

COLLOQUIUM

includes debate by practitioners and academicians on a contemporary topic

Japan's Tragedy and Aftermath: Lessons for Crises Management

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INTRODUCTION

Sushil Vachani

On March 11, 2011, a massive earthquake rocked Japan and created a tsunami that devastated the country's northeastern coastline, leaving 24,000 dead or missing. Tens of thousands lost their homes and are living in shelters. This human tragedy was compounded by further misery as the Fukushima Daiichi nuclear power plant was crippled by the tsunami and release of radiation, contaminating food and water and forcing thousands to flee.

The Nation's Mood

Japan has suffered much over the last two decades. An economic bubble, created in the mid-late 1980s by easy money and speculative investment in property and stocks, burst in 1990 and took down the economy, which has never quite recovered since then. Deflation has become endemic and affected the mood of the Japanese people.¹ There is a whole generation of Japanese youngsters under the age of 25 who have never experienced (or are too young to remember) a buoyant economic environment. Most do not see attractive job opportunities when they graduate from college and, unlike the young in other nations, are reluctant to spend when they do have income. This, added to the general Japanese propensity to save rather than consume, affects demand and hinders economic growth.

The recent disasters have made the Japanese even less likely to spend, for it appears insensitive to be spending on anything but essential goods while so many suffer. *Jishuku*, self-restraint, is more fitting.² Unfortunately, belt-tightening does not help the economy. When people buy less, there are fewer goods to produce and less money for wages, creating a downward cycle.

Economy

The Japanese economy had begun to emerge from the 2008 global financial crisis with a 4 per cent growth in GDP in 2010. Such growth was difficult to sustain and was

¹ Fackler, M (2010). "The Great Deflation: Japan Goes from Dynamic to Disheartened," *New York Times*, October 17, p.1.

² Belson, K and Onishi, N (2011). "In Deference to Crisis, A New Obsession Sweeps Japan: Self Restraint," *New York Times*, March 28.

KEY WORDS

Disaster Management

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Keiretsu

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Small Economies

Sound Judgement

Contingency Funds

International Relations

expected to moderate to around 1 per cent in 2011. The damage and dislocation caused by the disasters has, however, made matters worse. Japan's losses are estimated at \$300 billion.³ Manufacturing was disrupted in the affected region. Other parts of Japan were affected by interruption in power and supply chains. Exporters have been hurt by a rising yen as markets anticipated large funds inflows into Japan for reconstruction.

The IMF estimates that in 2011, Japan's GDP will fall by 0.7 per cent.⁴ The Economist Intelligence Unit forecasts GDP contraction of 0.5 per cent, but has raised growth expectations from 2.1 per cent to 2.5 per cent for 2012 as the economy's reconstruction gains momentum.⁵ Paradoxically, a natural disaster can stimulate the economy as reconstruction adds to GDP. This does not mean, of course, that a country is better off having a disaster, which destroys lives and infrastructure. Also, the investment needed for reconstruction siphons off savings or increases debt. Japan's gross public debt is close to 200 per cent of GDP, the highest among developed nations.⁶ (Japan's situation is, however, less precarious than that of nations like Greece where 95 per cent of the debt is domestically funded at low interest rates.) Much like its principal ally, the US, Japan is unable to address its problem of unsustainably high debt because it lacks political will to implement tough solutions such as raising taxes or reducing entitlements.

Government

Incumbents do not stay long in Japan's revolving-door Prime Minister's Office. In the last twenty years, Japan

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has had thirteen different Prime Ministers. The four incumbents before the current Prime Minister, Naoto Kan of the Democratic Party of Japan (DPJ), who took office in June 2010, each had a tenure of a year or less. In a recent poll conducted by Tokyo's *Daily Yomiuri*, only 22 per cent of the respondents indicated that they would vote for the DPJ.⁷ The main opposition party, the Liberal Democratic Party (LDP), which led Japan uninterrupted since World

War II, except for three years in the 1990s, did not fare much better: only 24 per cent said they would vote for it, suggesting that the Japanese disapprove of a broad swath of their political leadership.

Prime Minister Kan was expected to be nudged out of office earlier this year, but the earthquake made it necessary for him to continue. For a few weeks, the opposition rallied behind the government so that the nation could focus on reconstruction. The truce dissolved recently and the Prime Minister was tested by a no-confidence motion in early June, which he survived only by committing to step down after the critical part of reconstruction is complete.

As in India, Japan has a strong bureaucracy which provides a measure of continuity in governance. There has been a feeling among some people that

the bureaucracy hinders progress, and the DPJ's campaign in the last election included a promise of reining in the bureaucracy. Mistrust and miscommunication between the Prime Minister, the bureaucracy, and managers of TEPCO (the owner of the Fukushima plant) may, unfortunately, have hampered the efficient handling of the Fukushima nuclear plant crisis.⁸

International Relations

Historically, Japan has had strained relations with its major neighbours, China and South Korea, which have

³ Tabuchi, H (2011). "Earthquake and Aftermath push Japan into Recession", *New York Times*, May 19, p.2.

⁴ IMF (2011). "Concluding Statement of the IMF Mission: 2011 Article IV Consultation with Japan," June 7. Downloaded June 14, 2011, <http://www.imf.org/external/np/ms/2011/060711.pdf>.

⁵ Economist Intelligence Unit (2011). "Japan Economy: Quick View – In Recession", June 9.

⁶ Economist Intelligence Unit (2011). "Japan: Country Report," June.

⁷ *The Daily Yomiuri* (2011). "Kan Should Resign Post, majority say," June 6, p. 1.

⁸ Onishi, N and Fackler, M (2011). "In Nuclear Crisis, Crippling Mistrust," *New York Times*, June 13, p.1.

not forgiven Japan its colonial past. Prime Minister Kan attempted to pacify them by instructing his cabinet to forgo visiting Tokyo's Yasukuni shrine on the anniversary of Japan's World War II surrender on August 15, 2010.⁹ Previous Prime Ministers had insisted that the visit was important for honouring Japan's war heroes, but China and South Korea protested such visits because Yasukuni also has the remains of 14 "Class A" war criminals. Prime Minister Kan's gesture was unusual in signaling acknowledgement of Japan's past responsibility. However, tensions between Japan and China have remained high on account of territorial disputes. Last September, when Japan detained a Chinese fishing boat in disputed waters close to islands known as Senkaku in Japan and Diaoyu in China, it was forced to back down after China halted export of rare earths critical for the Japanese electronics and auto industries.¹⁰ (Vietnam and the Philippines are among other countries involved in territorial disputes with China.)

After radiation from the Fukushima nuclear plant contaminated produce in neighbouring areas, Korea and China restricted agricultural import from Japan. However, in a recent demonstration of support, Chinese Prime Minister Wen Jiabao and South Korean President Lee Myung Bak visited the Fukushima region in May and sampled local produce to signal its safety. China promised to selectively ease import restrictions if Japan guaranteed product safety. In another sign of co-operation, Japan is in discussions with China and South Korea for a three-way

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Nuclear Energy

The disaster at the Fukushima nuclear plant has spooked some of the governments that were relying on nuclear energy as a green and affordable solution to their rising appetite for energy. The world has 440 nuclear power reactors that meet 14 per cent of the global electricity needs. Another 60 plants are under construction and 493 at planning stages. Their future is now uncertain.¹² Germany's Chancellor, Angela Merkel, has decided to phase out her country's 22 nuclear reactors by 2022.¹³ Japan, Switzerland, and Italy are contemplating reducing dependence on nuclear power. Perhaps, the position of some of these countries will soften with the passage of time as safer designs and stricter regulations emerge. China, on the other hand, continues to be bullish on the potential of nuclear energy. It plans to increase nuclear power six-fold by 2020, with 34 reactors (38GW) under construction or approved.¹⁴

Impact on Other Nations

The world has much to thank Japan for. World class manufacturing today is built on the foundations of Japanese techniques such as continuous improvement, lean and flexible manufacturing, and just-in-time inventory systems. With globalization, supply chains have spread deep across borders, while specialization has narrowed the supplier base of some critical components. The Japanese disasters have tested the global supply

⁹ Blair, G (2010). "Japan PM Kan Sends Signal to Asian Neighbors by Shunning Yasukuni Shrine," *The Christian Science Monitor*, August 16.

¹⁰ Fackler, M (2010). "Japan Yields to Chinese over Arrested Boat Captain," *The International Herald Tribune*, September 25, p. 7.

¹¹ *The Japan Times* (2011). "Helping Hands for Mr. Kan," May 26.

¹² Crooks, E and Pfeifer, S (2011). "Atomised Approach," *Financial Times* (Asian Edition), June 7.

¹³ Clayton, M (2011). "Germany to Phase Out Nuclear Power. Could the US do the Same?" *The Christian Science Monitor*, June 7.

¹⁴ Ng, E (2011). "Beijing Planning Six-fold Increase in Nuclear Power," *South China Morning Post*, May 13.


chains and are forcing managers to confront the fact that they are unable to detect the health of their supply chain beyond one or two levels, while disruption several levels away can cripple production downstream.¹⁵

It is difficult to measure the effect of Japan's disasters on other countries. Anecdotal evidence presented in the US "Beige Book," which compiles perspectives drawn from conversations of the 12 regional Federal Reserve Banks with local businesses, indicates that there was "widespread" disruption of supply chains in the second quarter of 2011. Some of this may simply result in pushing economic activity to the third quarter.¹⁶ On the other hand, the world's third-largest computer manufacturer, Taiwan's Acer, fears that the negative impact will actually

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only be felt in the third quarter, because during the second quarter, surplus inventories helped companies survive, and pipelines will be depleted by the third quarter. Overall, however, the consensus seems to be that the disruption caused has been less than was feared.¹⁷

This Colloquium

There are many important implications of the Japanese disasters for people around the world, ranging from broad questions, such as "How can countries be better prepared to handle such disasters?" to focused concerns, such as "What is the future of nuclear energy?" Experts from different fields in a diverse set of countries have reflected on some of these questions and contributed their perspectives to this colloquium. 

Japan: Renaissance to Tackle its Graying Future...

Som Mittal

The early part of my career was greatly influenced by working closely with Japanese people and companies. I was touched by their discipline, diligence, strive for perfection, national pride, and preservation of culture while adopting new technology.

Contribution of Japan to technology and process innovation has been accepted and also adopted across the globe. The fact that Japanese continue to focus on high quality and cutting edge technology was reinforced by a recent report that even though Japan does not manufacture iPhone, it still contributes more than 30 per cent (highest among all nations) by value of iPhone through supply of sophisticated technology and parts.

The Japanese culture and work ethos have not only made them sustain in front of the adversities but also recover from these situations due to cohesiveness between the Japanese industry, government, and society.

Current Crisis

March 11, 2011 was perhaps the darkest day in the Post-World War history of Japan. As the devastating earthquake struck Japan (the most powerful recorded in the country's history), it triggered an extremely destructive Tsunami that caused physical damage estimated to be in excess of US \$ 200 billion, with more than 28,000 persons either killed or missing and more than 200,000 buildings damaged or destroyed. Not only did it cause an unprecedented damage to life and property but it also put the life of millions more in peril due to the nuclear leak at Fukushima. The effect on global trade and supply chain disruptions is still to be estimated. The impact could have been worse if this crisis had happened elsewhere as with respect to the earthquakes that Japan is prone to, it does build in protection.

Japan has seen and overcome many such challenges in the past. With its indomitable spirit of industry coupled

¹⁵ *Financial Times* (2011). "Look for the Single Point of Failure," May 3, p. 2.

¹⁶ Harding, R (2011). "Beige Book Confirms Break in Supply Chain," *Financial Times*, June 9.

¹⁷ Kwong, R (2011). "Acer Sees Supply Squeeze in July," *Financial Times* (Asian edition), June 2, p.16.

with its motivated, disciplined industrial workforce, Japan will come up trumps in this seemingly dark period. The tsunami may just prove to be the 'trigger point' that heralds a new era of change in Japan, ending its two decade old recession and catapulting Japan back into a phase of economic recovery and growth. Japan may swiftly recover from the damages caused by the recent catastrophe; however, there are some fundamental issues that still need to be addressed.

