</td>
</tr>
<tr>
<td>2006 Victorian bushfires</td>
<td>Victoria</td>
<td>160,000</td>
<td>December 2005 – January 2006</td>
<td>4</td>
<td>57 houses, 359 farm buildings</td>
</tr>
<tr>
<td>Grampians Bushfire</td>
<td>Victoria</td>
<td>184,000</td>
<td>January 2006</td>
<td>2</td>
<td>Approximately 25 homes</td>
</tr>
<tr>
<td>The Great Divides Fire</td>
<td>Victoria</td>
<td>1,048,000</td>
<td>December 2006 – March 2007</td>
<td>1</td>
<td>51 homes</td>
</tr>
<tr>
<td>Kangaroo Island</td>
<td>South Australia</td>
<td>95,000</td>
<td>December 2007</td>
<td>1</td>
<td>Mainly within National Park and Conservation Reserves</td>
</tr>
<tr>
<td>Boorabbin National Park</td>
<td>Western Australia</td>
<td>40,000</td>
<td>December 2007</td>
<td>3</td>
<td>Powerlines and Great Eastern Highway, forced to close for 2 weeks</td>
</tr>
<tr>
<td>Black Saturday</td>
<td>Victoria</td>
<td>450,000+</td>
<td>February – March 2009</td>
<td>173</td>
<td>2,029+ houses, 2,000 other structures</td>
</tr>
<tr>
<td>Tasmanian Bushfires</td>
<td>Tasmania</td>
<td>20,000+</td>
<td>January 2013</td>
<td>1</td>
<td>At least 170 buildings</td>
</tr>
</tbody>
</table>

Importantly, most bushfires in Australia are caused by lightning, with other causes including controlled burns, campfires, agricultural clearing, arson and in a small percentage arching from power lines, which is the focus of this article. A factor in the Black Saturday fires in 2009 was the felling of power lines in the area concerned.
BUSHFIRE MODELLING AND ANALYSIS APPROACH

At the major renewal periods since June 2009 those energy operators that are able to prove ‘Best in Class’ risk mitigation measures around bushfire exposures have been able to maintain coverage at competitive premium levels, maintain capacity and keep deductibles at reasonable levels by choice.

Accordingly, it is necessary that the organisation demonstrates to the insurance market:
- it has market-leading risk mitigation controls.
- a full appreciation of the geographical areas most at risk from a bushfire event emanating from the transmission and distribution line network.
- the potential exposure in terms of likely quantum.

The Willis bushfire risk database which has been developed based on the Australian Standard ‘Construction of buildings in bushfire-prone areas’ (AS3959-2009). This standard provides a method to calculate the bushfire attack level for a given property based on the risk from direct flame contact, radiant heat and burning embers. Once an organisation has provided its GIS datasets representing transmission lines, spans and structures, this database can be utilised to assess the bushfire risk.

This proprietary bushfire risk database provides coverage across Australia for approximately 99% of addresses, with the remaining 1% being in very low risk areas, such as tropical regions.

For each property, the risk is calculated with respect to the following parameters:
- Distance of the property to closest significant bushland;
- Type of closest vegetation;
- Effective slope (i.e. slope of nearby terrain covered with vegetation);
- Terrain slope - slope of land property is situated on;
- Regional Fire Danger Index (FDI); measure of severity of bushfire conditions with respect to weather and vegetation conditions.

The bushfire attack level is then used to classify the risk to a property into five classes - extreme risk, high risk, medium risk, low risk and very low risk.

It is noted that the bushfire standard is designed for an individual site inspection of a property. The method has been undertaken at a national scale using G-NAF (Geocoded National Address File of Australia), a 30 metre digital elevation model and vegetation mapping.

As an example, an illustration of a potentially high risk area in New South Wales is shown in the following diagram, with the power lines represented as red lines, properties as dark brown dots and dense bushland represented by the green areas.

In each region identified the location of the transmission lines is compared with vegetation mapping to determine whether the transmission lines intersect significant sources of vegetation and could result in bushfire ignition and a potential threat to properties.
**METHODOLOGY**

For each region, the highest concentration of properties is identified by creating a series of circles with radius of 5 kilometres from points along the transmission lines. The number of properties at risk within these areas at the urban-bushland interface is then defined using the following criteria:

1. Properties within 100 metres of significant sources of vegetation, including forest, woodland, shrubland and grassland. A significant source of bushland is defined by the criteria set out in the Australia Standard AS3959-2009 ‘Construction of buildings in bushfire-prone areas’.
2. Properties in areas where there is continuous vegetation between transmission lines and properties along the fringe of vegetation.

Once each affected area has been modelled, a summary of the loss estimates for each region is then presented in a table such as the one below.

