

Lessons from Japanese earthquake , tsunami and Nuclear disaster-5

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Power shortages

- Fukushima and 3 other Nuclear plants, 6 coal fired plants and 11 oil fired plants –i.e 11% of Japan's total power, is out of service
- Power shortages may last a year
- Impact:
 - possible 1.5% drop in GDP (annual)
 - Rolling black outs of upto 3 hours
 - Disruption in electric train/subway services so people can't go for work
 - At summer peak shortfall could be between 10-20%

Power saving initiatives

- In 2005 Japanese environment ministry introduced a power saving called 'Cool biz Japan' to save energy by cutting cost of operating air-conditioning systems.
 - 62% of Japanese had adopted Cool Biz Japan!
 - But for this the power shortage will affect Japan much more!
- Japan is even considering daylight saving time to save power
- Japan automobile manufacturer's association including Toyota Nissan and Honda are considering apportioning full days of power cuts among themselves.
- The need to conserve energy could force Japan to become even more lean and more efficient and competitive.

Lesson-24

- Learn from the Japanese how to conserve energy
- However there is another lesson to learn:
- Tokyo can't efficiently import power from Osaka as they use different frequencies –Tokyo 60 cycles and Osaka 50 cycles.
- Lesson: Rivalry between divisions, subsidiaries can affect the working of a company like in this case between Tokyo and Osaka affecting the country.

Was the risk underplayed?

- An AP investigation following the tsunami found that TEPCO officials had dismissed scientific evidence and geological history that indicated that a massive earthquake — and subsequent tsunami — was far more likely than they believed.

Lesson-25

- Do not pooh-pooh scientific evidence.

Impact on Taiwan

- The massive Japanese earthquake will drive down Taiwan's economic growth rate by 0.11-0.2 of a percentage point, decreasing the gross domestic output by NT\$15-20 billion.

Lesson-26

- We saw USA, China being affected
- Now Taiwan
- Proving the nature of the global village

Supply chain

- U.S.-based research firm IHS iSuppli said: the disasters had led to the “most significant” disruption ever to the Electronic industry’s supply chain.
- Ford says the industry most vulnerable to the supply disruption is the automotive industry.

Lesson 27

- How prepared is your company for disruptions in the supply chain especially when it is a single source?

Lessons from Kobe earthquake- 28

- The Kobe quake left much of the port city in ruins.
- Kobe was at the time the sixth-largest container port in the world, and the port facilities provided about 40 per cent of the city's earnings.
- Yet, despite the fact that only about three per cent of the property in the area was insured against earthquake damage, the residents, business and governments set about almost immediately to rebuild their city.
- Within a year, with only about half the port facilities rebuilt, it was handling almost the same amount of cargo as before!

Lessons from Kobe earthquake -28 contd.

- What Japan did after Kobe:
 - Huge blocks of rubber installed under bridges
 - Buildings were spaced further apart to avoid domino effect (one building falling on another)
 - Special disaster evacuation routes made to withstand violent shaking
 - Systems of emergency shelters , caches of food and supplies community preparedness networks introduced.
- Now after Fukushima they will do everything to protect against a nuclear disaster.
- **Most important Lesson:** Learning is a continuous process and there is no end to it, however learned you are.

What does the Black swan author say?

- Nassim Nicholas Taleb says some very important things no risk manager should ignore.
 - In 2003 Japanese Nuclear Commission said a fatality due to radiation exposure from an accident at one of its facilities should happen less than once per million years! It happened eight years into the million years on a much larger scale!
 - He says thinking that real risk is lower because of such formula based probability is like playing a game in a casino.
 - He calls this the criminal stupidity of statistical science and says we are incapable of measuring the risk of rare events. We underestimate both the probabilities and the damage.
 - Our connected world appears to be more efficient. But when there is a disturbance it is much harder to handle. Not only are we building riskier systems but also the risks involved in failure are a lot larger.

Lesson- 29

- Nassim Nicholas Taleb has given a 10 step plan for a robust Black Swan society.
- **One of the rules is 'eliminate agency problem'.**
- This is when some one makes money and someone else bears the deferred risk (like the financial crisis where some executives in banks made big money and millions lost lots of money)
- He suggests that every captain goes down with the ship. When there is a disaster every one connected with the chain should go down with it- the academic who makes a miscomputation, the Government supervisor – every one.
- That he says will make our world much better, safer
- A very important point to ponder!

So do we abandon nuclear power?

- Stewarg Brand editor of Whole Earth Catalog says:
 - Newer reactors like Westinghouse AP1000 have passive cooling systems; they don't need extra power. In Fukushima there was a 40 year old boiling water reactor with inefficient cooling capability.
 - We need to learn from Fukushima lessons like:
 - What is the training required
 - New equipment and systems needed
 - What new requirements should the NRC enforce?
 - The discussion should be technical rather than theological
 - Nuclear is Black Swan territory; other sources of energy fall into routine-death domain. (Coal power through mining deaths and emissions has been far more harmful)
 - My personal preference for the atmosphere is nuclear rather than coal.

So do we abandon nuclear power? Contd.

- Michael Brune ED of Sierra club , USA's largest environmental group suggests:
 - We can't shut down all nuke plants as they provide 20% of power. Look at country's most vulnerable , riskiest plants and set rapid timeline for decommissioning (like Diablo Canyon nuclear plant in California which is designed to withstand an earthquake of only 7.5)
 - Do not subsidise further nuclear plants
 - Phasing out coal fired fleet, not nuclear , is the most important thing to protect public health
 - Go aggressively for clean power- Iowa is now 20% wind; Portugal has gone into 45% solar and wind in just 5 years!

So do we abandon nuclear power? Contd.

- Views of Aileen Mioko Smith ED of Kyoto based NGO Green Action has views similar to Michael Brune:
 - Japan gets 30% of electricity from Nuclear power so shutting down all of them is impractical.
 - So first shut down the most dangerous sites starting with Hamaoka plant south west of Tokyo – it sits in the Tokai fault zone ,an area that geologists fear will create a huge earthquake in Tokyo.
 - Conserve more energy
 - Subsidise renewable energy rather than nuclear plants.

Lesson -30

- The answer to the question ‘Do we abandon nuclear power?’ like many other things in life lies between two extremes –none and all.
- Probably the answer will lie in Terra Power’s next-gen nuclear plant which uses spent fuel and is safer and cheaper. (It will take many years to develop)
- In the mean time we should try and make the world as safe as it is possible.

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