This would firstly call for acceptance of the problems by Japan and subsequently, some very dramatic shifts in the approach to resolve them.

Demographic Conundrum

Changing demographic trends have put a severe pressure on the current working population; and with falling fertility rates coupled with new lifestyle choices, the situation is poised to become grave.

One of the biggest challenges of Japan's future recovery is its aging population. In 2006, it became the leading country to tip into demographic contraction. The peak population at 128 million in 2005 would be reduced to 100 million by 2050 as per the estimates. According to UN, from the current ratio of 34 elderly dependents for every 100 people working, there would be 74 retired dependents for every 100 people working by 2050. These dynamics of population shrinkage will have huge bearing on every aspect of the economy. It has and will put an increasing tax burden on the working population. Unless there is a sharp increase in the birth rate, it is strongly envisaged that Japan's total population will shrink to one half of its

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current size by 2100. This aging will also augment health care needs, putting a considerable strain on government budget, which would shrink further and the costs could spiral out of control due to increased social spending. In addition, the budgetary squeeze may impact on other areas/ programmes that may affect areas like general transportation, infrastructure, and youth education programmes.

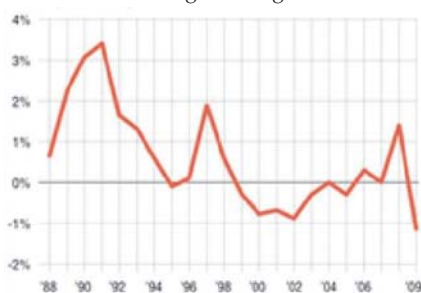
Demographic changes are extremely difficult to reverse; thus, though it is highly improbable that Japan would be able to preclude this trend, few measures can be undertaken to mitigate the risk. One solution from such a situation would be if the improvements in technology make up for what is lost by decreasing human capital. To reduce the mounting pressure on working population, the government can increase and liberalize immigration or raise the compulsory retirement age. Several European countries faced similar issues, but permitted reasonably higher number of immigrants to maintain and replenish their workforce, without impacting their cultural and social fabric. Further, the government could encourage great female participation in the workforce by providing health care facilities and other incentives.

Deflation and Falling Wages: Main Proponents of Japan's Southward Spiral

Another major reason hampering Japan's growth is the persistent recession for the last two decades. Commonly referred to as the 'Lost Decades,' these serve a cautionary anecdote to all other nations. Currently, the Nikkei index has almost come down by approximately 75 per cent of

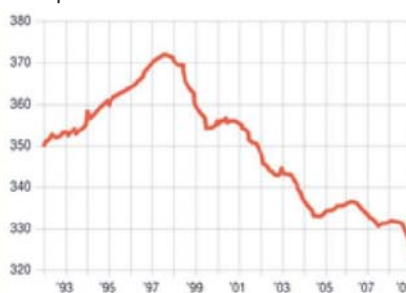
Inflation Rate (Consumer Prices)

Annual Percentage Change



Monthly Wages

Yen per month (in thousands)



Source: Japan Ministry of Health, Labour and Welfare

its highest value attained in 1990.

The real wages have fallen consistently over the years touching a nadir in 2009. This coupled with some questionable infrastructure expenditure (roads and bridges) have led to a large debt load for the nation. The debt/GDP ratio now stands at approximately 200 per cent, which has its own burden on the economy.

At the time, when other economies are growing and leveraging best practices of the world, Japan would have to take quick and appropriate steps to address this critical situation and global competition. Japan will have to tap newer markets, such as Africa, Latin America, and India and adopt new business models to simultaneously cater to its domestic and global markets. The traditional models will not work in these emerging geographies.

There has been an increasing push by the Japanese government and agencies to encourage Japanese business community to increasingly promote globalization as a strategy to survive in this dynamic world. Today, it is not just about dominance in the home ground but global competitiveness; a nation that will not accept this truth will be surpassed easily in this fast and power defining race. Though Japanese business has realized this need and is increasingly signing up EPA/FTAs with various growing Asian economies, the timing of execution will play a very important role. Increasing competition from South Korea and China is posing a vital question about the intrinsic propensity of Japanese business will. These two countries have not only emulated Japan's success but are also penetrating quickly in various markets once dominated by Japanese brands and products with aplomb. In the last three years, the global market share of Korean players – Samsung and LG – has increased from 25 per cent to 30 per cent in handsets and from 27 per cent to 37 per cent in LCD TVs, surpassing traditional Japanese leaders such as Sony and Panasonic. The serious

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commitment to product innovation, along with substantial investments in the targeted geographies is defining their success worldwide.

Political Churn

With the issues that Japan confronts currently, it is imperative to have a stable government to address economic stagnation and provide leadership and direction. However, Japan's unswerving political instability and inertia has become a matter of concern both regionally and

globally. As we are well aware, the new Japanese Prime Minister, Mr. Naoto Kan is the sixth Prime Minister of Japan in four years.

The population at large has apathy towards the political dynamics but a strong government will be a key to economic recovery. There is hope and faith as the new Prime Minister has shown promise and conviction to re-build Japan. In over 15 years, Mr. Kan is the first Prime Minister, who does not boast of any political lineage. Making his way up through the grassroot levels, the Ex-Finance Minister is targeting public debt and slow growth as his main priorities.

These problems should not persist any longer. There is a need for the government and the common people to work together to address the ills of the political instability and move towards financial well-being of the general population. All this is imperative for Japan to earn its rightful place back in the world.

Time to Learn from History

As Japan tries to steer its way out of the present situation, history has abundant examples to help Japan reflect on. One major exponent of Japan's meteoric rise in the world order was the abolition of *Sakoku* policy. Set in 1639 and in force till 1853, it postulated that no foreigner would be allowed to enter nor any Japanese would be allowed to leave Japan. This was the dark period, wherein

Japan lost its way as it tried to do things on its own. Centuries have passed when *Sakoku* was abolished and Japan became open for trade; however, remnants of the past ghosts can still be found in the way present business is done in Japan.

Unfortunately, it seems that *Keiretsu* has assumed the mantle of *Sakoku* in the modern parlance. Japanese companies would need to break the culture bondages of protectionism, if they were to compete and move past the competition.

Giving an example of the IT industry in Japan, IT services follow a *Keiretsu* model, where the Top Tier (primarily Japanese IT companies) works closely with the inhouse IT teams of large Japanese companies. Currently, when the global companies are opting for partners with varied experience and best practices, the Japanese clients are dealing with the same companies that are leveraging traditional and single-client single-geography experience and approach. There is very limited outsourcing to global service providers and more often than not these providers often appear at the base of this hierarchy with no visibility to the end customer. It is the time to adopt shared service model and best practices that the world is embracing; change in the outlook and attitude of Japanese companies is necessary.

To make situation worse, information technology is one of the least favoured career options for the Japanese youngsters. The technology jobs are commonly perceived and referred to as "5K" positions - *Kiken* (risky), *Kitanai* (de-meaning), *Kitsui* (demanding), *Kibishii* (difficult), and *Kirai* (low level/repetitive). At the time when Japan does not have locals with required IT skills, the resistance to sourcing from global service providers is a major impediment to escalating IT needs of various Japanese companies and institutions. The educational universities and institutions in Japan will have to encourage and provide more incentives and scholarship to foreign students to build a strong and skilled human capital base.

We all might be proven wrong about the panic we have created about demographic issues. There might be a new dawn for this land of rising sun. Apart from increasing immigration and retirement age, Japan might encourage greater female work force participation to alleviate this worry. Expanding healthcare facilities and focusing more on work-life balance would not only enhance female employment but also help raise country's extremely low birth rate.

Language and cultural issues do exist but can be mitigated and managed. It is not only the Japanese industry but also the government and population at large that need to assume greater responsibility to find a way out of this interminable situation. The world has increasingly accepted and praised Japan for its technology and expertise. Japanese food has become popular all over the globe. I believe that it is now Japan's turn to reciprocate the warmth much more, not as a goodwill gesture but because of financial compulsions. A recent Goldman Sachs research has shown that unless some concrete steps are taken to prevent its economic decline, Japan may fall out of the world's economic order.

Does Japan need another Commodore Perry and Meiji restoration to open its shore and become more global? In my opinion, the answer is 'No.' The Japanese government and companies are taking actions to address these intricate challenges and following an expansive mode to globalization. Japan has to emerge from the not so open economy to dare the inevitable decline. The Japanese companies known for their business acumen have already taken a note of it and have started expanding aggressively. The country will not have to show alibi for conservative ethos in the future. The message has been understood and acted upon.

Self preservation is imperative for Japan but not at the cost of its survival in the globalized world. ♡

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A Japanese Entrepreneur's Perspective on Japan

Miyuki Morimoto

The Japanese people have had a range of reactions to the big disasters that have struck the country. We are told that the number of victims, including both dead and missing, is almost 25,000, and there are almost 115,000 evacuees. In addition to the big natural disasters, the earthquake and tsunami, we have been deeply affected by damage to the nuclear power station in Fukushima, which is having a big impact on people's lives as well as economic activities. After the disaster, the Japanese media has shown the devastation, how it will affect our future, and the plight of sufferers in Northern Japan.

Even though there were loss of family, friends, and homes, most of the people are thankful for being alive. They have also expressed their strong will to rebuild Japan. I am not sure how widespread this admirable mindset and attitude is, but I am sure many Japanese who live outside the stricken area must have realized that they should accept the challenge of rebuilding their country and save the victims. I have tried to capture some of the important perspectives of the Japanese people in the wake of the disasters.

Entrepreneurs' Reactions

After the great earthquake and tsunami, and the huge damage caused to the nuclear power station, I have made some observations about how Japanese entrepreneurs have reacted to the difficulties. Even though they have the same goal, which is to rebuild Japan without being defeated by this disaster, their approach and way of thinking are different. I have categorized them into two types as follows.

Among the first type, the main player is Mr. Son, the President of Softbank

Inc., and one of the most established entrepreneurs in Japan. He would like to try to find safer and more efficient alternative electric power. He is not only organizing a

We should stop being too negative in our concerns regarding nuclear power and believe in our technology and wisdom to rebuild and improve our economy and life.

foundation, the natural energy foundation, to find alternative electric power by raising \$12 million, but has also donated \$123 million himself and has foregone his remuneration during his term of office as the Director. His goal is not just to change the current source of electric power, which is cheaper and more efficient than the other alternatives, but also to improve people's lives by removing their concerns for nuclear power. He and his

followers have a strong commitment to change the social infrastructure with this approach.

The other type includes the ones who think that the Japanese, especially leaders, should consider future action more carefully without reacting emotionally. They believe that the leaders should take more time to make the final decision regarding whether to keep the current nuclear power, while introducing higher standards of safety, or find alternative electric power. After conducting a set of cost-benefit analyses, they have concluded, "We should stop being too negative in our concerns regarding nuclear

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power and believe in our technology and wisdom to rebuild and improve our economy and life." These kind of entrepreneurs believe that short-term and emotional reactions will negatively impact the rebuilding of our economy.

New City Plan

It may not be so difficult to just rebuild damaged cities, but it is indeed very difficult to transform them into new cities that are strong enough to withstand any disaster without compro-

missing economic prosperity. An important criterion for our choices is whether we should assume that we may have more disasters in affected areas in some form or not.

New Energy System

It may be true that nuclear power is the most reasonable and efficient source of energy at the moment, but there is risk associated with it, as we have seen in Japan. How realistic it is and how long it would take to find alternatives is the primary concern. However, the issue here is not just economic efficiency, cost, and technological feasibility, but our way of life in future. One of the important criteria must be whether we should accept some level of inconvenience for securing our safety.