The specific values are arrived at by using property value data which may be sourced by property valuation specialists as well as local authorities. These will also take into account the residual land value following loss as regeneration of bushland (excluding some agricultural activity) is usually reasonably rapid.

The final stage in this analysis is to determine the overall bodily injury costs. For this the potential number of fatalities and injuries and their associated costs can be estimated.

Fortunately there have been very few catastrophic bushfires in Australia to date. However, this does mean that there is only a very small sample of events to analyse. We have therefore considered the number of fatalities and injuries for the Victorian bushfires in 2009 and fatalities in Canberra in 2003. Both events produced very different outcomes within the affected communities due to the “stay and defend” or “leave early” approaches taken. It is not possible to envisage the response from residents in NSW, nor the factors that may compel them to take either approach, such as state policies, involvement of police etc. Therefore both approaches are considered to produce a range of outcomes

The Australian Bureau of Statistics paper ‘Household and Family Projections’ enables the number of residents per property to be estimated. This in turn allows us to consider the likely number of residents who would not flee or would depart too late, if a bushfire were to burn in their vicinity.

Now we have an understanding of the likely number of addresses, we are able through the use of supporting statistics estimate the number of residents affected and arrive at the likely fatalities using sensitivity analysis. We are also able to provide some estimates based on high and low point fatalities for each region which take into account factors such as population growth, local court fatality awards, likely cost of injuries and other socioeconomic factors.

<table>
<thead>
<tr>
<th>REGION</th>
<th>ESTIMATED NUMBER OF ADDRESSES</th>
<th>ESTIMATED LOSS (AUD M)</th>
<th>COST OF FATALITIES &amp; INJURIES (AUD M)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>LOW</td>
</tr>
<tr>
<td>ABC</td>
<td>6,300</td>
<td>450</td>
<td>36</td>
</tr>
<tr>
<td>DEF</td>
<td>3,700</td>
<td>300</td>
<td>17</td>
</tr>
<tr>
<td>GHI</td>
<td>3,300</td>
<td>270</td>
<td>14</td>
</tr>
<tr>
<td>JKL</td>
<td>2,400</td>
<td>230</td>
<td>11</td>
</tr>
<tr>
<td>MNO</td>
<td>1,405</td>
<td>170</td>
<td>9</td>
</tr>
</tbody>
</table>

This is a simplified and compressed example to provide an understanding of the factors that are taken into account and how the limits are built up to produce a result that can inform clients’ decisions on an appropriate limit of liability to purchase.

Using the example above, the limit would need to be in the range of AUD 486m and AUD 645m based on region ABC.
The Willis bushfire risk database which has been developed based on the Australian Standard ‘Construction of buildings in bushfire-prone areas’ (AS3959-2009)
HOT TOPICS
PROJECT FINANCE

The combination of the increasing size of large infrastructure projects and the conservative attitude of most project lenders towards risk can create a situation where the amount of market capacity available at commercially economic terms may be insufficient to fully satisfy lenders’ insurance requirements.

Lenders typically require projects to be insured to their full value and their Business Interruption exposures to be insured with conservative maximum indemnity periods, and these requirements are usually written into a project’s financing documents. Meeting such requirements in full could compel a project to buy cover to levels that it does not consider to be either necessary or cost-effective, and we have seen instances of projects forced to access expensive capacity that they probably would not have bought without the constraints imposed by the lenders.

In most cases, the Estimated Maximum Loss (EML) scenario will not involve a total loss of the project, and in these circumstances many buyers would consider that ‘full value’ cover is unnecessary. This might apply particularly to projects which are appropriately designed to withstand earthquakes, but whose lenders’ requirements may not give them the option to insure against earthquake to a sublimit rather than to full value.

The key to persuading lenders to accept a lesser level of cover as being appropriate and sufficient protection for their investment is usually through robust engineering information and EML calculations, which can persuade the engineering consultant engaged by the lenders to recommend that coverage to a loss limit can be accommodated.

TWO-SHIFTING

‘Two-shifting’ is the term given to the process of shutting a power plant down when demand for its output is low, and restarting it when demand increases. In recent years there has been an increase in this practice, driven by the need to maximize the use of the increasing amount of renewable generation capacity in order to meet emissions reduction targets, and also by economic factors concerning the price of different fuel types.

One of the stories of the global power generation sector since the turn of the century has been the rise of Combined Cycle Gas Turbine (CCGT) plants. Because of their high efficiency relative to older power generating technologies, as well as their relatively low emissions, CCGT plants were generally designed to operate at base load. In recent years, however, they have increasingly been forced to give way to renewable generation and operate more flexibly. This has been exacerbated over the past year, as cheaper coal and the collapsing cost of carbon permits has made coal plants more profitable than CCGTs, and demand for electricity has been held back by weak national economies.

