

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 will experience a transitional period where there could be a danger of demand exceeding supply. In addition to this, add the increased danger of politically driven assaults on power supplies, then the argument for assuming that power black outs will increase in the future would appear strong. If this is the case then assuming that the power industry has a vital importance to society and the economy, then a classification of this industry as a critical infrastructure to be closely watched in the future would seem to be sound. Direct costs of such blackouts would be for example, lost production, idle labour and facilities, damage to electronic data, spoiled and damaged products and damage to equipment – a veritable playground for insurance.

At the present time there is a concentration of electricity production and consumption in the most developed world countries. However, the consumption in the future will be driven by the emerging markets with over 60% increases to be expected by 2020. The International Energy Agency has estimated that about 26 trillion USD will need to be invested worldwide in the power supply infrastructure to meet an expected 40-50% increase in energy demand between now and 2030. Experts believe that this demand will double until 2050-2060. Failure to meet this requirement will most probably lead to supply shortages and price hikes.

A worst case scenario would be a blackout lasting over one month. After this period most back-up systems will fail. Such a situation could be caused by several phenomena such as natural catastrophes, space weather (solar flare), terrorism attack or a cyber-attack. Most critical systems (hospitals, water and sewage systems, stock exchanges) will have back up in place. However these would only have generating possibilities 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.

Any future insurance development in this area has to be supplemented by exact and comprehensive business continuity planning especially in the smaller and medium sized industries to ensure reliability of exposure data for the insurers.

There is a necessity to encourage 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 can not 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.