Floating giant

The world’s longest floating bridge is currently under construction in Seattle. A challenge for constructors and insurers alike. PAGE 12

Industrial liability
Globalisation and liability practice

Telematics
Fewer accidents thanks to assistance systems

Diabetes
Taking steps to combat the disease
Dear Reader,

Technical progress, digitalisation, networks. The risk landscape is changing at breathtaking pace. Innovations are vital if insurers are to tap into profitable growth in this environment.

But for us, innovation does not just mean devising completely new products. Innovation can also be the further development of existing tools – perhaps due to the availability of new data – so that they provide additional benefit for our cedants. The article beginning on page 18 highlights one such example: since early 2014, we have integrated new high-resolution flood zones into our service tool NATHAN Risk Suite with an accuracy unprecedented in the market. This application helps underwriters and risk managers to assess risk locations and complexes more effectively and swiftly establishes clarity in the event of a claim.

Large-scale innovative projects naturally attract more attention, particularly among the general public. The world’s longest floating bridge is currently under construction in Seattle. As the leading reinsurer, Munich Re prepared a comprehensive coverage concept for this major engineering risk in collaboration with primary insurers. The project is presented in detail from page 12 onwards.

Munich, September 2014

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

NOT IF, BUT HOW
Heavyweight in tow

A 2.3 km long floating bridge is currently under construction in Seattle, Washington. The bridge consists of 77 pontoons, the 33 largest of which are 110 metres long, 23 metres wide and 8.5 metres high – as tall as a two-storey building. Weighing in at 11,000 tonnes, each one is as heavy as 25 Jumbo Jets.
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The new mass disease
The number of diabetes cases is increasing throughout the world, placing a huge financial burden on healthcare systems. Education and prevention could help ease the problem.
In May 2014, NATHAN received the “Geospatial World Excellence Award” for innovation from the Geospatial World Forum.

The reasons given for this award: With NATHAN, Munich Re has shown how geoinformation systems can be used for risk analysis in the insurance industry. Particular mention was made of NATHAN’s operating accuracy and its flexibility of use, ranging from the address-based analysis of a location to the assessment of entire portfolios covering all natural hazards.

>> www.geospatialworldforum.org

Munich Re is hosting the sixth ILS round-table meeting of experts in Monte Carlo.

In addition to six international experts from the ILS/ART community with their specialist perspective, Thomas Blunck will outline current and future market developments from the vantage point of a reinsurer. It promises to be an exciting exchange of views, especially given current developments in this segment.

>> Visit us at the Fairmont Hotel, Salle D’Or II, from 10 to 11 a.m. on 15 September 2014 and join the discussion.

The Supervisory Board appointed two new Board of Management members this spring. Doris Höpke was appointed a member of the Board of Management with effect from 1 May 2014. She will take over responsibility for the Health Division. Pina Albo will become a member of the Board of Management from 1 October 2014. She will take on responsibility for the Europe and Latin America Division together with Georg Daschner from that date, and will assume sole charge of the Division from 1 January 2015.

Munich Re publishes current information on developments relating to Solvency II and enterprise risk management in an international context several times per year as part of its Knowledge Series.

>> For further information, go to www.munichre.com/spaceflight

>> Subscribe to our RSS Feed to stay abreast of this key topic: www.munichre.com/en/sii

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Social Media

Why not meet us on the net?
In July, Steven Chu visited Munich Re and talked with Peter Höppe, Head of Geo Risks Research/Corporate Climate Centre.

**Peter Höppe:** Mr. Chu, we are happy to have you as a guest here today. Where are the connections between your work and ours?

**Steven Chu:** As a data-driven scientist, I wanted to shift the dialogue on changes in weather away from single events. In the last few years I have been studying and using your data to help educate the public that weather patterns are changing. What I like about your data is that you have to be objective and dispassionate since you are ultimately driven by business decisions.

The wind in the US policy on climate change has turned recently. What are the main reasons for this new attitude?

I think the main reasons are changing weather patterns and the high costs that just a few major storms caused in the last ten years. Several former EPA Administrators and Secretaries of Treasury, both Democrat and Republican, are now saying we have to pay attention to mounting climate change risks that entail major significant economic losses.

What can be done if the climate change negotiations in Paris 2015 fail again?

We should remain hopeful. These negotiations are important but even more crucial is that we are beginning to see movement in the US and China. Ultimately, those two countries are responsible for nearly half the carbon emissions in the world. The Chinese government is very committed: they accept that climate change is real and is threatening their people and their long-term prosperity. They are also working hard to diversify their energy supply. Many states in the US are also taking aggressive action. Above all, the US has the technological and innovative capacities to invent things and to invest in new technologies. Advances in technologies are rapidly bringing down the price of renewable energy and energy storage. When we also consider the large economic losses due to the accelerating changes in weather, the cost of renewable energy is the low-cost option. Finally, money drives everything in energy, and we absolutely need a price on carbon and other GHG gases to reflect the real cost of these emissions.

Many countries are trying to reduce their dependency on fossil energy. In your opinion, what is the ideal energy mix of the future?

We have to start with much-improved energy efficiency in all sectors. With regard to the energy mix, it depends on where you are geographically: North America as a whole, Europe in combination with North Africa, and China have good resources in wind, solar and hydro-power. Renewable energy becomes especially attractive if these regions have integrated grids and generate renewable energy where it is most cost-effective.

What has to be done to support the new technologies?

One major challenge is full system engineering of generation, storage, transmission and distribution of electrical energy. As renewable energy becomes the majority supplier of total electricity generated, the system engineering needed to guarantee the stability and security of the grid becomes more demanding. I would favour converting electrical energy into a form of liquid chemical storage that we can pipe, transport, and store. We need more research in this area!

How can the insurance industry support this process?

You are helping citizens and policymakers realise the risks of climate change by accurately assessing the insured and uninsured losses due to our changing climate. The industry can help the financial community invest in new clean energy by insuring project risk. Experience has shown that once technologies are proven at large scale, the cost of capital declines significantly. In this way, clean energy, which is dominated by up-front capital costs, becomes a safe, long-term investment.
Are industrial companies underinsured?

The international division of labour is influencing liability practice throughout the world. Industrial accidents and environmental scandals are given much greater prominence these days and can affect different legal systems. This poses a major challenge for companies and their insurers.
The global population has increased fivefold since the 19th century and industrialisation has long spread to the developing nations. The danger posed to the environment by today’s “third” industrial revolution is greater than ever, despite all the technological, medical and social progress made, and more people are now employed in dangerous working conditions than at any time in the past.

A hundred years ago, labour issues were higher on the political agenda. Today, the interest in environmental issues has increased, as has the involvement of the old and new media, which recurrently focus on one scandal or another. In our closely networked global economy, industrial accidents, deplorable working conditions, environmental scandals and other dubious practices in far-distant countries can quickly become headline news and the subject of extensive media reports due to the close connection with domestic customers and consumers. Such media coverage draws public attention to topics which were previously only of interest to ardent environmentalists and human rights activists.

This invariably leads to streams of rhetoric calling for international codes of conduct and voluntary commitments, the majority of which are virtually untenable when faced with the reality of global market conditions. Gradually, however, such “soft law” – unenforceable by definition – brings increasingly stricter standards of care, also in terms of tort law, be it within corporations or along the extensive supply chains.

Supply chains lead from developing countries to industrialised countries and vice versa. They were first viewed from the point of view of manufacturers’ liability and consumer protection in the 1970s and 80s. Global liability was initially associated with export markets. As a result, US product liability risks began to be considered in the insurance cost of goods exported to the US. In the European Union, the liability of manufacturers and importers was tightened up to protect the interests of EU consumers when the cause of a product defect lay in the non-European supply chain. Consumer protection laws were passed throughout the world, some of them (e.g. in Brazil) far more radical than the European model.

Today, responsibility in the supply chain is also considered in the opposite direction. Are the manufacturers and importers morally, factually, contractually or legally liable under tort law for personal injury and environmental damage in the suppliers’ countries? Does responsibility for disastrous industrial accidents, such as those in Bangladesh, consequently rest not only with the local companies, but also with the big textile firms and trading companies? As in the case of product liability, it all depends on each company’s actual influence on working conditions in the supply chain.

**New Munich Re brochure**

It is not easy to obtain an overview of local and global responsibilities. In its publication “Employers’ liability for occupational illness and injury – A familiar risk in a changing world” (Volume 5 in the series “Risk, liability and insurance”), Munich Re outlines different types of employers’ liability. A further brochure containing case studies on environmental liability will be published soon.

The first part of our publication on employers’ liability discusses the respective local situations concerning liability, which differ greatly from one country to another. It goes on to describe the various liability insurance systems and considers the relationship between employers’ liability and third-party liability, including the limits of moral, actual and legal responsibility in a closely networked, well-informed global economy. It concludes with an observation scheme permitting a more differentiated understanding and anticipation of the multifaceted developments in liability practice.

Our objectives are threefold:

1. **Transparency as regards the local markets**

In no other area of tort law is a comparable overview between countries so difficult. Liability practice in cases of personal injury generally varies due to differences in the interaction with social insurance systems. This applies above all to employers’ liability, for which each country, even within the EU, has developed its own national solution. In some cases it is of marginal significance, as in Germany. In others, it is the most important line of general liability insurance,
Liability has become more complex in a globalised economy in which the supply chain leads from developing countries to industrialised countries and back. The manufacturers are traditionally liable for defective products downstream within the scope of their product liability (blue arrows). Liability may now also apply in the opposite direction (red arrows). Does this mean that the manufacturers and importers are morally, factually, contractually or legally liable under tort law for personal injury, environmental damage and other negative impacts upstream in the suppliers’ countries?

- Traditional product liability of the manufacturers (e.g. of products containing asbestos)
- Possible liability of the manufacturers or distributors of end products for working conditions or environmental risks in earlier phases of the production process

Source: Munich Re
as in the UK. Generally, developments in liability practice lie somewhere in between, but often closer to the UK model. In the industrialised countries, it is shaped by new rulings in ongoing asbestos lawsuits, and in the developing countries by disastrous industrial accidents. In this far from transparent area, we have initiated the first serious comparative law study of its kind by the European Centre of Tort and Insurance Law in Vienna. Our publication builds on this 12-country comparison and takes in a number of other countries including the BRICS states of Brazil, Russia, India, China and South Africa.