This situation has led to some closures of CCGT plants, such as E.ON’s decision in March 2013 to close a plant that was only three years old. GDF Suez and Centrica have also both been compelled to mothball gas plants. This has created a problem for governments and regulators, as not only does the switch from gas to coal make it harder to meet emissions targets, but flexible CCGT plants are required to be available when weather conditions restrict the use of renewables – hence the increasing practice of two-shifting.

There are potential risks involved in two-shifting plants that were designed for baseload operation, principally the associated wear and tear which can cause fatigue, increasing the risk of a breakdown loss. Insurers will be wary of this, and will want to see that proper engineering and operational practices are in place to minimize the risk.
BLACKOUT BRITAIN?
A report issued towards the end of 2012 by the UK energy regulator Ofgem predicted that the UK may run short of electricity generating capacity by the winter of 2015/16.

The margin of generating capacity over expected demand in the UK has fallen from over 30% in 1990 to around 14%, and Ofgem's report warned that the capacity margin could fall to only 4% within three years, largely as a result of the early closure of coal-fired plants and the impact of EU environmental legislation.

In June 2013 Ofgem issued a new bulletin indicating that the tightening of electricity margins was happening at a faster pace than they had previously thought, and now warning that spare production capacity could fall to as low as 2% by 2015. They cited the global financial crisis, the closure of ageing power plants, tough emissions reduction targets and the UK's increasing dependence on imported gas as contributing factors.

This has led to predictable calls for significant investment to replace the country's ageing power stations and infrastructure, but it is not clear where this investment will come from. Plans for a new generation of nuclear power stations were hit by the separate decisions in 2012 of E.On and RWE to abandon plans to build new reactors in the UK following the German government's decision to close down its nuclear sector in the wake of 2011's Fukushima meltdown, and in February 2013 Centrica withdrew from the UK's nuclear rebuilding programme because of increasing costs and delays.

The UK is also not immune from the power sector economics that have caused CCGT plants to be mothballed, and it was reported earlier this year that Centrica is considering permanently closing at least one gas-fired facility in the UK.

It is well known that the UK was in the forefront of the drive to privatise its electricity industry in the early 1990s, and one consequence of this was that control over investment and pricing was taken out of government hands and left to the market. It appears at present that there is little in the way of market forces to encourage the building of new power generation capacity without financial incentives or subsidy.

Some commentators have taken issue with Ofgem, however, regarding their warnings as too alarmist on the grounds that mothballed plants can be brought back into operation and the National Grid Company can manage the system to prevent disruption to power supplies.

NUCLEAR CLAIM SETTLEMENT
A glimpse of the claims potential of the nuclear power industry was provided in February 2013 by the settlement of a claim arising from damage at the Crystal River nuclear plant in Florida, which had been closed since 2009 after a crack was found in the plant's concrete containment vessel wall, and has now been retired permanently.

The nuclear insurer Nuclear Energy Insurance Ltd (NEIL) agreed to pay the eye-watering sum of USD 835m to Duke Energy, which merged with Crystal River's owner Progress Energy in 2012.

NEIL offers limits of up to USD 500m per site under its primary programme, with additional cover of up to USD 2.25bn under its excess programme. As reported in Insurance Day, customers of Duke Energy and several Federal agencies had argued that a second series of cracks that appeared in 2011 qualified as a “second event” and that therefore two sets of business interruption limits of USD 490m should apply. NEIL disputed this, but agreed to a mediation. The figure of USD 835m was proposed by the mediator and accepted by Duke Energy and NEI.
The UK is also not immune from the power sector economics that have caused CCGT plants to be mothballed.
VIEW FROM THE MARKET

Mike Robertson, Chief Underwriting Officer, Global Power Generation, Liberty International Underwriters
Global economic growth rates continued to increase during 2012 as most regional markets demonstrated positive signs of recovery from the previous recessionary influences. As a result, increased investment within the power generation sector is continuing, driven by:

- A rise in demand for electricity, particularly in emerging markets given population growth, a predicted increase in domestic consumption and higher standards of living;
- The need to support increased utilisation of heavy manufacturing asset base and an expansion of existing facilities, particularly within the metals and mining sectors in areas such as Latin America;
- Returning confidence on the part of lenders to finance the construction of new power generating plants, predominately within the private sector, with the Middle East and Asia Pacific regions showing particular activity;
- The desire and requirement to replace ageing and inefficient generation, transmission and distribution infrastructure;
- Increasing focus on the renewable sectors - particularly wind and solar - despite the threat of a reduction in government subsidies, for example in Europe.