Preparedness for Unexpected Disaster

Due to our location, on active faults, we always have to be prepared for disaster, especially earthquakes. We should periodically review current city planning, which should include the building standards act, road traffic law, and so on, to minimize damage by unexpected disasters.

Along with the existing education system, there is the need to introduce new techniques for educating new leaders, who can take action after assessing cost and benefit, and suggest alternative plans to implement in the short term, middle term, and long term.

system, and so on. Our vision for the future should be created by young people. I believe that the Japanese education system is excellent for creating team work and morale. However, it is not strong enough for creating a leader or an entrepreneur. Along with the existing education system, there is the need to introduce new techniques for educating new leaders, who can take action after assessing cost and benefit, and suggest alternative plans to implement in the short term, middle term, and long term. ♡

Tax System

We have to change our mindset from preparing for “unexpected” disasters to focusing on “expected” disasters. We need to levy new taxes to deal with natural disasters, and all Japanese should equally share this tax burden for expected disasters.

Education

I personally feel that education is the most important factor for overcoming our difficulties. After rebuilding from the current situation, it is very important to make and execute new city plans, a new energy system, a new tax

Can Japan Come Back from This Major Disaster?

Keiji Oshima

On March 11, 2011, people around the world witnessed a natural disaster on a scale which they had never seen before. Houses, cars, trees, and people were swept away in a matter of seconds and mankind became helpless against nature. Over 15,000 people died and over 10,000 people are still missing. First, the 9.1 scale earthquake hit Tohoku Region in Japan; then, a massive tsunami hit the East coast; and lastly, the Fukushima Nuclear Plant disaster left Japan crippled. Japan is the only country that has ever been hit by an atomic bomb which

put the Japanese people through the horrific effects of radiation. In recent years, the Japanese government has been promoting nuclear energy as a major source of electricity. It is ironic that once again Japan would have to suffer radiation from this nuclear plant disaster. Given that the Japanese government is aware of the effects of radiation on humans, it should not be promoting nuclear energy; it should in fact be advocating its elimination.

Given that the Japanese government is aware of the effects of radiation on humans, it should not be promoting nuclear energy; it should in fact be advocating its elimination.

Japan has gone through many difficulties in the past, but the situation it is

facing now is totally different. The questions we all have are: Can Japan come back from this major crisis? What are we learning from this major disaster? How will Japan contribute to the world in the future?

Today, we cannot think of living without electricity, the need for which is growing rapidly even in emerging countries, including China and India. Even though the demand for energy is growing every year and everywhere, it will be very difficult to continue using nuclear power especially after seeing the safety issues with nuclear power plants. On the other hand, generation of electricity by burning conventional, non-renewable fuels such as coal, gas or oil would produce more carbon dioxide. This in turn would contribute to global warming, which is now creating more disasters due to rising sea levels, bigger hurricanes, and typhoons. We now see frequent occurrence of such phenomena around the world. It is time we should all seriously think how we can co-exist with nature and give back instead of taking from it.

We have to create a society that consumes less energy. To cite an example, Japanese businesses are setting office temperatures at 28 degrees Celsius during summer; to cope with the heat, people are avoiding wearing ties and suits from May to October. During winter, the office temperatures are kept lower than normal, and people are advised to wear extra clothes for staying warm. Moreover, the Japanese people are commuting to their offices by using modes of transport other than conventional cars. They are restricting the use of private vehicles and availing of the common public transport to save energy. This is possible only because Japan has one of the most extensive public transport networks in the world. Many such unique initiatives are already in place and more new ideas are to be added in the future. Japan can set a new standard for the world by implementing new

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Japan does not have natural resources; and so, the only way to come out of the present crisis and rebuild its economy and sustain its growth is by developing new technology and sharing this globally. By bringing these technologies together, the Japanese people can help to create a new world order.

ways to save energy.

There is a need to develop new technology to produce clean, renewable energy which can replace nuclear power. The Japanese are leading manufacturers of various advanced technologies and they know how to create, store, and use energy efficiently. Japan can recover strongly by promoting solar energy and producing rechargeable batteries to create an energy-smart society. It can create energy by making more energy-efficient solar panels. The current efficiency rate is around 21 per

cent and this can go up by another 10 per cent in the near future. Since solar energy can only be captured in the daytime, there is a need to introduce new technology which can help to store this excess energy for use during the night. Electricity can also be stored from the grid system during the night when the cost of electricity is low. Manufacturing of solar panels and lithium-ion batteries in large volumes can also significantly bring down the cost of these technologies. Japan is the world's leading manufacturer of lithium ion rechargeable batteries. The hybrid and electric car systems are driven by this rechargeable battery technology. After the earthquake, when there was no electricity, we witnessed people actually using hybrid and electric cars as a source of electricity for cooking, charging mobile phones, listening to the radio, and watching TV. The Japanese automobile industry can contribute to this new energy environment by promoting eco-friendly cars. Japan is also promoting solar energy for residential use. The expansion of renewable energy is something we must continue to promote on a large scale. We saw how one nuclear power plant disaster cost more than US \$15 billion, according to some Japanese analysts' estimates. This is equivalent of 30 years of solar subsidy provided in Japan. At this stage, government support is required and will continue to prove essential in the future. If the government funds are spent in a proactive manner, we can develop

and demonstrate a safe, new, renewable energy system for the world. Japan does not have natural resources; and so, the only way to come out of the present crisis and rebuild its economy and sustain its growth is by developing new technology and sharing this globally. By bringing these technologies together, the Japanese people can

help to create a new world order. And, we all believe that Japan can and will make a dramatic return to the global stage as an influential world power. It can foster a new future where only safe, eco-friendly, and renewable energy sources are used so that our planet can sustain itself in the long run. ♡

Using Damage Forecast Maps for Disaster Handling

Yuji Kitamura

The Great East Japan Earthquake that occurred in March, 2011, brought about a huge change in Japanese people's daily lives and ways of thinking on various social, scientific, and political aspects¹⁸. The tsunami that followed the Earthquake destroyed cities and villages along the Pacific coastline of northeastern Japan. To make it worse, a Level 7 nuclear accident occurred at Fukushima I Nuclear Power Plant¹⁹ that changed Japanese people's views on the energy policy of the Government. I would like to suggest the creation of damage forecast maps of uncertain events to systematically estimate damage from disasters and help in limiting it.

Unlike typhoons, which can be predicted by factors above the ground such as the motion of clouds and oceans, and change of sea water temperature, it is almost impossible, with the current technology, to foresee the definite location, magnitude, and time of earthquakes or any other natural disasters created underground, until the moment they happen. I would like to call those events that are difficult to foresee, "uncertain events," and a map or chart that shows the predicted results of damage caused by those events a "damage forecast map."

In Japan, earthquakes of smaller magnitude keep occurring throughout the year and the people of Japan have

taught themselves to build stronger buildings that could survive them over the centuries. And to prove that, it is said that about 90 per cent of the deaths from the Great East Japan Earthquake were caused by the tsunami, not by the actual 9.0 magnitude earthquake. Looking at the history of earthquakes in Japan, it is evident that there is usually a rule-of-thumb for calculating their frequency. It is important to realize that such high magnitude earth-

It is important to realize that such high magnitude earthquakes may again happen sometime in the future; therefore, what is required is to create damage forecast maps by applying "what-if" scenarios to the current Japanese landscape and people's way of living.

quakes may again happen sometime in the future; therefore, what is required is to create damage forecast maps by applying "what-if" scenarios to the current Japanese landscape and people's way of living. For example, we can predict the effect of a 7.5 magnitude earthquake in the middle of Tokyo metropolitan area during rush hours on a weekday. Even though it would still be difficult to estimate the definite timing of such events, having those maps beforehand would help in handling the situation right after the event without delay and panic.

The after-effects must be considered seriously when creating damage forecast maps and Japan must pay extra attention to nuclear power plants that are located along the coasts of the entire country. There is a record of an earthquake of 8.2 to 8.5 magnitude that occurred in 1896 almost in the same region in Northeastern Japan, in which more than 21 thousand people had died mainly from a tsunami with 38.2 meter high waves caused by the earthquake²⁰. There were no nuclear power plants in the world at that time. In

¹⁸ http://en.wikipedia.org/wiki/2011_T%C5%8Dhoku_earthquake_and_tsunami

¹⁹ http://en.wikipedia.org/wiki/Fukushima_Daiichi_Nuclear_Power_Plant

²⁰ http://en.wikipedia.org/wiki/1896_Meiji-Sanriku_earthquake

July 2007, the Kashiwazaki Kariba Nuclear Plant (in Niigata Prefecture, on the Japan Sea coastline) had caught fire as a result of the 6.6 magnitude Chuetsu offshore earthquake.²¹ Thereafter, a group of politicians in Fukushima had sent a letter to the Governor of Fukushima Prefecture and the President of Tokyo Electric Power Company to check and prove the safety of nuclear power plants in the area in the event of an earthquake^{22,23}.

However, neither of them took any action. Therefore, many people think that the accident at the nuclear plant this year is not a simple natural disaster, but caused by failure to learn from the past.

Has the Japanese Government not done any assessment of potential nuclear plant accidents? According to a newspaper article written in 1999, the Science and Technology Agency had estimated in 1959 that the loss due to a nuclear accident would amount to 3.7 trillion yen, which was more than twice Japan's annual budget at that time²⁴. However, the government did not disclose this analysis for forty years..

The assessment body should not be the government or a research company that is attached to the government. It should be an entirely separate group of specialists, selected from different fields of study, who can oversee government actions. The damage forecast maps that are created by those specialists should play an important role as a base of judgment when the local and national governments plan their budget. People have found out that the Japanese government has been hiding the possible consequences of having a nuclear plant accident and not

calculating the cost of maintaining safety for each nuclear power plant with the consequence that today no one knows which costs less — natural energy or nuclear power. It is high time the government considered the budget for creating damage forecast maps; they would be very useful in helping limit damage from similar disasters in future.

The assessment body should not be the government or a research company that is attached to the government. It should be an entirely separate group of specialists, selected from different fields of study, who can oversee government actions. The damage forecast maps that are created by those specialists should play an important role as a base of judgment when the local and national governments plan their budget.

The idea of creating a damage forecast map of uncertain events can be applied to any other natural disaster or accident that is hard to foresee. Japan has 108 active volcanoes. Damage can be caused not only by pyroclastic flows that swallow nearby cities, but also volcanic ash that reaches a wider area. Also, there are many dams in the country to help in development, but the collapse of these dams due to lack of strength to survive any kind of unpredictable event can cause catastrophe. Damage forecast maps for uncertain events may devise ways of limiting damage, casualties, and possible after-effects.

As technology advances, the situation may change in future and earthquakes and other uncertain events of today may become predictable. Therefore, it is important to continuously make efforts to review and update the damage forecast map and make it open to the public.

According to the Japanese government, over 130 countries, more than 30 international organizations, and over

1,500 NGOs and other entities have shown their willingness to provide assistance to Japan²⁵. Their gesture is truly appreciable! 

²¹ http://en.wikipedia.org/wiki/2007_Ch%C5%ABetsu_offshore_earthquake

²² http://www.jcp-fukushima-pref.jp/seisaku/2007/20070724_01.html

²³ http://www.jcp-fukushima-pref.jp/seisaku/2007/20070724_02.html

²⁴ <http://trust.watsystems.net/jikosisan.html>

²⁵ http://www.kantei.go.jp/foreign/incident/110407_wefmessage.html

Managing Risk: Lessons from Fukushima

Kenneth J Hatten
James E Post

Managing risk is an essential competency for today's executives. Accidents, natural disasters, and organizational failures of all types are expanding the risk profile for all companies. The earthquake and tsunami that struck Japan on March 11, 2011 has gripped the world because of its severity, catastrophic consequences, and death toll. Surely the first lesson to be drawn from this experience is "Respect Nature."

Beyond this lesson lie important risk management lessons. We divide them into two categories: Managing risk, and Sharing responsibility.