2. Sensitisation

Quite apart from the various local developments, the "duties of care" of internationally operating firms are becoming more stringent in conjunction with the structurally determined, but therefore by no means less scandalous, working conditions prevailing in the supplier countries.

3. Best practices

Finally, we are also pursuing a more far-reaching objective. The study has delivered a great number of solutions for the interaction between public and private first-party insurance with liability and liability insurance in the various insurance markets. An overview of systems that have developed historically, with all their strengths and weaknesses, provides a collection of market-specific solutions, also in other critical risk areas, when considering which mix of insurance and liability systems is best able to meet society’s needs.

Need for action

What needs to be done in the individual national markets? Are catastrophic industrial accidents – which can also occur in combination with natural hazards or terrorist risks – adequately insured? Every ship or aircraft is covered by liability insurance worth billions, but the limits of indemnity under general liability policies are usually considerably lower and may additionally contain sublimits or exclusions for employers’ liability. And how can specific problems of cover be solved for occupational diseases or the precarious or informal employment relationships which are resurfacing in industrialised countries as well?

301 miners killed and 486 injured – the tragic outcome of a fire in a lignite mine in Soma, western Turkey, in May 2014. The state-owned mine, opened around 1960, was privatised in 2009. Critics ascribe the accident to cost pressures and safety defects that were known but not remedied. Employers’ liability is the most important line in industrial liability insurance in Turkey. Occupational diseases may well be largely uninsurable. But why are such accidents not insured, under obligatory covers if necessary, with high limits of indemnity?
On the other hand, international coverage concepts must also be scrutinised in more detail. Most of today’s umbrella or master cover policies are shaped by the parent company’s domestic market. This can lead to questionable solutions. Because the local conditions are unknown, employers’ liability is frequently sublimited or excluded as a precautionary measure. Many questions concerning the interaction between local and international cover remain unanswered.

However, industrial accidents in the supply chain such as those in Bangladesh tend to affect external companies not included in the group-wide coverage concepts. Why, in that case, do the customers – such as the large manufacturing chains or trading companies – not demand that their suppliers purchase correspondingly high liability insurance? In this way, they would contribute to the development of local legal practice and insurance markets just as they are striving to promote the development of local regulatory standards through on-site factory inspections or as the International Labour Organization is striving to establish local compulsory workers’ compensation schemes.

While underinsurance is unfortunately widespread and by no means just restricted to the emerging markets alone, liability insurers can take steps to combat it on several levels. The limits of indemnity should be sufficiently high to cover the needs following major industrial accidents and complex rescue operations. In the case of group-wide covers, the interests of the parent company and subsidiaries on the one hand should be coordinated accordingly with those of the insurers providing the basic and umbrella covers on the other. Adequate liability and accident insurance should be demanded of the local suppliers and subcontractors. Liability and accident insurance companies should also consider the possibility of public-private partnerships and compulsory insurance. And why do rating agencies and other analysts not draw the attention of risk managers in industrial companies to the fact that the firms (which already have to cope with frequently uninsurable long-tail liability issues) could at least be better insured against ruinous liability for industrial accidents?

>> You can download “Employers’ liability for occupational illness and injury – A familiar risk in a changing world” from connect.munichre.com or order a copy from your Client Manager.

OUR EXPERT

Christian Lahnstein was for many years responsible for fundamental issues of tort and insurance law at Munich Re. clahnstein@lahnstein-pacon.de
In the study “Employers’ Liability and Workers’ Compensation”, commissioned by the European Centre of Tort and Insurance Law (Ectil) in Vienna, experts from the respective markets discuss the compensation paid to employees for occupational illness and injury in twelve countries: Germany, France, England, Italy, Denmark, the Netherlands, Austria, Poland, Romania, Australia, Japan and the US. The various national models – exclusive employers’ liability, combinations of employers’ liability and workers’ compensation, the (almost) total transfer of compensation from liability law to alternative compensation systems – are described in detail, highlighting the respective advantages and disadvantages.

The shift in the functions which each of these forms of compensation for employees must fulfil emerges clearly from the study. Originally, the focus was on compensating workers injured as a result of accidents. Taking care of employees with occupational diseases subsequently gained in importance. This raised a multitude of new problems, from causality and the question of limitation periods for long-tail claims (consequential claims due to asbestos being the best example of this), through the consequences of an employer’s insolvency, to distinguishing between occupational psychological disorders and those attributable to other causes. More recently – particularly in the US, but to a growing extent in Europe, too – employers’ liability has also played a role in cases of discrimination, and moral and sexual harassment.

This is a useful and interesting book for anyone involved in insuring risks in the field of tension between labour law, social insurance and liability law, whether at a national or international level.
The longest floating bridge in the world

The world’s longest floating bridge is currently under construction in Seattle, Washington – and it is a masterpiece of engineering and logistics. Munich Re, with its wealth of expertise, is involved in insuring the project.

Robert Gschwandner and Peter Hangen

It is a colossal reinforced concrete structure the length of a football field and as high as a two-storey building, with a tiny green tugboat in front of it. This tugboat, the Ocean Ranger, has already been sailing for three days, pulling an enormous pontoon from the dock in Aberdeen, Washington, along the Pacific coast, into the Strait of Juan de Fuca and then through various canals to the construction site on Lake Washington in Seattle.

Excitement is building in the project team on this cool day in April 2014 even though this is already the 36th of 77 pontoons to be towed into place. That is because precision work will now be needed: the present floating bridge has been opened wide to allow the pontoon to pass through. The Ocean Ranger carefully tows the 11,000 tonne reinforced concrete structure (equivalent to the weight of 25 Jumbo Jets) into the construction site next to Pontoon N, which is already in place. It takes several hours more to manoeuvre Pontoon O snugly into its final position. The team is relieved that everything has gone smoothly. Some time later, the Nancy M arrives, towing the next pontoon.

Pontoons are floating hollow bodies made from reinforced concrete. In Seattle, the pontoons are lined up like beads on a string, then connected to the bed of the lake with heavy anchors, after which the road surface is laid on top. All in all, it is a project of superlatives. No pontoons have ever been built that are quite as large and heavy as these. At 2.3 kilometres in length, the new bridge is 800 metres longer than the present one, much wider with six lanes, and almost twice as high above the surface of the water (see box on page 15).

Floating bridges are a special challenge

Even for experienced bridge builders, floating bridges without foundations or piers are extremely challenging. Four of the five longest bridges in the world of this kind are in Washington State. For many years, the SR 520 Bridge (also a floating bridge) has connected downtown Seattle with the northern communities on the other side of Lake Washington. A large number of commuters use the bridge every morning to travel to work in the city centre, returning in the evening to

View of the existing bridge on Lake Washington, which is now in a state of disrepair, and the construction site for the new floating bridge: it will be 2.3 kilometres long, have six lanes and be earthquake-resistant.
their homes in the fast-growing suburbs. Almost 100,000 people work at just one location, the Microsoft headquarters in the town of Redmond, to the east of Lake Washington. Up to 115,000 vehicles use the bridge every day, which was originally designed for a maximum load of just 65,000 vehicles.

The age of the bridge and the impact from the steadily increasing volume of heavy-duty traffic, with the enormous axle-loads involved, are pushing it further and further into the water. In rough weather with a heavy swell, the old bridge sways noticeably. During rush-hour traffic, it can also sometimes sag alarmingly. The bridge has to be closed on exceptionally stormy days in autumn and winter because water spills across the road surface.

The inclement weather conditions in the northwest of the US are also taking their toll on the old bridge: the concrete structure is now porous, allowing lake water to penetrate, and the steel girders are rusting at an alarming rate. Since a powerful storm back in the early 1990s, over 30,000 cracks in the structure have been repaired, and remedial work is still needed on a daily basis.

Geology meets geography

The new bridge was the subject of heated debate in Seattle for over a decade. Various technical designs were presented for selection, and detailed environmental surveys were carried out. Because Lake Washington is up to 60 metres deep, and since the bed of the lake consists of a layer of mud 30 metres thick, construction of a bridge with piers would have been both too expensive and geotechnically impractical. At the start of 2011, the state government therefore decided in favour of a new floating bridge to be built alongside the old one, which would replace it once completed (see Fig. 1). To achieve greater bracing strength, the pontoons are fixed to the bed of the lake by means of 56 anchors, each weighing 77 tonnes, roughly the weight of 70 cars.

Heavy load: Another pontoon arrives in Seattle after a journey lasting several days. The largest are 110 metres long, 23 metres wide and 8.5 metres high – as tall as a two-storey building. Weighing in at 11,000 tonnes, they are as heavy as 25 Jumbo Jets.
Fears about the next big quake

Even though the bridge floats on the water and is firmly connected to the bed of the lake via its enormous anchors, it still faces threats from windstorms, tsunamis and earthquakes. Earthquake exposure in the region is very high. The old bridge survived the last major earthquake (magnitude 6.8 on the Richter scale) without sustaining any serious damage. Nevertheless, it was still closed for several months because the access roads on the mainland were destroyed.

“The Big One”, an even stronger earthquake than the one in 2001, is bound to strike at some point. Of that the experts have no doubt. The only question is when. Despite many studies and simulations on the subject, there is still a great deal of uncertainty. The occurrence probability of a large earthquake striking one or more cities along the Pacific west coast between Vancouver and San Diego increases day by day. There are 13 tectonic faults in the region around Seattle (Puget Sound) alone, each of which is capable of triggering a powerful earthquake in the region.

In Seattle, people have also worried for years that a severe earthquake could trigger a tsunami with giant waves that could sweep away the bridge. An analysis of the exposure zones for the bridge’s geographical location using NATHAN Risk Suite confirms that such fears are well founded: NATHAN produces a risk assessment level of 3 for the occurrence probability of earthquakes (Zone 4 is the highest level), followed by the risks of tsunamis and severe storms.