Whilst there are therefore evidently industry growth opportunities, the power sector has and will continue to present a number of specific challenges for insurers:

1. Generating asset property values continues to be positively impacted by increasing material and labour costs - however, declared sums insured on occasions do not necessarily track in line with true replacement values;
2. Competition within the combustion turbine sector continues unabated, as the leading original equipment manufacturers continue to strive to obtain greater unit output and efficiencies - such developments have given rise to an increase in severity and frequency losses driven by continuous refinement of existing and new design;
3. Emerging nations are exercising significant global influence in the manufacture and supply of new pressure vessel and steam turbine technology, where ‘quality’ considerations remain a concern;
4. Stringent emissions controls and efficiency drives will mean greater use of advanced process materials e.g. ultra super-critical metallurgy, leading to less predictability in operational results;
5. There is an increasing frequency of design and workmanship concerns relative to civil and infrastructure components of operational hydro-electric plants;
6. 70% of steam cycle generating operations are reaching the end of their expected life increasing the prospect of increasing claims arising from factors such as fatigue and stress corrosion cracking (Source: Clean Air Watch 2012);
7. Global power generation conglomerates continue to expand through acquisition, marginalising prospects for the account-specific independent power producer.

The specialist power generation insurer needs to be aware of these industry trends and the impact of fluctuating portfolio risk to adapt its positioning and underwriting stance accordingly.

"Underwriters are taking an increasingly diligent approach to the provision of base policy cover, with particular focus being attached to traditional extensions to policy wordings and the limits applied, in areas such as contingent business interruption."
POWER INSURANCE MARKET OVERVIEW

It is estimated that the total global annual insurance premium attaching to the operational power generation sector has reached USD 2.0bn. However, according to LIU’s global loss incident database, the sector claims experience in the past five years has exceeded this premium level, reaching approximately USD 2.6bn in 2012. In the light of this deficit, most specialist power generation insurance markets are seeking to place even greater emphasis on risk selection and the promotion of price adequacy, and adopting a more conservative approach to line structure in an effort to contain potential portfolio volatility. As mentioned above, replacement property values are increasing and business interruption sums insured are also slowly beginning to rebound, in line with wider economic and industry dynamics. These developments can mean the need for additional underwriting capacity on major power generation accounts, given the impact of these increased property and business interruption values on Estimated Maximum Loss projections.

Working deductibles for property damage, machinery breakdown and business interruption in general have continued [to rise] to historical levels, but there is now a growing trend for these to be challenged and increased where concerns exist relative to operator profile, technology involved, catastrophe risk exposure and an account’s loss experience. Underwriters are taking an increasingly diligent approach to the provision of base policy cover, with particular focus being attached to traditional extensions to policy wordings and the limits applied, in areas such as contingent business interruption. With the global market consensus to drive more positive terms and conditions, many of the larger placements are being placed on a ‘split’ basis, with individual underwriters quoting their own terms for underwriting capacity according to individual risk appetite.

For the immediate future, greater focus will be placed on operator behaviour (including insurance buying practices and attention to risk improvement processes), inherent risk assessment and benchmarking according to relevant qualifying metrics (including technological impact, maintenance and inspection technique, contingency planning) and the application of pricing discipline (technical rate and working deductibles given policy coverage demands).

Given the industry challenges and claims trending that has been witnessed over the past 12 months, technical emphasis is likely to increase in the following areas:

- **Valuation**: continuing discipline in the establishment of adequacy of insured values thus attempting to encourage fairness in approach to all operators;
- **Combustion Turbine Technology**: evaluation and benchmarking of original equipment manufacturer and individual unit type, and increased deductibles applied where loss attrition is evident;
- **Steam Cycle Applications**: amended risk appraisal approach to encompass perceived increased risk associated with ‘emerging market’ suppliers including surveys of manufacturer’s workshops;
- **Hydro-Electric Facilities**: expansion of project evaluation to include a detailed assessment into integrity of dam, diversion tunnel and access road infrastructure;
- **Ageing Plant and Equipment**: increased benchmarking of relevant categories of risk at a mechanical and electrical ‘object’ level – including maintenance, inspection and performance measurement;
- **Contingent Business Interruption**: emphasis on approach to cover, limits and pricing expectations to reduce potential portfolio volatility;
- **Catastrophe Perils**: with the loss returns impacting the power sector following the occurrence of Superstorm Sandy for example, increased vigilance in evaluating storm surge exposures, pricing requirements and line structure.

In conclusion, with investment levels in the power generation sector planned to reach some USD 450 billion over the next decade and with the global insurance market, buoyed by the prospect of greater pricing stability (whilst recognising some regional degree and difference), the outlook for the specialist operational power generation insurer indicates the prospect of sustainable demand and a move to profitable returns.
With the global market consensus to drive more positive terms and conditions, many of the larger placements are being placed on a ‘split’ basis.
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