Managing Risk

Risk management is an administrative art as old as an organization itself. It demands preparation and requires fast and decisive responses and, when the dust is settled, can be improved by after-action learning. We teach "Managing Risk" and have studied many of the unexpected events that have recently changed the world, including the Fukushima nuclear disaster, and have drawn some lessons.

First, preparation makes a difference. Having experienced earthquakes and tsunamis for generations, the Japanese people responded quickly and correctly. Thousands moved to higher ground in the few minutes between the massive earthquake shock waves and the giant tsunami that inundated their homes and businesses. That so many survived is testimony that people and societies can learn, prepare, and respond in a crisis. Tokyo Electric Power Company's (TEPCO) response, however, demonstrates that it had not learned enough from its past to prepare for the crisis it faced and, so, was unable to respond effectively.

Managing risk effectively during a crisis requires that management quickly recognize the scale and scope of the crisis it faces, and has people empowered to *act*, able to *assess* the situation, *prioritize* the problems they face, and *mobilize the needed* resources.

Second, managing risk effectively during a crisis requires that management quickly recognize the scale and scope of the crisis it faces, and has people empowered to *act*, able to *assess* the situation, *prioritize* the problems they face, and *mobilize the needed* resources. TEPCO failed in each phase of the response process. Its top management failed to appreciate the risks it faced, and the company was slow to act. Each failure has consequences and for each, there is an explanation.

Identifying risk: On *recognition*, it seems that Japan's nuclear regulatory authority and TEPCO had functioned in

harmony for at least 40 years without a major incident. An unquestioning media also enabled TEPCO to avoid tough questions and public accountability. The scale of the disaster and its speed left both regulators and TEPCO in shock. A lack of preparation heightens the likelihood of corporate shock when disaster strikes. And, shock is paralyzing.

Prioritizing risk: Shocked and unable to purposefully respond, a power vacuum arose at Fukushima-Daiichi that the Japanese government reluctantly filled. Hampered by a lack of local and technical knowledge, the government was not effectively con-

nected to TEPCO's operations, so it too was unable to set priorities and execute quickly. It lacked the ability to reach those who could help. It did not know who they were. Setting *priorities* is impossible without preparation and without empowering people to act. At Fukushima, lower rank frontline workers displayed uncommon courage and heroism – ordinary people doing extraordinary things – in their efforts to limit disaster. That this was necessary is actually an indictment of top management whose lack of

preparation placed so much responsibility on front-line workers.

Mobilizing resources: In a crisis, *someone* must be in charge of *mobilizing* the organization and reach out to people with the competencies to deal with the crisis. This would be impossible if they don't know who they are, where they are, and how to reach them. Management's job includes not shooting themselves in the foot by making things worse! As more resources are brought to bear on the crisis, events will shift what and who is important. The crisis team has to keep this fact in mind.

Executives often have a tendency to minimize bad news to preserve control in the hope of solving the problem alone. If the crisis is severe, as at Fukushima, executives must know how to reach inside and outside their organization to access the knowledge and expertise they need. At Fukushima, TEPCO could have quickly tapped expertise at GE-Hitachi and Westinghouse (Toshiba), government experts, and the international nuclear community.

Competency is revealed when people invent solutions to problems they have never experienced. Government may have authority in industrial crises but, as we have seen, it rarely has the operational competencies or connections to create a rapid response to a fast expanding complex technologically bound situation.

Sharing Responsibility

Responsibility sharing reverberated around the world after the earthquake and tsunami, revealed by responses of the global insurance and reinsurance industries, emergency response programmes, charitable contributions, and direct assistance to those in need. Millions of dollars have been donated

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Conclusion

A responsible reader may ask how to prepare for catastrophes? Here are several suggestions:

The lasting lesson of Fukushima is that the great forces of nature are beyond human control and present risks that may force us into assumptions that may have inherent flaws. Cooperation and shared responsibility are vital if countries and organizations are to adequately prepare for such risks.

through the International Red Cross and other relief agencies. Each of these reflects a system of shared responsibility.

Businesses and governments need systems enabling them to anticipate, plan, and respond to cope with such risks. Preparation and learning from past crises is leadership's shared responsibility. The lasting lesson of Fukushima is that the great forces of nature are beyond human control and present risks that may force us into assumptions that may have inherent flaws. Cooperation and shared responsibility are vital if countries and organizations are to adequately prepare for such risks.

- First, ask, "What makes us nervous now that we have seen Fukushima? What did those who survived learn from it? What can we learn?"
- Second, explore these possibilities with your executive teams, learn who can do what, and where relevant competencies lie.
- Third, develop a simple one page checklist setting out what to do in a crisis; 1,500 page manuals do not help people in moments of crisis.
- Finally, expand safety drills to deal with low probability, high impact (so-called "black swan") catastrophes.

Effective risk management is impossible without learning and preparation. Fukushima is an enormous learning opportunity for all managers. Who will accept that responsibility? 🐦

Managing the Risk of Natural Disasters: Implications for Competitiveness in Small Economies

Alvin G Wint

While the last few years appear to have seen an increased global incidence of natural disasters in the form of hurricanes, earthquakes, tsunamis, volcanoes, tornadoes and floods, the Great East Japan Earthquake and the resulting tsunami and nuclear accidents have certainly riveted the world's attention to the potential destructive potential of major natural disasters.

Although there was significant loss of life and property in Japan as a result of this sequence of natural disasters, it could have been much worse. Japan, as one of the world's largest and best managed economies, and a country located in an earthquake-vulnerable zone, has an exacting building code and has hosted the world's most sophisticated earthquake tracking system, with up to 1,000 seismic stations located across the country. This system allowed for early warning and the implementation of precautionary measures that mitigated the loss of life and property. One of the questions raised by the Japanese disaster therefore, is How would other countries, particularly those which are small and developing, cope with a natural disaster of this scale and magnitude?

One such country has already pronounced on this matter. The Office of Disaster Preparedness and Emergency Management of Jamaica has indicated that 52 per cent of the Jamaican population, which stood at 2.65 million in 2011, would be impacted by loss of life or displacement if the Island was hit by an earthquake and tsunami of a scale similar to that of the Great East Japan Earthquake and Tsunami.

This paper examines the peculiar risks from natural disasters that confront small economies and assesses the extent to which such economies can implement measures that mitigate these risks.

Management of Risk in Small Economies

The conclusion of the Jamaican Office of Disaster Preparedness about the risk of natural disaster in Jamaica typifies a general principle about small economies; that is, they face significant levels of risk. And that is one of the primary reasons why small economies

have to be very specialized if they are to compete effectively on world markets. Changes in the world market conditions combined with the narrow set of products they are likely to produce can have a devastating economic impact. Similarly, because all policy and politics are es-

entially national policy and politics in small economies, changes in policy or politics can have quick national implications. It is the combination of disaster risk, market risk, and policy risk confronting small economies that Briguglio seeks to capture in his small economy vulnerability index.²⁶

The inherent riskiness of small economies because of factors lying outside of the control of policy makers, such as the risks associated with natural disasters, makes it even more critical for them to ensure that they reduce the policy and macroeconomic risks that lie within their control. Those small economies that have experienced success in generating above average levels of economic growth have done so precisely by

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els of economic

²⁶ Briguglio, Lino (1995). "Small Island Developing States and their Economic Vulnerabilities, *World Development* 26 (3), 507-515.

maintaining stable economic and policy environments that are conducive to the achievement of the fundamental source of competitive advantage of a small economy. This competitive advantage is the degree to which it is hospitable to international portfolio capital, foreign direct investment, international tourists, and international residents.²⁷

That the majority of the world's small economies are Island states is no coincidence. In many of these cases, the societies and economies are so small that there would be no basis for independent management of these societies and economies unless they were part of a larger territory. These countries can mitigate their risks from natural disasters. Companies operating in such economies can, and should, develop disaster recovery plans that incorporate off-shore hosting of critical data services to facilitate more rapid recovery of systems after natural disasters.

These societies should put in place disaster organizations, building practices, and urban and national planning processes that reduce the likelihood of property damage from natural disasters, and put in place contingency measures to reduce the loss of life during these disasters. But beyond these risk mitigating measures, the most effective risk mitigating measure for these small economies is the introduction of policy measures that promote economic growth.²⁸

The 2011 Japanese natural disaster would have been far worse if Japan were a poor country. Small economies, many of which are islands and highly vulnerable to hurricanes and earthquakes, cannot reduce their vulnerability to natural disaster. They do, however, have within their policy control the pursuit of initiatives that can allow their economies to grow. These economies do have a capacity for growth because the converse side of the environmental vulnerability of these societies is their environmental attractiveness as residential locations.

The literature on economic growth, while recognizing the importance of a country's location, places the greatest impact on growth of national policy.^{28,29} In the Caribbean, which is a region replete with small states, the rapidity of recovery of the high income territory of the Cayman Islands from the 2004 Hurricane, which devastated and almost submerged the territory, stands in sharp contrast to the problems the economically challenged Haiti has experienced in recovering from its 2010 earthquake.

Conclusion

Although it would appear that there is an increasing incidence of natural disasters, natural disasters are not new to our world. Indeed, part of the apparent increased incidence may also be attributable to more accurate reporting

Small economies that face an almost existential risk need to be particularly concerned about developing a risk mitigating capacity that is based upon a policy orientation focused on achieving adequate rates of economic growth.

and dissemination of information about natural disasters in the wake of the technological revolution that has brought the world much closer together. In the seventeenth century, for example, Port Royal in Jamaica was a city that was more populous than New York City, before Port Royal was destroyed by an earthquake that killed half of the city's population. But this is an incident that may well have gone largely unnoticed by much of the rest of the world.

Neither large nor small countries can avert natural disasters. What these countries can do, however, is to put in place at corporate and national levels, disaster preparedness and recovery plans that are much easier to implement on a foundation of economic strength. It is that foundation of economic strength and the associated technological sophistication that is the best risk mitigating device. Small economies that face an almost existential risk need to be particularly concerned about developing a risk mitigating capacity that is based upon a policy orientation focused on achieving adequate rates of economic growth. ✓

²⁷ Wint, Alvin G (2003). *Competitiveness in Small Developing Economies: Insights from the Caribbean*, Kingston, Jamaica: UWI Press.

²⁸ Barro, Robert (1997). *Determinants of Economic Growth: A Cross Country Empirical Study*, Cambridge MA: MIT Press.

²⁹ Bloch, Harry and Sam Hak Kan Tang (2004). "Deep Determinants of Economic Growth: Institutions, Geography and Openness to Trade," *Progress in Development Studies*, 4 (3), 245-255.

Management of Crises: Lessons from Earthquake and Mining Crises in Chile

Rafael Romero-Meza
Claudia Blanco-Vidal

Even though distant from each other, Chile and Japan share a long history of natural disasters. In 1960, Chile suffered the strongest earthquake recorded in history. As a result, an extremely large wave was generated which travelled through the Pacific Ocean reaching the coasts of Hawaii and Japan, among many other Pacific coasts.

Both Chile and Japan are seismic countries and their inhabitants have learned to deal with earthquakes. Yet when a major disaster strikes, in both these countries, precautionary measures are seldom enough to cope with the magnitude of these natural events.

A year ago, on February 27, 2010, at 03:34 AM, Chile suffered another earthquake, one of the largest in its history, measuring 8.8 degrees on the Richter scale. On March 11, 2011, Japan suffered a major earthquake that reached 9.0 degrees Richter. Both countries lost many lives.

Currently, Japan is struggling with the effects of damage to the Fukushima nuclear plant as a result of the tsunami following the earthquake. Chile does not have nuclear energy and thus faced a different set of problems than Japan.

Yet, in both cases, the Chilean and Japanese people realized how poorly both countries were prepared for these kinds of events. Japan is a developed country that is known for its technological expertise as well as high standards of living. Also, it is believed that they generally have a better preparedness for natural disasters. However, when a tsunami hit the city of Okuma, where the Fukushima nuclear plant was located, Japan's technology could not cope with this nuclear catastrophe.