Intense public and financial pressure on all the parties involved

Because the bridge is being financed largely from funds provided by the State of Washington, in other words by the taxpayer, its construction has attracted a great deal of public attention in Seattle and the surrounding region. The probable construction costs for the entire project are currently put at US$ 4.6bn.

Unexpected damage and work to repair it would not only seriously delay construction of the bridge, but also entail high additional costs. The primary insurers involved in the project therefore needed an experienced partner on the reinsurance side, one with a high level of technical expertise, who would be able to provide cover for the construction of both the pontoons and the bridge.

Underwriting challenges

From an engineering perspective, every building project is unique. After all, the many general features, such as geology, location and materials, as well as specific technical requirements, can all differ widely from one structure to the next. This repeatedly presents challenges for everyone involved in a project, including the insurers.

Comparison between the old and the new bridges

The old bridge (above) has been in service for many years. It was originally designed for 65,000 vehicles. Today, more than 115,000 vehicles cross over each day. The new bridge will therefore be much wider (35 metres) and will have six lanes. In comparison with its predecessor, it will also be higher above the surface of the water (13 feet/4 metres, 20 feet/6.1 metres).

Source: Washington State Department of Transportation
For the insurers involved and for Munich Re as the project’s reinsurer, the main challenge was to understand the totality of risks and to assess them in a risk-adequate way. The problem is that there is little experience relating to construction and underwriting of such a long floating bridge. The bridge is a prototype, the manufacturing areas complex, and there are a lot of factors to consider. Both the technical planning and the cover concept need to take account of the width and height, the unladen weight of the bridge, the weight of the traffic, and also the loads exerted by currents, wind and waves. Once they are built and delivered to the bridge location, the pontoons must be permanently stable, just as the calculations onshore promised.

Munich Re has insured only a small number of floating bridges up to now, but the cedants and the consortium placed their trust in us based on our extensive experience with insuring other challenging engineering mega-projects in the realm of bridge and tunnel construction.

Customised solutions for large, complex, individual risks

Experience from other construction projects was considered when quantifying the risks: similar pontoons, for example, have been insured as immersed tunnels for underwater tunnels in Turkey and in Vietnam. Pre-stressing and anchoring techniques are also known from other infrastructure projects. In addition to the technical aspects, the impact from natural catastrophes like earthquakes, tsunamis and windstorms played a central role in the risk assessment.

The relatively little claims experience with floating bridges in the immediate region shows that longer floating bridges can be damaged even by smaller natural catastrophes. For example, two bridges have already been sunk in the State of Washington as the result of storm damage: the Hood Canal Bridge (to the Olympic Peninsula) in 1979, and the Interstate 90 bridge over Lake Washington in 1990. The design-related shortcomings in these two cases were addressed in the plans for the new bridge.

A high level of precision is required when anchoring the pontoons.
In cooperation with the consortium, Munich Re developed an innovative concept covering construction and transportation of the pontoons and the building of the bridge. Insurance cover extends to the dock and the construction of the pontoons in Aberdeen, as well as transportation of the pontoons up to the first anchor point. At the construction site, the cover solution includes the anchoring of the pontoons on the bed of the lake, the pre-tensioning of the pontoons, connecting the bridge with the mainland and the laying of the road surface.

The bridge should be open for traffic in 2016

The Ocean Ranger, Nancy M and many other tugboats will be kept very busy over the next few months, towing pontoons to Lake Washington. All the pontoons should be anchored and connected in place by the end of 2014. After that, the remaining work will continue. The floating bridge in Seattle should be finished by early to mid-2016, after which it will become the city’s latest attraction.

>> Further information on this major project can be found on our Touch Engineering internet portal at www.munichre.com/en/engineering

Facts and figures

- Start of construction: October 2011
- Scheduled completion date: Early/mid-2016
- Estimated construction cost for the entire project: Approximately US$ 4.65bn
- Length of the bridge: 2,310 metres (total structure: 4,750 metres)
- Width: 35 metres (six lanes, two hard shoulders, and a pedestrian and cycle path)
- Height of roadway: 6 metres above the water
- Number of pontoons needed: 77 (the 33 largest pontoons are each 110 metres long, 23 metres wide and 8.5 metres high)
- Weight of the largest pontoons: 11,000 tonnes

OUR EXPERTS

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Munich Re Topics Magazine 2/2014 17
Transparency and expertise – The key to success

These days, managing risks holistically requires a detailed knowledge of the geographical surroundings if the hazard potential is to be precisely assessed and adequately priced. NATHAN Risk Suite supports insurers and risk managers in this task.

Geodata have long been in use in the insurance industry. Now conveniently available at individual workplaces, they have become an integral part of risk management.
As the frequency of extreme weather events increases, an accurate assessment of risks and of the loss potential posed by natural hazards is more crucial than ever for insurers in all lines of business. Long-term success is only possible if a portfolio's risks are known precisely and the prices calculated appropriately for current and future scenarios.

The importance of geoinformation systems has increased

The insurance industry has been making use of geo-data for many decades; originally, they were primarily used in property insurance for managing risks from natural hazards. To obtain this information, different risk data are collated from various sources, linked to spatial data and visualised by means of satellite images. This yields detailed risk landscapes which illustrate the exposures and possible accumulations within a region very effectively. Depending on the issue and the task, users can thus produce their own up-to-the-minute risk profiles and display them in map form.

Technological advances and web-based solutions have revolutionised and greatly simplified these applications, making the analysis of geocoded portfolio and loss data a fundamental element of risk management. They are used throughout the insurers’ value chain – i.e. for the identification, modelling and assessment of risks, as well as for claims management. For industrial risks and their locations, it is now possible to carry out highly accurate geographical portfolio analyses. The results of these analyses help to optimise premium calculation and risk management.

However, these solutions must be closely linked to processes inside the company if full use is to be made of the geographical expertise available. Munich Re has been using geointelligence for rating purposes for many years now and is constantly refining and improving the techniques it uses.

NATHAN – A success story

Munich Re’s expertise in geo risks research is based on decades of experience and data on cyclones, hurricanes, earthquakes and other natural hazards that have been systematically collected and evaluated.

NATHAN Risk Suite combines all our expertise in this field and has been available to clients since 2011. NATHAN stands for Natural Hazards Assessment Network. It is a package of geo-tools permitting precise address-based assessment of natural hazards for individual risk locations and also of entire risk portfolios worldwide. Working with geocoded portfolio and loss data, NATHAN can analyse and depict complex geographical correlations. This transparency provides the basis for the efficient identification of risks and their spread in a portfolio or market, more accurate pricing without cost-inflating loadings, long-term portfolio monitoring and the identification of hotspots and accumulations – in other words, it helps to ensure profitable operations in the long term.

Jürgen Schimetschek

NATHAN Risk Suite products

Munich Re has pooled its range of services in NATHAN Risk Suite. The individual products are available either in print or online, for individual-risk analysis or portfolio analysis, with different geographical resolutions and levels of integration in the assessment process. As a result, suitable products are available for all individual requirements.
The risk in detail

High-resolution data clearly show that the risk exposure can differ significantly despite geographical proximity, as illustrated by industrial locations in the Bangkok area of Thailand, for example.

The general map of the region serves as the starting point.

It can be increasingly magnified to pinpoint an individual location – in this case the Bangkok metropolitan area.

The close-up shows clearly that, although only a few hundred metres apart, the individual risks (red dots) nevertheless have different exposure to flooding.

Constant further development of the tools

We strive to continually extend our tried-and-tested NATHAN Risk Suite to include updates, new content and functionality, enhancing the precision of the information provided and making the system easier to use.

The latest improvements include:

- Restructured navigation interface for even more intuitive operation
- Hybrid base map to link satellite images with information about the location and roads
- Newly defined CRESTA zones in two resolutions (HighRes and LowRes)
- Digital elevation model with a spatial resolution of 90 m for more effective mapping of the risks posed by storm surges and tsunamis
- Report on the analysis of insured values allowing the exposure resulting from the combination of natural hazard zones and insured values in the region to be displayed at the push of a button
- High-resolution display of global flood zones with two return periods

New standard for assessing flood risks

Since the beginning of 2014, we have been successively integrating high-quality standardised flood zones into NATHAN, with a globally unprecedented degree of accuracy. Risk locations can be evaluated consistently and hence more accurately with the new globally standardised maps of high-hazard flood zones. The principal advantages of the flood zones are the global scope, consistent use of a digital terrain model with a resolution of 30 m and also the high-quality, hydrological basic data. This is a major improvement, for a resolution of 100 m was hitherto the best that could be achieved when analysing natural hazards on a global scale. Due to the global coverage, only rivers and tributaries with catchment areas of > 500 km² have been included. This approach means that not every tributary is shown.

Risk locations can be evaluated consistently and hence more accurately with the new globally standardised maps of high-hazard flood zones.
In addition, NATHAN consistently supplies the data for floods in two return periods, namely 100 and 500 years. As a result, the data can now be compared – in the past, the return periods differed not only in length, but also from one country to another.

Consistent data now make it possible to assess flood risks more accurately in 169 countries and help underwriters and risk managers answer the following questions when evaluating the risks due to natural hazards in insurance and reinsurance:

- Where do we have significant exposures in our portfolio and what can be said about their quality?
- Where can we write new business without significantly increasing the portfolio’s potential for flood losses?
- Where should we avoid writing new or additional business?
- Is there a flood risk somewhere that needs to be analysed in more detail?

Further information is available online at connect.munichre.com. Contact your client manager if you wish to use NATHAN.

OUR EXPERT

Jürgen Schimetschek, who holds an M.Sc. in Geology/Hydrology, is a risk manager in Corporate Underwriting/Geospatial Solutions at Munich Re. He specialises in geointelligence and client services and how they add value to the insurance business. jschimetschek@munichre.com
Is your business geointelligent enough?

