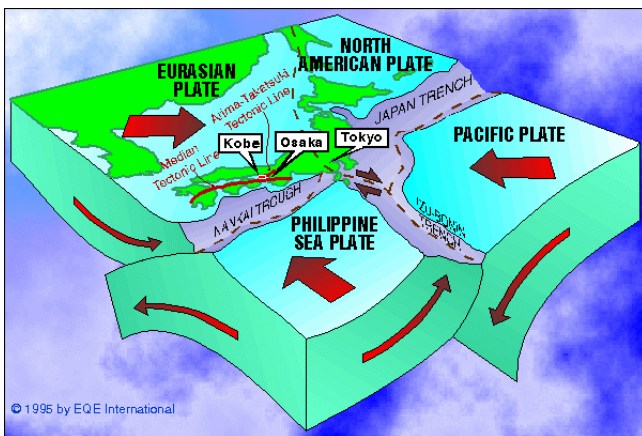


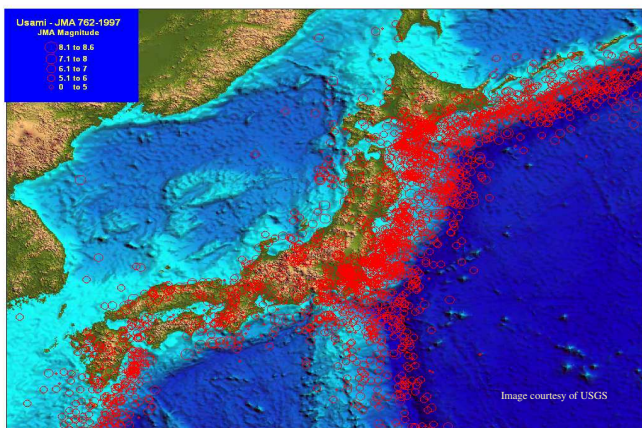
## Supply Chain Seismic Vulnerability Study Japan

Client – Confidential

A major pharmaceutical corporation with a series of facilities in Japan relied on over 50 dependences in their supply chains. Over half of these suppliers were located in the same region. The client was correct of the opinion that one single event was unlikely to cause maximum predicted damage at each site simultaneously, however, what were the credible damage scenarios? How would the operations be affected and could anything be done to mitigate the risk?



ABS Consulting assisted the client in determining the credible seismic event scenarios, return periods and seismic vulnerabilities for typical supplier facilities. For each seismic scenario corresponding seismic accelerations were calculated at each supplier site using JapanQuake a part of the EQECAT suite of natural hazard modelling software packages.



Building and equipment vulnerabilities were determined based on the supplier information and this was interpreted in terms of Business Interruption. Therefore, for each seismic scenario the relative business interruption of each supplier was derived.

Information was fed into their supply chain management process to allow decisions to be made with respect to stocks, geographic diversity etc.

Based on the results several key sites from the supplier portfolio were judged to represent an unacceptable business exposure. Targeted risk mitigation plans were developed focusing on addressing these specific exposures. This involved a range of options including:

- Developing diversity of supply to avoid multiple suppliers simultaneously being out of business due to the same event.
- Identifying and registering secondary suppliers in other parts of the world.
- Agreeing Business Continuity Plans with existing local suppliers.
- Instigating strategic safety stocks of certain key intermediates outside Japan.

Via this approach the client was able to reduce its supply chain risks to within tolerable levels. Transferring liability for raw materials and distribution of finished products does not protect market share, reputation or shareholder value or confidence.



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