Given that there is no way to prevent natural disasters, each country should ponder their appropriate training

and resource needs so that they can react with the necessary flexibility and speed to minimize the damage. In the case of Chile, weakness in dealing with natural disasters was evidenced by many problems that occurred after the earthquake. The main difficulties revolved around communication, public order, funding for victims' relief, and the design along with the implementation of rebuilding programmes.

Chile is also a mining country and has witnessed many disasters in the past. On August 5, 2010, a tunnel collapsed trapping 33 miners at 700 meters under the sea level. The whole world watched how the miners were rescued after 70 days and how Chile successfully dealt with the natural disaster. Considering the Chilean standards of living and technology conditions, the Government of Chile responded promptly to the miners' distress, providing emergency funds and asking other countries for technological help, and finally getting all the miners rescued alive, which was indeed a remarkable achievement.

What has Chile learned from these crises and their management?

Given that there is no way to prevent natural disasters, each country should ponder their appropriate training and resource needs so that they can react with the necessary flexibility and speed to minimize the damage.

Communication

In Chile, the earthquake disrupted the communications system. For several hours, the affected regions were completely blacked-out. The lack of communication between regions delayed damage assessment and arrival of aid. The first lesson that the authorities learned was the need of a parallel communications network that could link the government, the army, and the police authorities as well as the first rescue agencies.

In the case of the mine disaster, the owners tried to hide the problem. But the miners' families took initiative in building a camp near the accident site the day after in

order to draw the government's attention to the crisis. People were empowered and Chile's President instructed the State Secretaries to take direct charge and stay constantly in touch with the families and rescue teams. Communication to local and national communities was made possible from the moment the news of the accident spread through the newspapers, television, and radio news reports.

On the other hand, in Japan, given their advanced technology, within a few minutes of the occurrence of the two natural disasters, the entire world knew about their consequences as well as the course of action taken by the authorities. What it proves is that good, clear, and well-timed communication of the facts can allow any country to get, in a short time, support from international experts and organizations, by establishing cross-country inter-disciplinary teams.

Public Order

After a natural disaster hits a region, maintaining public order assumes paramount importance. It facilitates fast response from the rescue agencies and helps them provide food, clothing, and other basic services for families in a more timely fashion. Concepción was the main disaster-affected city in Chile. Just for a few hours after the earthquake hit the city, the police were unable to keep the public under control, which resulted in looting and created a general panic among the population. This kind of phenomena, caused by the lack of timely action by the authority, has been documented in other countries too, e.g., New Zealand after a large earthquake in 2010.

In the case of the mining disaster in Chile, the President commissioned the Minister of Mining to coordinate the rescue activities. The Minister and the other public and private entrepreneurs lived in the camp, kept in touch with the miners' families, and gave them all the relevant news before they were on

Good, clear, and well-timed communication of the facts can allow any country to get, in a short time, support from international experts and organizations, by establishing cross-country inter-disciplinary teams.

Seismic countries should have minimum safety standards for building and infrastructure. Both Japan and Chile have these norms and standards in place. In both the countries, most of the casualties were due to the tsunami, not the earthquake.

TV. This strategy was fundamental to structure the required rescue activities in an environment of public order. Only police officers were used for the purpose.

Even the Government of Japan could maintain public order and manage the crisis situation efficiently during the most critical moments after the natural disaster.

Funding of Rescue and Reconstruction

Countries with high likelihood of natural disaster should create savings mechanisms to raise funds over time in anticipation of these events. The financial resources will help the state to face the emergency needs in the short run, and meet the rebuilding requirements in the medium and long run.

Chile had accumulated enough financial resources as a result of the high price of copper, one of its main exports. This allowed them to face the first stage of the reconstruction. However, these resources were limited and the needs of the affected regions and families were much more than estimated.

In the case of miners, the Chilean Government had the necessary assets to meet the objective of rescuing them. However, in the Fukushima catastrophe, despite the availability of funds, the Japanese State could not control the atmospheric damage caused by radiation in the short run.

Final Remarks

The decisions regarding the location of housing and industry should be made considering the likely impact of the natural disasters such as earthquakes, floods, volcano eruptions, tornadoes, and tsunamis. Moreover, early warning systems should be installed that would work round the clock in order to protect the civilians' lives. This would be important for forming a good communication system that would

work well under all circumstances. Japan excels in this area and Chile must improve it.


Seismic countries should have minimum safety standards for building and infrastructure. Both Japan and Chile have these norms and standards in place. In both the countries, most of the casualties were due to the tsunami, not the earthquake.

In Chile, most of the infrastructure failures were on highways and bridges with lower standards of construction. In Japan, the old infrastructure suffered the worst effects of the disaster. Deciding to renovate the old infrastructure is shown to be a way of minimizing the risk and consequences of natural disasters, thus minimizing the resultant possible losses.

The rescue operation of the miners had a happy ending. Communication systems worked, public order was in place, and there was enough funding to support the en-

Seeking help from the international community has proven to be an important means of overcoming natural disasters. Reciprocity in these cases is a collective social responsibility of public, private, and non-governmental organizations (NGOs).

tire operation. But having all these elements does not always ensure success. Japan had all the basic resources, yet in the Fukushima nuclear plant, no security plan ensured positive results. The best strategy for potential problem or catastrophe is to minimize it by taking preventive measures within highly exposed areas or activities, such as preparing contingency plans. The target must be to bind the negative effects of natural disasters through sustainable development adopting new technologies as well as learning and improving processes among people and organizations engaged.

Finally, seeking help from the international community has proven to be an important means of overcoming natural disasters. Reciprocity in these cases is a collective social responsibility of public, private, and non-governmental organizations (NGOs). 

What's Lost in Crisis, Can be Regained in Crisis

Jean Yu (Yu Jing)

A region in response to a major catastrophic event can always learn lessons from other regions that have experienced similar challenges. After the 2008 Wenchuan mega-earthquake, China learned a lot from Japan and other earthquake-prone countries in areas such as taking measures to enhance construction quality supervision, exploring disaster insurance schemes, strengthening the special legal system for disasters, and so on.

The Japanese earthquake and tsunami this year was particularly serious and triggered a series of new problems. As Prime Minister Naoto Kan pointed out, the earthquake-tsunami crisis is the biggest crisis Japan has ever faced in

its 65-year post-war history. To overcome the difficulties, here are some insights from my Chinese experience that could be helpful.

People are extremely vulnerable in situations with great uncertainty after a disaster. In such times, the priority should be to build trust and belief, and then, minimize damage with united effort, rather than blaming or questioning anyone.

First and foremost, it is important to avoid magnifying problems and pessimistic thoughts. One must try to keep a positive social outlook and strong public opinion. In Japan, Tokyo Electric Power Company (TEPCO), as the operator of the nuclear power station, faced harsh criticism. The executives of TEPCO were accused of failure to manage corporate responsibility and ethical systems. Actually, people are extremely vulnerable in situations with great uncertainty after a disaster. In such times, the priority should be to

build trust and belief, and then, minimize damage with united effort, rather than blaming or questioning anyone. If this principle was followed in dealing with the TEPCO nuclear crisis, the situation could have been different and both the damage to the company's reputation and the suspicion of Japanese corporate governance model could have been avoided.

Second, to deal with the aftermath of disaster, market forces and individualism cannot help; moral virtue and collective consciousness should be relied upon. One of the usual things in unusual situations is that the normal social and economic order gets disturbed. The process of rebuilding requires lot of caring for each other. At this point, Japan and China share similar experiences of

One of the usual things in unusual situations is that the normal social and economic order gets disturbed. The process of rebuilding requires lot of caring for each other. At this point, Japan and China share similar experiences of success and similar cultural background that puts premium on social benefits.

success and similar cultural background that put premium on social benefits.

Progress may sometimes follow trauma. Catastrophes are sad memories during the course of human civilization. In such events, unity of humanity appears to be of great significance. In confronting the dangers and challenges arising from disasters, it takes innovation and improved human relations to inspire wisdom of collective action and explore more reasonable institutional arrangements to mitigate and resolve intense conflicts and contradictions between mankind and nature. And such wisdom can even fetch positive results out of traumatic disasters, bringing back all the good things that had been swept away. 🐦

Japan's Earthquake: Economic Impact on Vietnam

Luc Can

On March 11, 2011, an earthquake measuring 9.0 Richter hit the Sendai region in North-East Japan. It was followed by a tsunami wave, causing widespread damages and losses. More than 10,000 dead have been identified, with many still missing. Total damages were estimated by insurance companies at more than US \$300 billion. This number is expected to increase as more assessment of the devastated areas is conducted. In addition, the radiation leak at the Fukushima nuclear generator is still unresolved and uncertainty about further impact is hampering the return of business and life to normalcy. This event particularly carries an emotional effect across countries, because similar reactors are used in other countries to generate electricity.

Economic Impact on Vietnam

Vietnam and Japan have established diplomatic and economic cooperation over many years. In 2010, the two countries agreed on strategic partnership, and committed to developing further cooperation between the two coun-

tries in many areas such as diplomacy, trade, investment, official development assistance (ODA), science and technology, education, and cultural exchange, among others.

Japan has been the largest bilateral ODA donor for Vietnam. The earthquake is expected to have little impact on the ODA flows. Though Japan has declared a general reduction in its ODA to foreign countries by 10 per cent, there has been no decision in this regard for Vietnam. At the Consultative Group meeting in December 2010, Japan had committed US \$2.2 billion or 12 per cent of the total ODA amount to Vietnam, which is likely to remain intact. We, however, note that a rising Yen (after the quake) can increase the debt service charge on ODA loans from Japan. Vietnam needs to get US\$ to buy Yen for this purpose. With the VND depreciating against both currencies, the debt servicing cost is expected to be higher.

FDI and FII flows from Japan might decline slightly, starting with some delay in disbursements as an assessment of the quake's total impact is made. In addition, many

Japanese manufacturers in Vietnam rely on Japan both for material and component import as well as market of final products. It is likely that they will not import or procure material and components from Japan either because of the damages to their suppliers, or because some of the material and components are being used for restoration in Japan. Nevertheless, in the medium and long term, according to a recent survey by JETRO, Vietnam will still remain attractive to many Japanese investors.

On the other hand, bilateral trade is not likely to decrease. After the disaster, there might be increased demand in Japan for basic items such as food (especially rice) and other commodities. The Vietnamese exporters of these commodities may find opportunities to increase business due to their geographical proximity to Japan. In 2010, Japan was ranked as the 4th most important trading partner with Vietnam in terms of combined value of exports and imports (GSO, 2011). Vietnam's exports to Japan totalled US \$8 billion (or 10% of total exports), comprising mostly of basic commodities with low demand-elasticity. Thus, their volume and value of trade is not likely to change to a great extent. Vietnam imported capital goods worth around US \$8 billion from Japan, which is not likely to decline. However, delays are expected as recovery progresses. For instance, the shut-down of earthquake-hit factories has interrupted Japan's supply of electronic products whose prices have thus risen in local markets.

Many Japanese manufacturers in Vietnam rely on Japan both for material and component import as well as market of final products. It is likely that they will not import or procure material and components from Japan either because of the damages to their suppliers, or because some of the material and components are being used for restoration in Japan.

Besides, many sea ports on the east coast of Japan were damaged, causing transportation disruptions which would also have an impact on Vietnamese exports by ship. Use of air transport would reduce the profit margins.

Tourism is seen to face an immediate impact. There are no exact estimates as yet, but many tourist companies have reported cancellation of tours by Japanese visitors to Vietnam. In March 2011, Saigon Tourist had to cancel a tour of about 100 Vietnamese visitors to Japan who had planned to enjoy the cherry blossoms in April. Vinpearl Joint Stock Company, which owns resort facilities catering to Japanese tourists in Khanh Hoa province, estimates that the number of arrivals from Japan would decline by one-third this year.

Finally, the leak in the Fukushima nuclear plant has caused concerns and debates among the Vietnamese authorities regarding their plan of building the proposed nuclear plant in the Ninh Thuan province. The plan will be delayed while further assessment of the leak is made.