Modern integrated risk management requires a detailed knowledge of the geographical environment. NATHAN Risk Suite optimises your assessment of natural hazard risks, from entire portfolios down to individual risks at address level – worldwide.

OUR SOLUTIONS – YOUR SUCCESS

NATHAN Risk Suite offers a range of advantages:
- Knowledge of individual locations for tailor-made rating
- Greater transparency of complexities ensuring clear-cut decisions
- Increased knowledge providing an optimal spread of risks

For further information, please contact your Client Manager or go to connect.munichre.com

NOT IF, BUT HOW

New: Globally standardised flood hazard maps
Better insurability for breast cancer patients

Munich Re has introduced a new calculator in the North American market for rating life insurance applicants with a history of breast cancer. The breast cancer calculator enables primary insurers to offer more competitive premiums and finalise policies sooner.

Mammography is an important means of discovering breast cancer at an early stage.
LIFE INSURANCE

Robert Lund

Breast cancer among women is very common. Since the introduction of large-scale screening mammograms in the mid-1980s, diagnosis of early-stage breast cancer has approximately doubled in North America. This is good news for those affected, as early detection is key to successful treatment.

In step with the latest advances

Munich American Reassurance Company and Munich Re Canada (Life) have introduced a new section for underwriting life insurance applicants with a history of breast cancer into their North America underwriting manual, EDGE. The new breast cancer section was mainly developed using data from SEER (Surveillance, Epidemiology and End Result), the national cancer registry of the National Institutes of Health in the US, although information from clinical studies and industry data were also included.

The easy-to-use calculator takes a new approach to age bands, dividing applicants into three age groups: age 49 and under, ages 50 to 69, and ages 70 and above. This is more relevant than the 40 to 65 age band used in the past and has resulted in a decrease in the ratings recommended for those aged 50 to 69, the vast majority of early-stage breast cancer applicants.

Breast cancer is hormone-dependent, with tumour growth stimulated by oestrogen. Post-menopausal women over 50, who make up the vast majority of those treated for breast cancer, have a more favourable prognosis than pre-menopausal patients. The advent of effective hormone therapy has further improved survival curves, notably among older age groups. Around 75% of women over the age of 70 with localised breast cancer have no lymph node involvement and relatively non-aggressive tumours, and treatment is usually confined to surgical removal of the tumour (lumpectomy) and hormonal treatment with the oestrogen receptor antagonist, tamoxifen. Survival in this setting has been found to be as good as when more aggressive treatment is pursued. In these cases, lymph node dissection for pathological examination is not performed and the new breast cancer section in EDGE reflects this clinical approach and the relatively favourable survival.

Precision, fairness, competitive premiums

With the new calculator, primary insurance underwriters can swiftly determine appropriate ratings for applicants with a history of breast cancer and offer coverage commencing as early as one year after completion of treatment. For maximum convenience, it asks “knockout” questions that filter out uninsurable applicants first, enabling the underwriter to fully concentrate on the applications that may be insurable. It has been found that early-stage breast cancer demonstrates survival that is more aptly described using table ratings (e.g. debits) rather than the traditional temporary flat extra loading form. In the majority of cases the indicated debits are minimal, enabling a standard or mildly substandard offer to be made. The traditional “postpone” period offers no real advantage in early-stage breast cancers because the minimal extra mortality is expressed relatively later.

For most early-stage cases with neither lymph node involvement nor metastatic spread, the tool recommends minimal debits or even standard ratings.

When confronted with complex and problematic applications, clients are always welcome to contact the Munich Re specialists in the US and Canada for support and, in many cases, facultative reinsurance solutions. The overall effect of the underwriting tools and services is expanded insurability and competitive strength for clients.

The advantages of the calculator: More favourable ratings, earlier insurability, fewer denials.

Intensive transatlantic cooperation is very important for the further development of both systems – MIRA and EDGE.
The breast cancer calculator is the third in a suite of cancer underwriting tools introduced in EDGE following the recently launched prostate cancer and cutaneous melanoma (skin cancer) calculators. Yearly additions of other new cancer sections are planned for the tumour calculator.

**Underwriting excellence on both sides of the Atlantic**

EDGE is tailored to meet client needs in the North American market. Like its counterpart MIRA, which is available in various languages and versions worldwide (except North America), EDGE delivers evidence-based underwriting recommendations in straightforward and convenient form. In addition, extensive background reference information is available via a search function. Both are platform-independent and require no special software.

MIRA and EDGE benefit from intensive transatlantic cooperation between colleagues in the US, Canada and Munich. Web conferences, held on a regular basis, and on-site collaboration guarantee effective knowledge-sharing, essential to the ongoing refinement and expansion of both systems. Highly advanced underwriting platforms not only boost efficiency in the business process, but also raise the bar in terms of underwriting excellence – to the benefit of all stakeholders. “More favourable ratings, earlier insurability, fewer denials.” The breast cancer calculator makes EDGE more attractive than ever to insurers.

**OUR EXPERT**

Robert Lund, Vice-President and Medical Director of Munich American Reassurance Company, was significantly involved in the development of the new calculator. rlund@munichre.com

**The online underwriting manual EDGE**

EDGE is tailored to meet the needs of clients in the North American market. Besides the breast cancer calculator, it currently includes calculation tools for prostate cancer and skin cancer. Further additions are planned.
What is it that makes reinsurance so exciting?

You can find out the answers to this question in TOPICS ONLINE. Our magazine for insurers takes you behind the scenes at Munich Re and shows you what drives us. We will introduce you to interesting people, address current topics in the worlds of insurance and finance, and present the latest trends, solutions and services.

Have your say: use the comment function to start interesting discussions with us. Your opinions are reflected in interactive surveys.

www.munichre.com/en/topicsonline

NOT IF, BUT HOW
Livestock hazards

Livestock farming
Whether organic or conventional – what is on the label must also be in the product.

Diseases/epidemics
If a complete herd is affected, the financial consequences for the farmer can be dire.

Vaccines/medicines
There is a risk if residues exceed threshold values or unlicensed medications are used.

Feed
Feed must be species-appropriate and free from contaminants.

Food risks

Even though you might think otherwise given the level of public debate on the subject, our food has never been as safe as it is today. Legal requirements for product safety and the powers of the public authorities to enforce these requirements are rising throughout the world. This is an important starting point for the best-possible consumer protection. Risks can nevertheless occur in many places along the production chain.
Crop hazards

Pests
- Pests can be a sign of poor hygiene.

Cold chain
- This must be guaranteed throughout the entire period of transportation and storage.

Weather risks
- It is also possible to insure against these.

Genetic engineering
- There are considerable variations from market to market in regulations on this point.

Allergens
- The consumer’s health could be seriously impaired if allergens are not declared.

Ingredients
- Missing or defective declarations can lead the consumer astray.

Transportation
- What should be done if supplies fail to arrive?

Soil/environmental influences
- These can significantly influence the quality of food.

Hygiene
- This is of prime importance during processing, storage and transportation.

Fertilisers and crop protection products
- Residues are not palatable and can be dangerous to health.

(P)hazard (Analysis and Critical Control Points) and the Codex Alimentarius of the FAO and the WHO as well as national regulations define the framework for food production.
PRODUCT LIABILITY

Andreas Dettendorfer
and Alfred Sattler

EHEC, hormones and antibiotics in meat, dioxins in eggs, glass shards in apple sauce, milk powder contaminated with melamine, or fraudulent labelling – the list of much-publicised food scandals is long, and new cases are uncovered at regular intervals. The effects such scandals can have on the consumer range from a feeling of revulsion to serious food poisoning. But the general public does not always accurately gauge the level of risk involved nor does every food scandal result in an insured third-party liability claim.

Multifaceted causes

The reasons why individual products become the subject of criticism are of a very diverse nature: something undesirable may already be present in the product (e.g. allergens or bacteria), or can develop there as a result of the product’s composition (e.g. fungi, parasites) or due to the production process (e.g. defective pasteurisation of the product, unhygienic conditions during production or an incomplete cold chain), or something harmful was able to enter the food (e.g. foreign bodies such as glass, wood or even bacteria or dirt).

Contamination or spoilage of foodstuffs can be traced back either to errors or intent. In the case of intent, a distinction must be made between the criminal actions of a company’s employees and third parties possibly wanting to extort money from the company.

The manufacturer is under an obligation

Even well into the 1990s, random sampling was the standard final check to monitor the safety of food. Since then, it has been agreed that this procedure offered little in the way of safety, as foodstuffs are rarely homogeneous or uniform. It was the BSE crisis which fundamentally changed thinking in this respect and intensified legal requirements and checks. All companies involved in foodstuffs are now subject to a special duty of care and official supervision. This requires that everything is done along the production chain to ensure that the food which is produced is safe and properly labelled.

The World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO) joined forces back in 1962 to create a body concerned with food safety, the “Codex Alimentarius”. Over 180 countries work together in more than 20 committees under the aegis of the Codex Alimentarius to develop standards, guidelines or codes of practice on food hygiene and safety which must be applied along the entire food chain – from the primary producer through to the end consumer. These include standards on food additives and contaminants or on specific product groups. Admittedly, these do not constitute legally binding national laws but they do act as recommendations for the Codex members. In the event of trade disputes, the World Trade Organization (WTO) consults these standards as reference norms for compliance with the underlying requirements.

Risk management and quality management are crucial

Since 1993, the Codex has recommended application of the HACCP approach (Hazard Analysis Critical Control Point) to guarantee food safety. HACCP was developed by NASA in 1959 to ensure the hygiene of astronaut food. In the meantime, it has become the most important international safety standard in the foodstuffs industry. In 2006, it became compulsory in the EU via Regulation (EC) 852/2004 on food hygiene and must now be incorporated into companies’ quality management systems. Only foodstuffs which meet the HACCP guidelines may be imported into and traded in the EU. The vast majority of the food industry complies with these regulations but shortcomings are repeatedly found among small and medium-sized companies. Three-quarters of all foodstuffs which are the subject of complaints come from this sector.

