

Future increase of worldwide electricity consumption will challenge the power supply infrastructure

Disruption of critical infrastructure – Power Blackout Risks

With the significant increase in demand for energy worldwide to be expected in the coming years, there will be the necessity to boost supplies or experience overloaded networks. At the same time with the desire to promote more environmental friendly energy sources, we are experiencing a transitional period from traditional fossil fuels to renewable energies where there could be a danger of demand exceeding supply. In addition to this, add the increased danger of cyber attacks, grid volatility, overaged infrastructure, or extreme weather events, then the argument for assuming that power blackouts will increase in the future would appear strong. As the energy industry is of vital importance to society and the economy, the industry is rightly classified as critical infrastructure that will need to be closely monitored in the future.

Examples for serious direct effects of power blackouts are interruptions in energy and water supply, traffic restrictions, payment transaction interruptions, interruptions in manufacturing processes or restrictions in medical care. In general, it can be assumed that all other segments of critical infrastructure are affected to a greater or lesser extent in case of power blackouts. Besides direct effects, there will be numerous domino effects in all parts of the value chain.

The impact depends largely on the regional extent and duration of the power blackout. The worst-case scenario would be a power blackout over a longer period of time (e.g. one month). After this period, almost all backup systems will fail. Most critical systems (hospitals, water and sewage systems, stock exchanges) have backup systems. However, these only have the capacity to generate electricity for a maximum of a few days.

An example of a severe power outage has been the shut- and melts down of a nuclear power station in Japan in March 2011 due to an earthquake and tsunami. This natural catastrophe also led to the closure of three other nuclear plants, six coal fired plants and eleven oil fired plants, all in all representing 11% of Japan's total power. Factories have

been forced to operate at reduced levels with an annualised effect on Japan's gross domestic product of estimated 1.5%.

Already past scenarios indicate the possibility of severe economic losses occurring, however at present with relatively reduced insured losses. The reaction of the insurance community has been affected by the complexity and depth of substantial unknown accumulations and has such been tentative. There is a general recognition of the need to offer customers adequate risk solutions but more research has to take place into the intricacies of global production relating to such issues as supply chain insurance, contingent business interruption and non-physical losses. The challenges for the insurance industry arise from claims scenarios that result from the complex and interdependent nature of the risks. However, it can be assumed, that all major lines of insurance business may be affected by severe power blackouts.

Any future insurance development in this area has to be supplemented by exact and comprehensive business continuity planning from all relevant industries to ensure reliability of exposure data for the insurers. There is a necessity to foster a more intensive concerted action between politics, industry and insurers to ensure the reliability in investment and energy planning necessary to encourage insurers to develop innovative and workable solutions. Insurance cannot be seen as a substitute for political inactivity or failure to invest in unstable grid systems. As such, risks have to meet the conditions of insurability.