In conclusion, the quake in Japan is anticipated to have some impact on Vietnam in terms of slightly decreased FDI and trade, and delayed projects. Tourism is likely to be affected to a great extent. However, the good news is that Vietnam is still seen as one of the most attractive tourist sites and investment priorities for Japanese firms and visitors. ♡

THE CRITICAL POLICY ISSUES

Go Nuclear but Make it Safe

Narendra Bhandari

Nuclear power is one of the major sources of energy, responsible for about 14 per cent of the global en-

ergy generation, next only to thermal and hydroelectric power. France is a leader in this technology, generating

about 75 per cent of its power requirement from nuclear reactors.

Nuclear power has certain advantages and disadvantages compared to other modes of power generation. The main advantage is that it is cleaner compared to thermal power, which burns coal or gas to generate heat and in the process produces a lot of carbon dioxide, which is a "dirty" green house gas, responsible for most of the ills of global warming, climate change, ozone depletion, pollution, etc. Moreover, a small amount of nuclear fuel can produce a large amount of energy whereas in the case of thermal power, large amount of fossil fuel is needed, making transportation of fuel to the production site very expensive. The major disadvantage of nuclear power is that it produces radioactive waste which is a serious health hazard; also, the strategy and techniques of nuclear waste disposal needs improvement. The used nuclear fuel can be reprocessed and reused but the nuclear waste requires storage for hundreds or thousands of years for most of the radioactivity to decay before it can be handled safely. Furthermore, any natural hazard can cause a serious catastrophe; the same is also true of hydroelectric power. The cost of nuclear fuel is low but the capital cost of building nuclear reactors is high; specifically, the cost of waste disposal is enormous. Overall, the cost of production of nuclear power is comparable to thermal power.

Nuclear power can be produced in two ways: By breaking (fission) heavy atoms (like uranium, thorium or plutonium) and by combining (fusion) light atoms (like hydrogen). But the natural uranium or hydrogen cannot be directly used for this purpose; it requires the lighter isotope of uranium (U-235) for fission and the heavier isotope of hydrogen (deuterium or tritium) for fu-

A small amount of nuclear fuel can produce a large amount of energy whereas in the case of thermal power, large amount of fossil fuel is needed, making transportation of fuel to the production site very expensive. The major disadvantage of nuclear power is that it produces radioactive waste which is a serious health hazard; also, the strategy and techniques of nuclear waste disposal needs improvement.

There are nearly 500 nuclear reactors in the world, most of which use uranium. India's crustal rocks have little uranium, which can be mined, but its stock of thorium amounts to about 25 per cent of the world reserves. India is therefore pursuing the development of thorium-based reactors. That may solve the fuel problem but not the magnitude of disaster.

sion. Natural uranium has only 0.7 per cent of uranium-235. Therefore, for using it as a fuel, it has to be enriched through a complicated process, by first making a suitable chemical compound (hexafluoride) and then centrifuging it. Fusion technique has not yet been perfected for commercial production but from the point of view of radioactivity, it is considered to be much cleaner than fission. In fission, when a neutron strikes a U-235 atom (which is the fuel), it not only splits it and produces energy, but also produces two neutrons which, in turn, meet two U-235 atoms and thus multiply. In this way the number of neutrons goes on increasing by a factor of two in each of such encounters. This multiplication of neutrons results in a chain reaction which needs to be controlled; otherwise in a highly enriched U-235, as used in an atom bomb, it will, in a split second, explode. For safety reasons and for controlled generation of power, the enrichment of U-235 used in nuclear reactors is kept low. Control is exercised by inserting a moderator (e.g., graphite) which slows down and consumes the neutrons. The energy released in each of the fissions is enormous and is used to heat water which is used as a coolant. The steam so produced or the other materials that are used as coolant can run a turbine to generate electricity, just as in the case of thermal power. The heat from the reactor has to be carried away faster than the rate at which it is produced so as to prevent the reactor from getting overheated and melting. Melting of uranium causes the radioactive elements to leak from the reactor producing serious health hazard. The radiation emanating from the reactor in nuclear reactions is also a serious health hazard and is contained by building thick walls to shield it. The reactor and all the ancillary units are extremely complex systems and have

a zero failure tolerance. They also require decades of lead time to plan and build.

In spite of all the safety measures, there is always a chance, however small, of an accident. The accident could be internal due to malfunctioning of some of the vital operations (like cooling, shielding of radioactivity) or external, due to geological events (earthquakes, volcanoes, or tsunamis) which cannot be predicted. Because of this uncertainty, nothing can be fully safe for ever – neither a dam producing hydroelectric power, nor a thermal power house, or a nuclear reactor. It is the ensuing disaster after a failure, in terms of which we must assess the safety.

After the Fukushima nuclear disaster in Japan earlier this year, the wisdom of generating nuclear power has been questioned. It may be noted that the disaster was not initiated by an inherent technical failure in the reactor but by a series of natural events. The main cause was the large surge of water brought in by tsunami, which was triggered by one of the largest submarine earthquakes in recent history. This resulted in electric blackout, which in turn damaged the pumps required for cooling. This led to partial meltdown of a reactor. However, this was not the first nuclear disaster; earlier in 1979, the Three Mile Island plant in USA, and in 1986, the Chernobyl reactor in the USSR besides several others in submarines and ships faced similar problems. In some of these cases, meltdown had occurred and radioactive elements had leaked into the atmosphere making food, water, etc., in the surroundings unusable and exposing people and animals to severe radiation, resulting in some deaths.

There are nearly 500 nuclear reactors in the world, most of which use uranium. India's crustal rocks have little uranium, which can be mined, but its stock of thorium amounts to about 25

If our forefathers, who discovered fire, had decided to ban it for the fear of forest catching fire or those who discovered electricity abandoned it for the fear of accidental electrocution, where would we be? The remedy lies in perfecting the technique for maximum safety, and not in banning it.

The danger of a disaster does not mean that we should stop creating nuclear power. Apart from providing electricity for daily use, nuclear power is essential for submarines, large ships, space missions which go far out in the solar system where sunlight is dim. We cannot stop all these programmes.

per cent of the world reserves. India is therefore pursuing the development of thorium-based reactors. That may solve the fuel problem but not the magnitude of disaster. Then there are the fast breeder reactors which, in the process, produce more nuclear fuel than they consume. Thus we may never run out of nuclear fuel, unlike fossil fuel.

In the current global political scenario, there is also a danger of proliferation of nuclear fuel because it can be used to make nuclear bomb. It can be stolen by people who pose a threat to humanity. This danger is higher in case of uranium and plutonium or breeder reactors and less for thorium.

We must remember that solar energy, considered to be the cleanest and safest, is itself nuclear power-produced far away, in the interior of the sun by fusion. The danger of a disaster does not mean that we should stop creating nuclear power. Apart from providing electricity for daily use, nuclear power is essential for submarines, large ships, space missions which go far out in the solar system where sunlight is dim. We cannot stop all these programmes. If our forefathers, who discovered

fire or those who discovered electricity abandoned it for the fear of accidental electrocution, where would we be? The remedy lies in perfecting the technique for maximum safety, and not in banning it. The minimum precaution we can take is to build nuclear reactors in geologically safe zones where known natural disasters have the least probability of occurrence. Although the physics of nuclear power generation is well understood, the design of nuclear reactors needs further improvement, keeping safety in mind. After all, it is only in the past half a century that we have learnt to harness the nuclear energy. It will increasingly become more important as the coal and gas reserves deplete, hydroelectric and renewable sources of energy (solar,

geothermal, wind, etc.) get fully used up, and energy demand increases. Today, as far as nuclear power is concerned, we stand at the cross-roads between the hope of

providing power sufficiency and the fear of facing a great catastrophe. The choice is clear and safety must get the prime attention. ♡

Climate Change and Coastal Protection

Jawed Usmani
Sushil Vachani

The devastation caused by the powerful tsunami that recently struck Northern Japan has urgently focused attention on the ocean's powerful impact on people living along the coast. Though tsunamis are caused by earthquakes under the sea and have no causal relationship with climate change, the damage wrought by tsunamis will be magnified once sea level rises by a couple of feet as a result of climate change by the end of this century, as scientists predict. Risks are presented not just by tsunamis, which occur rarely, but from more frequent typhoons and storm surges that can destroy homes, cripple livelihood, and drive people to already-crowded inland cities. Climate change is likely to intensify the hydrological cycle which will, *inter alia*, result in an increase in the frequency and ferocity of such extreme weather. There are ways to blunt the fury of the forces unleashed by climate change, but this calls for advance planning, substantial resource commitment, and skillful political management to broker agreements among diverse stakeholders and implement solutions.

Importance of Coast

A disproportionately high share of the world's population, 23 per cent, lives within 100 km of the sea at an elevation below 100 meters.³⁰ Population density on the coast is three times the world average as a result of migra-

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tion that rose significantly during the twentieth century.³¹ As people moved to the coast, they used it for agriculture, industry, and aquafarming. They built homes, pipelines, and ports and dredged waterways to accommodate shipping. As a result, in some places, coastal inlets were widened and it became easier for storms to sweep larger quantities of seawater inland onto fertile land. Over the years, excessive use of fertilizers and pesticides, not just near the coast but inland as well, has contaminated the seawater around areas where major rivers merge into the ocean, killing off fish and ruining the livelihood of fishing communities and destroying coastal ecosystems and their rich ecological diversity.

Effect of Rising Sea Level

Scientists estimate that sea level rose by around 17 cms during the last century. The international body monitoring the effects of climate change – the Intergovernmental Panel on Climate Change (IPCC) – had previously estimated that by the end of this century,

there would be an increase in the level of the sea by as much as 60 cms. In the last few years, however, studies have indicated that the increase could be a meter or higher because of more rapid melting of polar ice.³² This will cause higher erosion of coasts and greater level of storm

³⁰ http://worldoceanreview.com/wp-content/downloads/WOR_chapter_3.pdf

³¹ <http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter6.pdf>

³² <http://www.webpages.uidaho.edu/envs501/downloads/Nicholls%20%26%20Cazenave%202010.pdf>

flooding, which will pollute freshwater with seawater and erode agricultural productivity of land as it is salinized. A tenth of the world's population, about 600 million, lives at an elevation below 10 meters, referred to as low elevation coastal zones.³³ These people are especially vulnerable to the effect of rising sea levels. Millions will be forced to abandon their homes. A rise in sea level by one meter will inundate 17 per cent of the arable land of Bangladesh causing a permanent loss of 20 per cent of its agricultural output (mainly rice, jute, and sugarcane). Egypt will lose 12-15 per cent of its arable land and 15 per cent of its agricultural output. Higher storm surges will threaten many coastal areas that experience hurricanes, including the Indian subcontinent, the Caribbean, the Western Pacific, and the Southeastern US.³⁴

India's Coastline³⁵

India's coastline is 7,500 km long — 5,400 km on the mainland and the rest on islands. Seventy-three of India's 593 districts are on the coast. Seventeen per cent of the Indian population lives in these coastal districts. About five per cent of the Indians, 63 million people, live in low elevation coastal zones. The Indian Ocean region contains a significantly diverse population of coral, fish, and marine mammals, many of which are in danger of extinction. Most of India's oil and gas reserves lie offshore, in coastal or shallow waters at Bombay High, the Krishna-Godavari Basin, and the Gulf of Kachchh. About a third of the coastline contains rich mineral deposits. In Tamil Nadu, there are deposits at a depth of as little as a meter, whereas in Orissa, Andhra, Kerala, Karnataka, Goa, and Maharashtra, they are at a depth of 15 to 25 meters. The coast is dotted with

tourist and cultural attractions such as the Sundarbans, the Elephanta Caves, Rameswaram, Puri, and Digha and states like Goa and Kerala.