HACCP requirements are as follows:

− Conducting a hazard analysis

All risks relating to food safety within a company’s area of responsibility must be analysed. Example: Biological, chemical or physical properties of the food can be hazardous to humans.
The most expensive recall of all time in the foodstuffs sector

An ingredient contaminated with salmonella (to be specific, peanut butter or peanut paste) was sold to 85 companies which manufactured hundreds of different products from it. These products were subsequently sold to other manufacturers for further processing or to end consumers. All in all, up to 4,000 end products such as cookies, crackers, cereals, sweets and ice cream, not to mention animal feed, may have been involved.

The result was 700 cases of sickness and 9 deaths across 46 US states. The first cases of illness in the late summer of 2008 were followed by the first recall in January 2009. There was a total of 375 recalls. The government had to assume control of the recall campaign after the initiator went bankrupt. All recalls were placed in the highest risk category by the Food and Drug Administration (FDA). The FDA identified deficiencies in the manufacturing process even though the producer had contractually warranted compliance with “good manufacturing practice” and the HACCP guidelines. The company had also passed official and private audits. But any inspection is merely a snapshot of the situation at a particular moment in time. The Food Safety Modernization Act was passed in the US after this case.

Overall losses totalled about US$ 1bn.

**Approx. US$ 1,000,000,000**

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### Identification of critical control points

The critical points in the production process at which any deviation from the standard leads to unsafe or illegal foodstuffs must be identified.

*Example:* A cooking vessel in which foodstuffs are heated to kill pathogens which might be present is defined as a critical control point.

### Establishment of intervention limits

A minimum or maximum value must be defined for the critical control points to avoid any unacceptable hazard.

*Example:* A defined temperature must be maintained for a defined period in the cooking vessel.

### Establishment of monitoring procedures

Procedures for the continuous monitoring of the critical control points must be developed and implemented.

*Example:* The temperature in the cooking vessel is permanently monitored by a thermometer.

### Establishment of corrective measures

Corrective measures must be defined in case the monitored parameters should fall below the minimum values or exceed the maximum values; these measures must intervene and correct at the critical control point.

*Example:* If the temperature in the cooking vessel should fall below the minimum temperature, the energy supply is increased.

### Establishment of evaluation procedures

It must be verified that the system is suitable for ensuring food safety on an ongoing basis.

*Example:* Regular calibration of the measuring equipment, monitoring of the sampler or the collection of retained reference samples.

### Establishment of record-keeping procedures

All actions, documents and retain samples must be recorded so that the efficiency of the HACCP system can be proved.

*Example:* Data measured at the critical control points, defined critical values and procedures in the event of deviations from the required values must all be recorded.
PRODUCT LIABILITY

But preventive measures and standards cannot stop every case of contamination for the very reason that food manufacture has become increasingly complex as a result of the international division of labour and frequently long supply chains. Consumer awareness has also increased, with consumers much more fussy about where the food on their plate comes from. Consequently, there are frequent cases of suspected contamination of food, as well as actual contamination. In the event of health risks, public authorities alert consumers via special websites or the media. For example, the EU Commission’s “Rapid Alert System for Food and Feed” (RASFF) issues the latest warnings on contaminated food to European countries (see Fig. 1). In the US, up-to-date warnings or product recalls are published on the website of the Food and Drug Administration (FDA) or at foodsafety.gov (see Fig. 2). This is a portal on which national or state authorities provide information on food safety.

Product liability and product recalls

Under product liability, which throughout the world is normally conceived as strict liability regardless of negligence or fault, the manufacturer or importer is liable for defective products. Bodily injury and damage to property stand at the heart of product liability.

If defective products which have been placed on the market constitute a real and imminent risk of bodily injury, manufacturers and distributors are obliged to recall the goods in order to prevent injury. Public authorities are also normally entitled to issue a recall. In practice, however, recalls are mainly undertaken by the manufacturer and are only ordered by public authorities in an emergency. It is also possible to have a “silent recall”, where the public is not informed. These occur, for example, if contamination is discovered before the product in question reaches the consumer.

Fig. 1: EU food warnings in 2013 by product groups

In 2013, more warnings were issued in the EU about hazardous foodstuffs than in the previous year. All in all, more than a fifth of all warnings came from the categories “fish, molluscs and shellfish” and “meat and meat products (including poultry”).

Source: Preliminary RASFF Report 2013
Consumer protection takes centre stage everywhere in the world and food manufacturers find themselves increasingly confronted by ever stricter food safety requirements. In Europe, for example, the provisions of the new Food Information Regulation on the labelling of foodstuffs become compulsory on 13 December 2014. This includes the obligation to label allergens – an obligation which also extends to foodstuffs which are sold loose. The labelling of nutritional values also becomes obligatory from 13 December 2016. The stricter requirements for food safety, as well as an increasing quality consciousness on the part of consumers, have caused recalls to remain at a high level in recent years. A further factor is that because the food industry’s products are intended for consumption, it is an industry which is susceptible to malicious tampering of its products and even product extortion. In such cases, companies are exposed to a crisis situation which could even threaten their very existence. Consumers’ loss of confidence in the products or even in an entire brand can bring significant financial damage. The accompanying media interest exacerbates the situation further.

Contaminated Product Insurance can cushion the financial risk

Protection against the financial consequences requires cover which extends beyond that of conventional liability insurance. This is called Contaminated Product Insurance and includes many aspects of first-party cover.

The insurance covers the following costs (among other items):
- Recall costs
- Loss of profits as a result of reduced sales
- Advertising costs for product rehabilitation
- Ransom demands
- Crisis consultancy costs

Risk assessment in underwriting

The risk analysis must first examine the points in the box on the right. The following criteria are among the most important in this process:

- Is the company a manufacturer, supplier, importer or distributor?
- Is the policyholder’s product portfolio exposed (type and number of products, brand products and product awareness level)?
- What is the volume of sales, batches and series or the daily production of the best-selling products?

Ten key questions in risk analysis for liability insurance for food manufacturers

1. Is the personal hygiene of all staff (including contractor staff and visitors) monitored?
2. Does the structural design of the production premises ensure cleanliness at all times and is this backed up by regular maintenance and cleaning?
3. Has a risk analysis process and control of critical production areas been implemented using the HACCP procedure?
4. Are quality controls implemented using recognised best-practice standards and has a quality management system been established?
5. Is there an effective pest control process?
6. Are foodstuff-specific hazards associated with the policyholder’s product range (e.g. listeria, aflatoxins, allergens) specifically analysed?
7. Is it possible to trace components, packaging, raw materials manufactured by the company and those supplied by outside companies in the upstream supply chain and is it possible to trace finished products, transportation processes and, if applicable, the cold chain in the downstream supply chain?
8. Are raw materials as well as semi-finished and finished products monitored at all production sites for foreign bodies (e.g. wood, glass and metal) and for unwanted substances (e.g. toxic or nauseating substances)?
9. Do the declaration and product labelling (packaging) comply with the legal (and, where applicable, religious) requirements and is security against product tampering adequate?
10. Does the company undertake product monitoring after delivery? Does it have effective recall and crisis plans in place?
If insurance is also requested against malicious tampering and product extortion, close consideration must be given to factors such as how susceptible a product packaging is to tampering, company size, its public image, the products’ profile and popularity as well as possible internal motives such as employees’ job satisfaction.

**Recall and crisis management processes must be commensurate with the company**

It is particularly important to ensure that the HAACP requirements are fully met in the policyholder’s risk management system and that recall and crisis management processes have been established which are commensurate with the requirements of the company in question. This is because adequate preventive measures and an appropriate reaction to a potential crisis are the decisive factors in effectively minimising risks and costs.

When considering liability insurance in the foodstuffs industry, special attention should be paid to certain features. Because of their limited shelf-life, most products will be sold and consumed relatively quickly; this means that the total number of contaminated products will not be reached in a recall situation.

Suppliers of ingredients constitute an increased risk in recall insurance as enormous quantities of end products can be affected in a recall because of the “dilution effect”. This is the case, for example, if a relatively small quantity of an ingredient (e.g. a spice or a flavour enhancer) is spread across many end products. In certain circumstances, undesirable or inadequately researched substances in food which remain in the body after consumption can have carcinogenic, mutagenic or teratogenic effects over a period of many years. This means the liability insurer is exposed to a potential long-tail risk or, conceivably, to an accumulation risk if the problem involves an additive which is present in many end products.

It is precisely in this area that the insurer can act as a consultant for smaller companies and, through its experience, help to improve their risk management. And in the final analysis we will all benefit from this: companies, insurers and consumers alike.

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**Fig. 2: Foodstuff recalls in the US 2010 to 2013**

In 2013, foodstuff recalls fell compared with the previous year. But more than half of all recalls were once again in the highest risk category (class 1), remaining more or less at the same level as in 2012.

- **Class 1**: Reasonable probability that the product will cause serious adverse health consequences or death.
- **Class 2**: Product may cause temporary or medically reversible adverse health consequences; probability of serious adverse health consequences is remote.
- **Class 3**: Product is not likely to have adverse health consequences.

Source: FDA
PRODUCT LIABILITY

Insurers should also indicate the potential extent of the loss to their clients so that a limit of indemnity can be selected which is reasonable for the actual risks involved. The example in the box on page 31 demonstrates how high such losses can be in an extreme case.

In recent years, we have seen premiums in this area fall. However, this does not tally with the actual risk. In addition, insurance terms and conditions have been consistently extended in recent years – on the one hand to take account of increasingly strict consumer protection regulations and on the other hand because the entrepreneurial risk is being increasingly transferred to the insurance industry.

The basis for long-term profits in liability insurance for food manufacturers is therefore cautious risk selection and utmost care in underwriting, particularly in the case of “innovative” coverage modules or cost items.

In questions such as these, Munich Re can act as a consultant and partner to clients, as we continuously monitor the changing risks in the food sector and are happy to share this knowledge with clients through our Client Managers.

>> Further links:

http://ec.europa.eu/food/food/rapidalert/index_en.htm
http://www.fda.gov/Food
http://www.foodsafety.gov
Assistance systems help to prevent accidents

What technical developments have there been with driver assistance systems and telematics applications in commercial vehicles, and what impact will the technical innovations have on insurers? Munich Re and MAN Truck & Bus discuss the issue.
Jochen Friedrichs, Munich Re: Manufacturers are constantly presenting new vehicle telematics applications and ever more sophisticated driver assistance systems. I have the impression that, as with many things in the technology industry, companies first develop ideas and then see whether the technical innovations are accepted by the market. Is that also true in the commercial vehicle segment, Mr. Hipp?

Eberhard Hipp, MAN: Our customers don’t act in the same way as buyers of passenger cars. The industry is extremely competitive and every euro counts. Our customers constantly have the TCO (total cost of ownership) in mind. In addition, there is the fact that the industry traditionally takes its cue from regulations.

Stefan Schulz, Munich Re: Can you give an example of this?

Hipp: A few years ago, we engineers were very proud of an underride guard we had developed. It consisted of an energy-absorbing structure fitted under the number plate that would absorb the kinetic energy in accidents with low and relatively lightweight passenger cars. We received congratulations from all sides, from specialist colleagues and the media. Despite this, we couldn’t sell the system. A few years later, a regulation came into force prescribing a much simpler underride guard. The first system, which was much superior in engineering terms and exceptionally energy-absorbing, unfortunately never caught on.

Friedrichs: How widespread are safety systems in commercial vehicles at the present time?

Hipp: We offer various safety packages – for example, with brake assistant or lane guard systems. Even though the systems complement the individual driving style and consequently deliver average fuel savings of around 2%, there is still considerable room for improvement in terms of the penetration rates for the safety systems on the market.

Schulz: In a passenger car, a resale is more difficult if the various safety packages are not available. Is this the same in the commercial vehicle sector?

Hipp: There are a number of major fleet operators and forwarders who have no workshops of their own and only drive with new trucks that are still in the warranty period. Already when the vehicle purchase is made, warranty packages are tailored for the mileage and use of the trucks. Some customers also arrange buy-back contracts, which means they hand over the truck to us for a fixed value after the utilisation phase. The resale of used vehicles is therefore extremely important in our business. Companies that have their own workshops run their vehicles for between ten and fifteen years. However, the situation with all haulage contractors is that they explore every possibility of optimising the total cost of ownership.

Friedrichs: Are the company owners not being a little short-sighted here? After all, the systems can prevent accidents, plus the follow-up costs from accidents, thereby avoiding time off the road and reputational damage. Costs like these can very quickly exceed the purchase costs. Is that something that fleet operators consider?

Hipp: No one can afford to do without their vehicle for more than a day. For that reason, haulage contractors protect themselves against the situation where vehicles are in a workshop for several days. Every manufacturer now offers a 24-hour service. Companies receive a replacement vehicle immediately if there is an accident or defect. This is especially important for fleets operating in urban areas: over 80% of companies based in these areas have fewer than eight vehicles, which only make money when they are on the road.

Schulz: What safety systems do you currently offer?

Hipp: As standard, we offer the following systems: antilock braking, acceleration skid control, electronic stability programme, electronic braking system, adaptive cruise control, lane guard system, emergency brake assist, tyre pressure monitoring and active roll stabilisation.

Schulz: Could you briefly explain how active roll stabilisation works?

Hipp: An active roll stabilisation using electronically adjustable shock absorbers is fitted on the chassis at the rear axle. Thanks to the air suspension system and different pressures, the vehicle and its load can be stabilised, in particular when cornering or with a crosswind.

Friedrichs: Which of the systems are required by law?

Hipp: Between 2014 and 2016, the LGS (Lane Guard System), ESP (Electronic Stability Programme) and the EBA (Emergency Braking Assistant) will be prescribed by the EU.

Schulz: What difference would it make to accident frequencies if these safety systems were installed in commercial vehicles now?

Hipp: The Association of German Insurers (GDV) has presented some interesting statistics on this. If we had 100% deployment of ACC (Adaptive Cruise Control), 71% of pile-ups on motorways could be prevented.

As much as 33% of all accidents involving trucks are pile-ups. If every commercial vehicle was equipped with a lane guard system, 49% of these accidents could be prevented. And if ESP was installed in every truck, 44% of the accidents could be prevented.

Friedrichs: Pile-ups in particular are very expensive for insurers. What is the future timetable for implementation of emergency braking systems?
Hipp: To begin with, the emergency braking systems are meant to reduce the speed behind moving obstacles from 80 to 30 km/h. In the next stage, they should allow fully automatic braking from 80 to 10 km/h.

Friedrichs: In the transition period, new vehicles will feature these technologies, but old ones will not. Many vehicles from eastern Europe will probably still be driving for many years using the old technology. Is there a danger that if a modern truck in a line of vehicles brakes suddenly and heavily, the vehicle driving behind them with outdated technology will have no chance of stopping in time?

Hipp: That is one reason why the authorities are very cautious in defining the braking effect on stationary vehicles. An automatic deceleration of up to 20 km/h doesn’t prevent accidents, but it enhances the level of safety.

Schulz: What do drivers think of these regulations?

Hipp: We conducted a survey of drivers to find out. Unlike the companies, they are very critical about the emergency brake assistant, making comments like: “Firstly I am not carrying a load, and secondly, what happens at the rear of my vehicle? If an inattentive car driver is following me, a rear-end collision could result if the emergency brake is activated.”

Friedrichs: But aren’t there plans to introduce emergency brake assistants that intervene even more powerfully?

Hipp: MAN and Daimler are currently working on a special emergency braking system that brings the vehicle to a complete stop.

In other words, the system always brakes along the coefficient of friction. For a system like this to operate effectively, the background conditions need to be thoroughly understood and the system must be so safe that it is never activated accidentally. Just one false activation would destroy the drivers’ confidence in the system, because they would say: a system is operating under my seat that I know
nothing about, and I can do nothing to adapt to it or direct it. Only a very small number of the safety systems available on the market can be inspected, and even fewer can be tested, since the systems are only activated in extreme situations.

Schulz: ... like the airbag, which you hope you will never actually see.

Hipp: Airbags are not widely used in the commercial vehicle sector. They are of no practical use. The driver is sitting in a 40-ton solid mass. If this mass collides with a car, it is the car driver that needs the airbag. Tests simulating such collisions using dummies show that the head of the dummy in the driver’s cab is seen to move very little in a collision with a car. There is a reason for this. Your sitting position is completely different in a truck. The driver sits up on high in a vertical posture in front of a horizontal steering wheel; the compressed air seat can be adjusted 18 centimetres up or down. By the time an airbag in the form of a vertical cushion can deploy and fill with air, the accident would be long over. Unlike in a car, the driver’s position in relation to the airbag is not ideal. The advantages are therefore open to question.

Friedrichs: Advanced driver and safety systems are intervening more and more actively. What are you working on at the moment?

Hipp: We can now automatically bring a vehicle back towards the middle of the traffic lane. We have also developed a technology that allows vehicles to be driven very precisely past roadworks.

Friedrichs: Do these systems directly intervene to steer the vehicle? Can the driver deactivate the system?

Hipp: As a general rule, the driver is unable to shut off systems like ESP. On the other hand, it must always be possible to disengage an emergency braking system. However, the next time the ignition is switched on, all the systems are automatically back on again.

Schulz: Why do you need to be able to switch off the emergency braking system?

Hipp: The driver must always be responsible. In an emergency, drivers must be able to intervene using their own experience and judgement. There are also systems that you must switch off, especially in driving situations that put a strain on the driver. Total concentration with no distractions is required if the driver is in a difficult situation immediately before an accident. In our trucks, if an emergency braking system is active, all other sources of information are switched off. The driver only receives the information needed at that precise moment to prevent the accident.

Schulz: And hopefully the driver hasn’t nodded off. Microsleep is a very dangerous phenomenon. An American insurance company carried out a field test with 1,500 drivers over a six-month period to find out whether sleep training could help them to prevent accidents. Half the drivers had the advantage of sleep training, while the other half received no training. After six months, the results were as follows: there were four total losses involving drivers who received sleep training, and 21 total losses among those who received none. Do you offer any technical systems to counter microsleep?

Hipp: Research on drivers is becoming increasingly important. A research colleague at another manufacturer is testing sports apparatus in the cab to help keep drivers fit and alert. He is also experimenting with fragrances and light phases. In the UR:BAN project that started in 2010 in collaboration with 30 partners, suppliers, universities and two cities, we are conducting research into questions such as whether stress increases if you drive more in an urban environment, and in what way, and how people behave under complex conditions.

Friedrichs: Have there been any initial findings from the study?

Hipp: One very interesting finding is that making a turn not only causes stress, but that the stress lasts for quite some time after. We have established that the stress level of the driver is just as high three to fifteen minutes after turning as during the manoeuvre itself. Only after this period does the strain begin to diminish. In other words, you can’t simply switch off stress. These are important findings for us.

Friedrichs: The current discussions on telematics are taking on greater importance. In future, the subject will become an ever greater focus for manufacturers, insurers, fleet owners and for drivers too. In the various sectors, there are different definitions and application scenarios for telematics. Which aspects do you think are important?

“The driver must always be responsible. In an emergency, drivers must be able to intervene using their own experience and judgement.”

(Eberhard Hipp)
“We are confident that we can drive vehicles at low speeds without a driver in simply structured spaces, for example on motorways with a hard shoulder.”

(Eberhard Hipp)

Hipp: We can see telematics in very different areas. For example, vehicle data can be of interest for insurers or other companies, and they also help to optimise logistics. Unlike cars, commercial vehicles have had highly developed data communication on board for many years now. Haulage contractors would not permit their internal logistics data or information relating to logistics to be stored somewhere in a database, where it might be accessed by competitors or hackers.

Friedrichs: We are hearing from different insurers that, purely from the perspective of data protection regulations, telematics is too complex a subject and we will have to wait for further developments in this field. In the meantime, however, everyone is very much part of a telematics network anyway – for example, if you have a smartphone in the car.