The Coastal Economy

India's marine fish output is around 2.7 million tonnes. This is produced by over two million people, either directly or by adding post-harvest value. About 25 per cent of the coastal population consists of rural women, living in over 3,600 fishing villages. The rural poor on the coast are especially vulnerable to disruption by extreme weather. Their land is eroding and resources are declining, while markets remain inefficient. Among the 73 coastal districts, six are especially at risk: two in Gujarat (Porbandar and Junagadh), two in Orissa (Kendrapara and Jagatsinghpur), and one each in Tamil Nadu (Nagapattinam), and Andhra Pradesh (Nellore). The coast is also home to dense urban population in 77 cities, the largest of which are Mumbai (16 million), Kolkata (13 million), and Chennai (6 million). It has hundreds of manufacturing plants, many special economic zones, and nearly 200 ports.

India's coast is under tremendous threat. Its stock of fish is falling rapidly and a third of its mangroves (important for limiting damage from sea surges) have disappeared as people exploit them for food and fuel. About 60 per cent of its coral reef is endangered by mining, oil pollution, and other human activities, as well as from

rise in sea temperature owing to climate change.

Action Underway

Unfortunately, India's response to erosion of its coasts and the challenges presented by the rising sea level has been chaotic. There are numerous laws that provide the bases for protective action, but implementation is poor. There is inadequate coordination among the multiple regulatory bodies with jurisdiction over the coastline. The

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³³ <http://www.earth.columbia.edu/news/2007/story03-29-07.php>

³⁴ http://www.ipcc.ch/ipccreports/far/wg_II/ipcc_far_wg_II_chapter_06.pdf

³⁵ This section draws from *India - Integrated Coastal Zone Management Project: Project Appraisal Document*, World Bank.

government made its first attempt at systematic and coordinated coastal management in 1991 with the Coastal Regulation Zone Notification. In 2004, the Ministry of Environment and Forests commissioned a committee of experts, led by Professor M S Swaminathan, to review this notification. This committee made recommendations governed by a dozen guiding principles that advocate inclusive, cautious, scientific, multi-disciplinary approaches to create sustainable solutions for protecting the ecology and livelihoods. In response, the Government of India launched a Rs. 1,156 crore (about \$250 million) project for Integrated Coastal Zone Management in 2010, with the World Bank's assistance. The project includes an extensive plan for hazard mapping of the Indian coast to identify areas at risk. It will also create institutions and build capacity for coastal management, including pollution control and development of livelihood options for communities living on the coast. A National Centre for Sustainable Coastal Management has been established in Chennai at Anna University.³⁶ A number of conservation activities are proposed in West Bengal, Orissa, and Gujarat.

Looking Ahead

The world needs to take urgent action to reduce emission of green house gases (GHGs) that cause global warming and climate change, but action is painfully slow, partly because nations are reluctant to restrict consumption of less-expensive but more-harmful fossil fuels, and partly because of differences among leading polluters as to who should make the greater sacrifices, and whether developed countries should compensate developing countries for the environmental harm caused by the former's economic growth. Even if the world miraculously agreed to limit emissions

of GHGs aggressively, it will take decades for the effect of those measures to have a tangible impact. The current high level of GHGs in the atmosphere pretty much guarantees that atmospheric temperature will increase (before stabilizing as a result of mitigating actions), and the sea level will rise and storms will be more frequent and violent. So, it is imperative that actions be taken to adapt to the changes. The first assessment report of the IPCC, published in 1990,³⁷ indicated three kinds of responses.

- **Retreat.** This involves recognizing that the land and structures in some areas will be too difficult and costly to save. The people in these places will need to be relocated over the coming decades in a planned and coordinated fashion.
- **Accommodate.** Some areas can survive, but will need to adapt by changing building codes, stricter regulation, and measures to protect ecosystems.
- **Protect.** In the case of some centres of population and economic activity, the best option may be to create protective barriers. These can be "hard structural options," such as dikes, sea walls, and floodgates, as in the River Thames, which are designed to protect London. Or they can be "soft structural options," such as afforestation, dune restoration, and creation of wetlands.

The choices between the alternative strategies will be difficult and fraught with political manoeuvring as stakeholders push for outcomes that serve their narrow interests. There is need to inform and educate the public of the unavoidable changes ahead, and include local communities in open decision-making rather than restricting it to selected influential stakeholders and the policy elite. ♡

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³⁶ <http://www.ncscm.org/>

³⁷ http://papers.risingsea.net/federal_reports/IPCC-1990-adaption-to-sea-level-rise.pdf

Sound Judgments Must Not be Stifled by Crisis Management Protocols

Krishna Pillai

The story is told that at the Fukushima Daiichi nuclear plant, the three reactors in operation began an orderly shutdown when the Great Tohoku quake of 2011 struck, even though the magnitude at 9.0 was significantly higher than the 8.3, the plant was designed for. But when the tsunami wave rolled in and all the 13 back-up diesel generators and all the emergency cooling pumps were knocked out, then an unprecedented and unforeseen chain of events was set in motion. It is said that the site management quickly came to the conclusion that sea water cooling was necessary even though this would render the reactors permanently inoperable. But it took a further eight hours for the Tokyo Electric Power Company (TEPCO) management in Tokyo to agree. In the event the meltdown of the fuel rods may have been unavoidable in any case but an additional eight hours of cooling with sea water could not have hurt. A similar story is told about Hurricane Katrina where an operating engineer had the possibility of opening some valves and preventing flooding of some areas of New Orleans but did not do so because such a decision was explicitly excluded from his authority and his superiors were unreachable.

The question that arises is whether the culture of an organization helps or hinders individual managers to make judgments at times of crisis or impending disaster. Should the site manager at Fukushima or the operating engineer in New Orleans have had to wait for higher authority as they did or should the organizational culture have permitted them to bypass the chain of command?

The question that arises is whether the culture of an organization helps or hinders individual managers to make judgments at times of crisis or impending disaster. Should the site manager at Fukushima or the operating engineer in New Orleans have had to wait for higher authority as they did or should the organizational culture have permitted them to bypass the chain of command?

For judgments which must be made in times of crisis, the distinguishing and dominating feature is that time is of the essence. They remain cognitive processes even though there is no time to think!

In the managerial context, I take judgment to be that exercise of mind which leads to actionable conclusions. It is the fundamental activity for a manager in his primary task of mobilizing actions towards his purpose. Judgment is a cognitive process. It is drawn from what is known or assumed or guessed or inferred or deduced to come to a predictive conclusion of what is to be done. However, the processes by which judgments are reached are as numerous as there are ways in which the human mind works.

The “goodness” of a judgment can only be assessed long after the judgment itself and therefore it is the soundness of judgment which must be sought rather than the intangible goodness of a future result. But a sound judgment must also be consummated by the willingness to exercise it.

A judgment in the managerial context is always concerned with a choice about the future – to do one thing rather than another, or to choose one course of action over another, or to choose one person instead of another, or to choose one desired result over another, or to choose one path instead of another.

Irrespective of country or organization or culture or language, every managerial judgment contains all the fundamental characteristics of all judgments:

- an objective with its conditions of satisfaction
- a review of the current status
- a conclusion regarding the future action.

A “sound” judgment is the most proper judgment possible at the time,

but whether it is the best possible judgment or not will always be uncertain. The soundness of a judgment is not dependent upon the success or failure of the subsequent actions. The variety of processes that a manager must employ to make a judgment means that it is futile to look for a single process as being “sound.” The quality of a judgment must be secured long before the outcome can be known; it is the quality of the process to come to a judgment which can and must be secured.

It is by ensuring the robustness of the process of coming to a judgment that it becomes possible to predicate for the soundest judgment possible, both for individual managers and collectively for the organization. For individual managers, this entails making the quality assurance of coming to judgment automatic and habitual. This is a matter not only of training but also one of ensuring that the environment is conducive to the application of the quality gates to secure the soundness of the judgments. At the organizational level, processes, procedures, protocols, and methodologies need to be designed to ensure that the quality assurance is carried out while coming to judgment. For judgments which must be made in times of crisis, the distinguishing and dominating feature is that time is of the essence. They remain cognitive processes even though there is no time to think!

Organizational arrangements such as crisis response or disaster management plans – by their very nature – provide for rigid procedures to be followed since there is no time in the heat of the crisis for developing a response. But these rigid procedures can smother the individual manager’s judgments. If such procedures are further constrained by inflexible limits of authority then the judgment

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The judgments of the competent manager in the field must, in times of crisis, be allowed to override the constraints of protocols and processes and limits of authority.

ment of the individual manager on the front line of the crisis may not even come into play. And when unforeseen scenarios are encountered, it becomes all the more necessary that the individual manager’s judgments take precedence over inappropriate protocols or procedures.

Herein, I think are the lessons to be learnt from Fukushima and Katrina. In both, it would seem that the prevailing organizational culture hindered the judgments from being made in the field close to the disaster and shifted them to headquarters. In both cases, the organizational culture was such that it

did not encourage the operator at the front line to disregard the chain of command. In the case of Fukushima, it would seem to be a TEPCO-specific issue and not some inherent aspect of Japanese culture.

But in both cases, the lessons are that:

- a) Crisis management protocols must be flexible enough to cater for scenarios which have not been envisaged,
- b) The judgments of the competent manager in the field must, in times of crisis, be allowed to override the constraints of protocols and processes and limits of authority.

Sound judgments by front-line managers at the point of crises must not be permitted to be stifled by the rigidity of crisis management protocols. And that all managers at all times have the ingrained habit of going through a process to assure the soundness of their

judgments is self-evident.

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Contingency Funds as a Fiscal Policy Tool: A Reminder and Lesson from the Japanese Nuclear Accident

Yilin Hou

The Great Recession of 2007-09 with the lacklustre effects of monetary and fiscal policies highlights the urgency and importance of a more close scrutiny of the government's counter-cyclical policies. The Japanese Fukushima Daiichi nuclear plant accident and the months-long oil spill in the Mexican Gulf by the British Petroleum (BP) Corporation painfully remind us of another indispensable aspect of fiscal policy, a part involving businesses: Neither of these two accidents was from the economic downturn but both cast huge negative impact on a global economy that has been struggling for recovery.

This severe recession had its root causes in loose (or "liberated") monetary policy and inadequate regulation (or deregulation) of the financial market; the BP and Fukushima accidents reveal the weakest link in our awareness of and preparedness for industrial disasters. The tremendous damage caused by the recession and the accidents so far has set all policy makers and scholars in deep thinking again about the role of government in stabilizing the macro economy and the policy tools that should be designed and made available and should be fully employed during a recession or subsequent to a disaster. Before the recession, most major economies had been in chronic deficits and increasing debts; during the recession, counter-cyclical fiscal policy was heavily used but its effect had been compromised. In the case of the two accidents, delayed reaction by the concerned businesses (due partly to inadequate resources reserved for relief of human life and assets) added to the already devastating damage. Thus, it is urgent for the public policy and public finance communi-

ties to reexamine whether the current policies contain systemic loopholes, and consider creating an improved network of policies with adequate policy tools to better safeguard the future of our society. With an integrated policy network, we can better maintain macroeconomic stability on the cyclical side as well as social stability and public safety on the acyclical side. This essay offers an

idea towards this holistic system of policy design.

There have long been macroeconomic debates about the necessity and efficacy of the function of government in economic stabilization as well as the choice between monetary and fiscal policy as the major policy tool for this function. Fiscal policy dominated from the 1930s to the 1960s and monetary policy took over from the 1970s to 2000. In this Great Recession, all central governments fully exploited both monetary policies and instruments. In 2002, Nobel laureate in Economics, Robert Solow, regretted, "there has not been any serious discussion of fiscal policy." The recent recession and incidents offer the most appropriate occasion for serious examination of fiscal policy and to correct the path of policy development.

Effective economic stabilization requires coordination of monetary and fiscal policies as well as integration of

the use of policy tools in the public and private sectors. After all, the private sector accounts for the bulk of the economy; without active participation of businesses, stimulative efforts can hardly meet expectations. This short essay expounds on an integrated policy network, in particular the creation of contingency funds as an inherent component of government fiscal policy.