Hipp: The data log helps haulage carriers to optimise their logistics, for instance. But in theory the vehicle data could also be used to assess the driver. This is a tricky subject because the drivers’ tasks differ considerably. In order to assess fuel consumption by drivers, you need to evaluate the overall driving environment; not just the topography, but also things like the time trips were made, empty runs and special loads. I would not advise fleet companies to use individual measuring methods for drivers. But such ideas are under discussion in the commercial vehicle sector, the thinking being that the data could be used to influence a driver’s pay or to recommend a driver training course.

Friedrichs: Another telematics application is car-to-car communication. What is your assessment of the vision of autonomous cars, and how far have you come with research?

Hipp: We are confident that we can drive vehicles at low speeds without a driver in simply structured spaces, for example on motorways with a hard shoulder. We are currently planning a project in this area in cooperation with a university.

Schulz: What fields of application are there for this type of technology?
Hipp: A particularly unpleasant type of accident on motorways involves the utility vehicles that mow the grass verges and clean the sides of the road. A truck drives behind the utility vehicle to warn motorists of its presence. Otherwise drivers might not see the vehicle until too late and would collide with it. A driver has to sit in the truck driving very slowly. It is precisely this kind of situation we would like to automate. The truck could then operate without a driver while at the same time protecting the workers on the hard shoulder.

Friedrichs: That is a very specialised application. There is currently a discussion about who driverless vehicles would actually appeal to. Who would want to buy a vehicle and then not be able to drive it himself? Can you imagine that in a few years’ time, we will see driverless commercial vehicles on the roads in Europe, for long-distance haulage in particular?

Hipp: We are starting with the following restrictions: low speed, and clearly structured spaces. For commercial vehicles of the size you mention, I can’t envisage your scenario in the foreseeable future. We also need to remember that drivers have a range of other tasks to perform apart from actually driving. They may have to collect a load and deliver it to a warehouse in the city centre. That is a complex task. Many experts are focusing on automated driving, reversing and turning. But so far, none of the technical ideas have actually been implemented. There are already trucks today that are driven fully automatically in controllable spaces like factories or warehouses.

Schulz: In the US, where some commuters drive 200 kilometres or more each day, you could drive onto a highway, move into a line of vehicles and drive fully automatically to the next exit. Then the driver takes over again. I can imagine this would also be possible with trucks.

Hipp: For that we would need a special lane for trucks and that would not be a popular move. We have already tested an autonomous convoy with four vehicles on public roads, a telematics application on wheels if you like. Three large forwarding companies were involved in the project. Technologies like these only have a chance if haulage contractors are in favour of them.

Schulz: How could the insurance industry get involved to improve the proliferation of telematics and driver assistance systems for commercial vehicles?

Hipp: Financial incentives will not have much effect. Because when fleet operators go to their insurers, they invariably try to get a good premium anyway. What I would like to see is insurers across the board investigating the different topic areas in more detail, and communicating to the public what can be achieved with these systems, and how traffic safety can be enhanced, while at the same time saving energy.
Every step counts

Diabetes is one of the most pressing health issues of the 21st century. Healthier diets and more exercise are needed to get this global epidemic under control. The insurance industry can help by raising awareness of the problem and ensuring that the disease remains insurable.
Diabetes mellitus is a chronic metabolic disease which leads to high blood sugar levels (hyperglycaemia). Depending on the type of diabetes, the body is – in simple terms – either unable to produce enough insulin (type 1) or has developed an insulin resistance over time (type 2). The insulin hormone produced by the pancreas helps to transport the glucose extracted from food (dextrose) from the bloodstream into the cells, where the sugar is either converted into energy or stored for later use.

Type 1 diabetes is mostly an autoimmune disease where the body’s own immune system destroys the pancreatic cells producing the insulin. The disease usually occurs in children and adolescents and sometimes also in later years. The far more common type 2, which is found in nine out of ten diabetics, is much more complex. Hardly any other disease has such diverse causes: the insulin resistance is the result of an interaction between genetic factors and secondary resistance mechanisms such as excess body weight and lack of exercise. It is compounded further by high blood pressure, fat metabolism disorders or certain drugs such as cortisone. Age also used to be a key risk factor, as particularly in overweight people the effects of insulin decrease with age. But now more and more young people are developing type 2 diabetes as well.

Hyperglycaemia has severe consequences

If the body cells react to insulin with less sensitivity, the pancreas has to provide larger amounts of the hormone. Once this brings the organ to its maximum capacity, the diabetes disease breaks out. The blood sugar levels get too high, which can cause dangerous side effects and secondary illnesses: retina damage, diseases of the nervous system (neuropathy) as well as heart attack, stroke and kidney failure.

Diabetes is already one of the most widely spread diseases and its incidence – the rate of new cases – is increasing worldwide. Its main cause is a high-calorie lifestyle combined with insufficient exercise, which promotes excess body weight. The International Diabetes Federation (IDF) estimates that the number of diabetics will rise from 382 million today to 592 million by 2035. Most of this increase will probably occur in developing and emerging countries. The disease mainly affects the age group between 40 and 59, with 80% of diabetics living in low- and medium-income countries. According to the IDF, around 5.1 million people died of the consequences of diabetes in 2013 alone. The countries with the most diabetes sufferers are China (98.4 million), India (65.1) and the US (24.4). The prevalence – the proportion of the overall population that has the disease – is highest on the Pacific islands of Tokelau (37.5%), Micronesia (35%) and the Marshall Islands (34.9%).

Number of diabetics by region

The International Diabetes Foundation (IDF) estimates that around 382 million people suffer from diabetes worldwide. In 46% of them, however, the disease has not yet been diagnosed.

- West Pacific
- Southeast Asia
- Europe
- North America and Caribbean
- Middle East and North Africa
- South and Central America
- Africa

Source: IDF Atlas 2013
The main reason for the increasing spread of the disease is the rapid economic rise of developing and emerging countries. This produces an affluent middle class who change their eating habits, consuming more high-calorie food and fewer vegetables. Adopting a Western lifestyle with less exercise further increases the risk of diabetes. In contrast to the US or Europe, where the transition to a diet with ever more calories took place over a long period of time, the change is happening much faster in many developing countries. That is why more and more people also from low-income groups are confronted with obesity and diabetes. As these groups usually have little or even no access to the healthcare system, diagnosis tends to be difficult.

**Diagnoses often come very late**

The insidious thing about this disease is that many type 2 diabetics often only develop vague symptoms such as tiredness, weakness, blurred vision and an increased proneness to infections over a long period of time. In contrast to type 1 diabetes, type 2 is only rarely accompanied by weight loss and only causes thirst and an increased urge to urinate if the blood sugar levels are elevated massively. Due to these non-specific symptoms, diagnoses are often only made after several years when the consequences of the diabetes have already done their damage. It is estimated that around 20.8 million US citizens suffer from the disease but only two-thirds know about it.

The earlier diabetes is diagnosed, the sooner complications can be avoided. These result from circulatory problems on the small (microvascular) and large (macrovascular) blood vessels. Vascular complications develop over the course of many years and can be diagnosed and treated very effectively at any stage. Without the appropriate countermeasures, however, there can be severe damage to health through heart attack or stroke as well as from damage to the kidneys and the nervous system. In the US, diabetes is already responsible for most cases of kidney failure. Poor circulation, particularly in the feet, means that wounds heal only slowly and can even lead to amputation. Diabetic retinopathy, a disease of the retina which can result in blindness, is also caused by increasing damage to the small blood vessels. According to the IDF, diabetes is the leading cause of blindness and severe vision impairment in adults in industrial nations. Overall, the mortality risk of diabetics is at least twice as high as for healthy people in the same group.

And yet it would be relatively easy to control this disease. For type 2 diabetes, therapy focuses on a healthier diet and more exercise. If these measures do not produce the desired success, the next step can be to prescribe medication. As the health risks are very difficult to convey, particularly without the corresponding symptoms early on in the disease, many patients reject a radical change to their lifestyle and opt for medical treatment straight away. In addition to this, even highly developed healthcare systems provide almost no systematic approaches to a change in lifestyle, partly because there are no monetary incentives to do so.

**Massive cost increase expected**

Due to the chronic nature and the severe complications which can occur in any combination and form, diabetes is a very expensive disease. According to the IDF, an estimated US$ 548bn was spent on it worldwide in 2013 – that is 11% of the entire healthcare expenditure for adults. Three-quarters of this amount was allocated to the age group between 50 and 79. In 2035, the total cost will probably exceed US$ 627bn. Figures from German private healthcare insurers also indicate a worrying trend: their costs for diabetes rose by approximately 45% between 2005 and 2010, with type 1 diabetes patients causing about three times the cost of the average insured person. For type 2 diabetes the ratio is 2 to 1, but the costs can almost quadruple once consequential damage has been caused.

The largest share of the costs is for hospital stays to treat complications. The direct medical costs are compounded by indirect costs for missed working hours and loss of productivity. Estimates for this are naturally very difficult to provide. The World Health Organization assumes that the indirect costs are at least as high as the direct costs. In countries with poorly developed healthcare systems, they can be up to five times higher. And the loss of quality of life as well as the fear and pain brought on by the disease cannot be quantified financially at all. The costs differ greatly from region to region: in wealthy countries, they came to an average total of US$ 5,621 for a diabetic in 2013 and to US$ 356 in countries with low to medium income. The patients and their families are still under great strain, though, as health insurance is not widely available there. In Latin America, for example, between 40% and 60% of medical costs have to be paid by the patient, while this can rise to 100% in the world’s poorest countries. This is a ticking time bomb for many developing countries. In India, for example, only about one in ten people has health insurance and treating diabetes can quickly eat up half the family income, even in mild cases.
Preventing excess body weight is a top priority

These figures demonstrate that prevention and early detection are very important. Education about the numerous causes of diabetes can heighten awareness in high-risk groups, and prevention programmes can be offered. This can at least decrease the diabetes costs for health insurers. The money would be well invested, as excess body weight is the fastest-growing health risk. More than two billion people worldwide are overweight with about half a billion classified as obese. The risk of developing diabetes increases with a body mass index (BMI) of 23 to 25. With obesity (BMI > 30), prevalence is 50 times higher than for people of normal weight. In contrast to cardiovascular diseases, cancer and fat metabolism diseases, where progress is clearly being made in prevention, this is not the case with diabetes – the issue is too rarely discussed publicly. There are simply too few information campaigns about the interaction of the various factors and about the risk of developing this disease over the course of our lives. A change of direction is urgently needed: the longer diabetes exists, the more unlikely it is that the disease can be contained.

Insurers have already had positive experience with special programmes for diabetics in Abu Dhabi. The rate of hospital admissions among the participants in the programme has decreased by 60% in recent years. These programmes are so successful because they consider the individual tendencies of the patients and the severity of the disease to recommend the best measures. Experience from telecoaching also indicates that patients feel more committed to their personal coach than to their doctor, whom they rarely see. The main challenge lies in taking into account the specific cultural characteristics of a country. In Arabian culture, for example, it has to be ensured that female patients are only ever looked after by a female coach. Set up correctly, these programmes definitely pay off, partly because a changed lifestyle lowers the risk of numerous other diseases. The positive effects have been proven, for example, for lung, breast and bowel cancer, for depression, high blood pressure, back pain and even for dementia.

As a next step, the insurance industry could think about developing an insurance market for healthcare providers. These usually depend on the statutory health insurance fund to pay for prevention programmes. The health insurance funds, however, need a guarantee of success in order to justify these expenses. This presents a great obstacle particularly for smaller health service providers, as they have to create provisions for the risk of failure. An insurance market could be organised if a standardised process for measuring success was established and the processes that are crucial to success or failure were understood. The insurance industry could then make an important contribution to containing diabetes.

Different measures have to work together

In addition to this, the food industry should be called upon to market healthier products containing less hidden sugars and fats. We also need a simplified and standardised label which helps consumers to identify those ingredients which are relevant to their health. As a problem that concerns all of society, the phenomenon of excess body weight must also involve other parties: politicians in charge of education should ensure that schools teach a healthy lifestyle at all
HEALTH

“The customers benefit if they do what is good for them”

Antony Jacob, Chief Executive Officer of Apollo Munich Health Insurance in India, talks about his company’s new disease management programme for diabetes patients.

**Topics: The number of people suffering from diabetes in India is increasing all the time. What are the main reasons for this?**

**Antony Jacob:** The Indian Council of Medical Research (ICMR) estimates that the country has around 65 million diabetes patients and that there are about 77 million people suffering from pre-diabetes. Over the last decade or so, Indians have become increasingly challenged by lifestyle-related medical conditions such as diabetes, hypertension and cardiac problems, primarily due to a changing, more sedentary lifestyle. Addictions such as smoking and drinking, compounded by long working hours and lack of exercise, have become a part of their daily routine, with poor eating habits adding to the challenges.

How long has the diabetes programme been in place?

Launched in December 2013, “ENERGY” is Apollo Munich’s first product designed to manage medical conditions of those who are already affected. It was developed as a plan that understands the health condition of people living with diabetes and hypertension, provides hospitalisation cover and at the same time supports them.

Why was it introduced?

After China, India is known to have the highest number of diabetics. And our diabetic population is still largely unaware of how to control this lifestyle ailment. But medical data reveal that type 2 diabetes mellitus can be controlled via changes in lifestyle and a regular wellness regime. So we at Apollo Munich Health Insurance feel that the industry needs to move ahead from just offering basic indemnity products, towards more comprehensive health management programmes – which will be the future of health insurance in India. To begin with, we started the disease management programme for diabetes.

What kind of “benefits” do the participants get?

ENERGY combines three steps: first it provides indemnity cover to the customers from day one for hospitalisation due to diabetes or hypertension. Other pre-existing diseases are also covered after an applicable waiting period of 24 to 36 months.

It also comprises a comprehensive wellness plan that helps patients to manage their health condition. ENERGY offers customers the services of a health coach who personally monitors, advises and reminds a customer of important health milestones. Policyholders also have access to an online web portal (thesweetestthing.in), which enables them to track their health check-up results, maintain records of diagnostic reports and receive the latest updates on their health. The programme also provides customers with special offers from health partners to aid and enhance their overall well-being.

Finally, policyholders undergo wellness tests twice in the policy period – one before the fourth month and the other before the ninth month. A wellness score is ascertained on the basis of the results of these wellness tests. Customers can get up to 25% cash discount on renewal, which can be used as reimbursement of expenses incurred for the purchase of medical and related products including consultation fees and pharmacy bills. They also get another discount of up to 25% of the premium on the basis of the achieved wellness score. This is the core of the plan where our customers will benefit by doing what is good for them.

Is the programme affordable for all people who would need it?

With the help of the Apollo Hospitals and Munich Health’s expertise, we have been able to price this programme appropriately for all. It is offered to anyone who is diagnosed with type 2 diabetes and/or hypertension. In order to cater to all segments of the population, it is offered under a range of individual sum insured levels, starting from INR 200,000 and up to INR 1m.

How can potential participants find out about the programme?

Consistent investment by the insurance companies and other stakeholders has helped to raise the general awareness and readiness to buy a health insurance plan in India over the last few years. This is especially true of the people who are already challenged by adverse medical conditions like those living with diabetics, who find it tough to get a plan that covers all their medical conditions without any restrictive terms. We have also undertaken various marketing and communication initiatives.
stages of schooling. Communities and employers should create the necessary conditions and facilities for more exercise and a healthy diet. Where possible in developing countries or even in large Western cities, town planners could create urban environments that encourage people to exercise more.

The insurance industry has to develop customised products in order to establish efficient insurance cover also in low- and medium-income countries. As a reinsurer with global experience in the management of health risks, we support innovations from analysis and design right through to implementation. The objective should be that diabetics can still be accepted for insurance at an early stage and that accompanying health programmes bring about a change of behaviour. This type of programme could also provide those affected with valuable orientation in the healthcare system jungle so they learn about the right measures and preventive options. Ideally, the programmes should be designed to be evaluated with reliable data such as blood count, weight and exercise data. If patients can prove that their diabetes has been under control for an extended period of time, this would have a positive effect on the insurance contract. The insurance policies should also apply deductibles to provide financial incentives for a healthy lifestyle.

One challenge for the insurance industry are the costs for diabetics, which are rising disproportionately when compared to the overall average of all insured persons. Coded information using the ICD key (International Statistical Classification of Diseases and Related Health Problems) could provide insights for identifying the biggest cost drivers. One problem with this is the varying data quality between countries. Another benefit would be a system of e-claims which can be used for verifying diagnoses and bills. But one thing should be clear with all efforts: the objective of keeping insurability high does have its limits. Late diagnoses, little support from the patient, existing comorbidities such as obesity or extremely high blood pressure as well as advanced damage to nerves or blood vessels make it virtually impossible to calculate risks. Munich Re sees it as a challenge and an opportunity to provide data and knowledge for public discourse and to promote new approaches in product development which will permit active management of services and costs.

**OUR EXPERT**

Franz Benstetter is a health economist and Head of Operational Services at Munich Health. fbenstetter@munichre.com
For the pessimist, picking holes in the Japanese economy is all too easy. Since 1992, it has grown by an average of just 0.8% per annum in real terms. Deflation was not just a risk scenario – it was reality. Today’s prices are at the level of the late 1990s. At 243% of economic output, the national debt has reached record levels. Low interest rates are endemic in Japan. Over the next 30 years, Japan’s population will shrink by almost 20% while the proportion of people over 65 will increase to almost 40%. In addition, the nation will increasingly be dependent on imported energy to compensate the shortfall due to the temporary closure of nuclear power plants for safety tests following Fukushima.

If you want to discuss any kind of economic problem, then look no further than Japan: its development over the last 20 years will provide all the material you need.

However, the optimists now have one or two salient arguments of their own: moderate growth, at least, has at long last been restored. The consumption tax hike imposed in April of this year is not expected to dampen the economy’s dynamic trend unduly. At under 4%, unemployment is lower than in most other industrialised nations. Japan’s population is already one of the best educated in the world. And after innumerable futile efforts in the past, it seems that even the spectre of deflation has been banished: the average annual rate of inflation is likely to exceed 2% in 2014. However, this is largely due to increases in the consumption tax rate.

**Moderate growth in Japan has at long last been restored.**

Has Japan finally succeeded in overcoming its protracted crisis? To break through the vicious circle of deflation and recession, the government led by Prime Minister Shinzo Abe has drawn three “arrows” from its economic and monetary policy quiver. This programme consequently became known as “Abenomics”. The first arrow was an extremely expansionary monetary policy. The central bank bought up its own government bonds en masse and increased its inflation target to 2%. The second arrow took the form of a flexible fiscal policy – which is a clever euphemism for massive economic packages financed by new government debt.

These economic and monetary policy arrows appear to be taking effect, although Japan still has a long way to go to reduce its enormous national debt. Domestic banks and insurers in particular have always been loyal buyers of Japanese government bonds, which despite their low yields, remained attractive given the low rate of inflation. The envisaged rise in inflation could sorely test investors’ confidence. Above all, however, the government’s economic policy can only succeed in the long run if the third arrow also hits the mark. This will bring structural reforms, such as liberalisation of the labour market, reform of the system of corporate taxation and deregulation in some economic sectors.

Unlike the monetary and economic injections administered by the central bank and government, this really will be a bitter pill to swallow. That is also why the Abe government has announced a whole array of measures without so far being able to actually let this third arrow fly. Only a few individual reforms have been launched to date, but no major upheaval. However, that is precisely what is needed to counter the Japanese economy’s productivity deficits and prepare the country for demographic change and other major challenges.

“Abenomics” is by no means a magic pill for the economy. Expansive monetary and fiscal policy cannot solve Japan’s problems – it can, at best, buy a little extra time. It also has side effects in the form of new risks, such as asset price bubbles. The longer structural reforms are delayed, the greater the economic risks will become.