It is urgent for the public policy and public finance communities to reexamine whether the current policies contain systemic loopholes, and consider creating an improved network of policies with adequate policy tools to better safeguard the future of our society. With an integrated policy network, we can better maintain macro-economic stability on the cyclical side as well as social stability and public safety on the acyclical side.

An Integrated Policy Network

An optimal policy network must involve both monetary and fiscal policy. Monetary policy is designed to be counter-cyclical, with all its tools going against the cycle. Interest rates and money supply, for example, are designed to go against the economic cycle. Fiscal policies are of three types by their cyclical features: procyclical, counter-cyclical, and acyclical. Procyclical policies go with the economic cycle; they are applied only when the economy is in expansion. Counter-cyclical fiscal policies go against the economic cycle: They are designed for and expected to be effective when the economy contracts; once the economy starts to expand, such policies phase out of use and are put on shelves. Automatic stabilizers (like the progressive personal income tax and unemployment insurance) and budget stabilization funds are among the counter-cyclical tools. The third type is acyclical, i.e., they are not related to fluctuations of the macro economy. These are contingency funds. A government's fiscal policy is incomplete without carefully designed contingency funds.

The reason for creating contingency funds is straightforward. To stabilize the economy and to protect public safety more effectively, it is crucial that the public sector (government) and the private sector (firms) work together. Thus, both monetary policy and fiscal policy necessarily contain elements that involve actions by the government itself and also by individual businesses. An ideal policy network must have the two sectors integrated. In the finance/banking sector, the central bank requires commercial banks to submit a certain percentage of their absorbed savings as deposits for possible bank rushes, which may or may not be linked to the economic cycle and is associated more with any type of risks.

In the business world, especially those

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Contingency Funds

The economic rationality of the proposed acyclical contingency fund follows the same idea as tax smoothing for the general public. The requirement of a certain level of upfront precautionary financial resources can be of great utility in correcting negative externality by firms. This up-front cost is linked closely to benefits: Whichever firm poses potential risk pays to set up such a fund. The costs may shift forward to consumers or backward to providers, thus whoever benefits from the firm's products shares the cost.

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industries that involve high risks to assets or human life, purchase of insurance has been a widely adopted practice to cover unexpected damage. But as the case of the American International Group (AIG) demonstrated in triggering off the Great Recession in the United States, insurance firms themselves are also subject to huge moral hazard related risks. Thus, it is not enough to rely solely on them. This author advocates that central governments adopt a uniform policy that requires firms in high risk industries to set up contingency funds with a central financial institution, in a similar fashion as commercial banks do with the central bank.

The amount required for such a contingency fund is not tax; the payment into the fund remains as the firm's asset. The asset, however, is now in a trust with government, as in an escrow account, for use only on occasions specified in the legislation that creates the fund and in the charter that guides the operation of the fund. The size of the reserve is related to the amount of risks exposed by the firm. There are three major factors to consider in determining the fund size. The first is the probability of accident: Higher probability imposes higher reserves. The second is the scope of damage in case of an accident in terms of the number of peo-

Box: Illustration of the Integrated Policy Network

Policy Area	Cyclical Feature	Government	Business
Monetary	Countercyclical	Interest rate; money supply	Deposit requirement
	Acyclical	(Not applicable here)	Deposit requirement
Fiscal	Procyclical	(Not applicable here)	(Not applicable here)
	Countercyclical	Automatic stabilizers; budget stabilization funds	Contingency funds
	Acyclical	Intergovernmental grants; debt	Contingency funds


ple, the size of accident impact area, and the amount of total social assets under impact of the accident. And, the third is the duration of damage in case of an accident: Longer lasting damage demands larger funds.

After the above-mentioned accidents, both firms (BP and Daiichi) have (been required to) set up dedicated relief funds, which is a necessary action long overdue. The rushed process of fund construction, however, caused disruption to the normal flow of business financial operations and slowed relief work, weakening public trust in government's ability in handling catastrophes. Had the funds been pre-established, the firms, the victims, and the government would have all been in a much more comforted position in handling the incidences.

To effectively implement these contingency funds, two additional aspects are important. First, the reserve funds will be under central government control. This is to prevent local authorities from relaxing the reserve requirement in competition for business investment. Second, the contingency funds must be regularly audited with full

information disclosure for public oversight. Finally, preliminary plans should be composed for each fund in preparation for disaster relief. Every plan shall include operation details such as (a) relief standards for loss of life and assets, (b) procedures for damage verification and relief application, and (c) timeline for immediate relief and continuing assistance. With these done, the contingency funds will be fully functional and can hit the ground running in case of an accident.

Summary

This author proposes an integrated policy network with both monetary and fiscal policies that actively involve both the government and the private sector. Specifically, the policy recommendation is to require the creation of a contingency fund by each high risk business with a central regulatory agency. Learning from past experiences, this proposed integrated policy network will contribute to better protecting the public and maintaining macroeconomic stability. 

What We Learned From Japan – And What We Still Need to Learn

Visty Banaji

I distinctly remember the time when Japanese precept permitted India's manufacturing sector to stand proudly on its feet for the first time. Decades of protectionism and licence-controlled output had atrophied much of the musculature for productivity and quality that Indian manufacturers may have inherited from their principals, collaborators or founders. When liberalization threatened to sweep away these artificial props, even the best of the country's corporates quivered at the prospect.

Many of them turned to Japan for lessons from the globally recognized masters of manufacturing who seemed to be then on their way to the economic conquest of the world.

For Telco (now Tata Motors), where I led Corporate HR at the time, the saviour came in the form of Nawano San of Shingijutsu. He was not a true blue-blooded Toyota alumnus but he was more than adequate for what we

needed. I used to accompany him to our manufacturing facilities during his initial pilots. Each such tour left me amazed at the transformation a single wise and wizened individual could make to the way a 50-year old enterprise (with its own proud tradition of manufacturing excellence coming, not least, from its German parentage) managed its manufacturing. Stories of Nawano San's ability to cut through red tape, such as the time when he personally gas-cut a conveyor because the normal approval process could not move fast enough to get the layout change he demanded, became the stuff of legend in the organization. With his undisputed pre-eminence as a practical trainer, his insistence on perfection and his fearless chastisement of managers who otherwise made the rest of the organization tremble, Nawano San reminded me of no character more than Yoda – albeit somewhat magnified. *Kaizen*, which till then had been just a phrase one came across in eagerly devoured articles in *Fortune* and books by Ishikawa, became a manifested and experienced force in front of our eyes.

Telco may have been among the first but was, of course, not the only corporate that pursued the lean manufacturing path. The lessons Japan taught so freely became the path for every Indian manufacturer to survive the international competition unleashed by liberalization and carry the battle to other markets. It may not be an exaggeration to say that today's trail-blazing MNCs of Indian origin in the manufacturing sector could not have come into existence but for this tutelage. The 'machine that changed the world' changed the face of manufacturing in India for ever.

There are two other lessons we can learn from the Japanese that could be even more valuable than the one that reshaped our manufacturing sector.

Anyone who visits Japan is struck by the spotless cleanliness of a country

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The ability to face extreme adversity with courage and steadfastness without abandoning the core principles of our Secular Republic, may be the lesson we need to learn from the Japanese more than any other.

where even the dust knows its place is not on a public road. Obviously this remarkable cleanliness demands incessant effort and is only one manifestation of the social conscience that is so central to the culture of Japan. I got an even more memorable instance of this trait when we were in Japan last year. Our hotel room overlooked a busy street in Kyoto which was, of course, fairly deserted in the night. My wife got up for a drink of water at 2:30 am one night and happened to look at the part of the street where the traffic light at a pedestrian crossing was still operational. Not a pedestrian was in sight and certainly there was no policeman on the scene. All the same, every single car stopped at the traffic light as long as it was red and proceeded only when it turned green. I do not need to draw

the contrast with Indian driving behaviour. And what about our cleanliness? People who visit India for the first time often comment on the contrast between the cleanliness inside Indian homes and the filth that pervades just outside our doorsteps or gated communities. It is as if the moment we cross the thresholds of our homes, the locus of our moral control is switched from internal to external mode. So, if there is a policeman around, we will still follow the traffic rules but conscience-driven checks seem to lose their efficacy as soon as we leave our families and premises. Small city-states or totalitarian regimes can ensure good conduct through policing – at least for a time.

A large democracy like India does not have that option. Reports by the Comptroller and Auditor General or by one Parliamentary Accounts Committee after another can only hold the mirror of shame to our faces after the event – not prevent the crises of conduct under which we are drowning. Unless we learn to internalize social mores, which the Japanese do so well and seemingly so effortlessly, scams, road-rage, unsanitary surroundings and all the other symptoms of a weak social conscience will continue to plague us.

The last lesson the Japanese have to offer us is *kaifukuryoku* which they demonstrate when faced with misfortune. The recent earthquake and Tsunami are only the latest example of the unfair hand fate has dealt the Japanese nation. Lloyd George once said "It is not what happens to you in life that matters; it is the way in which you face it." As each calamity has befallen the Japanese, they have demonstrated a spirit of resilience that has left the world gasping in admiration. India's own star seems to be in the ascendant in recent times. Even the recent financial Tsunami that submerged many developed economies seemed

to lap gently around Indian shores. Much as one wishes that our good fortune continues uninterrupted, one has to reckon with the possibility that the *Moirae* may turn their baleful glances in our direction and test the strength of our national character and of the fabric that binds us together as a nation. Ultimately, the ability to face extreme adversity with courage and steadfastness without abandoning the core principles of our Secular Republic, may be the lesson we need to learn from the Japanese more than any other. 🐟

PERSPECTIVES FROM THE JAPAN COLLOQUIUM

Sushil Vachani

This colloquium has brought together perspectives from eight countries – Chile, China, India, Jamaica, Japan, Sweden, Vietnam, and the US. The contributors have shared their reflections on the implications for different nations, lessons that may be drawn, and important questions that societies need to address, for example, whether or not to rely on nuclear energy in future and how to be fiscally prepared to handle disasters.

Perspectives from Japan

The Japanese authors reflect on selected important issues facing their nation. Morimoto recommends that it is important "to change our mindset from preparing for 'unexpected' disasters to focusing on 'expected' disasters". He suggests that it might be important to focus not only on rebuilding damaged cities, but on transforming them into ones that can prosper despite challenges from natural disasters. In addition to developing more stringent infrastructure standards, citizens must be willing to contribute in taxes to fund safety programmes. He expresses his faith in the young to rise to Japan's challenges, but asks that Japanese society adjust its educational system to better prepare entrepreneurs and leaders.

A critical question for Japan, a nation with scarce natural

resources, is how much to rely on nuclear energy in future. Oshima notes the irony in the fact that Japan, the only nation to suffer the effects of nuclear bombs, is now facing the effect of radiation from a damaged nuclear power plant. He urges Japan to reduce energy consumption and replace nuclear energy with renewable sources. Japan could build upon its position as the leader in Lithium-ion rechargeable battery technology to develop solutions that tilt the balance in favour of solar energy. Kitamura expresses disappointment with the Japanese government for withholding analyses of the potential consequences of nuclear power generation in evaluating its desirability compared to sustainable energy. Morimoto, himself a successful entrepreneur, shares that Japanese entrepreneurs are divided with regard to the use of nuclear power.

The major shortcomings in dealing with disasters and their aftermath are: "communications, public order, funding for victim's relief, and the design along with the implementation of rebuilding programmes."

Implications of the Japanese Disasters for Other Nations

Wint observes from the Caribbean, that small island nations, such as Jamaica, Haiti, and the Cayman Islands, are especially vulnerable to natural disasters given their large exposure to the ocean. He reaffirms the need for proper disaster planning but notes that there is no better insurance against disaster than sound national policy

that builds economic strength and enhances a nation's capacity to withstand shocks.

The events in Japan could naturally have serious consequences for nations such as Vietnam that are closely linked with Japan through trade, investment, and tourism. Can provides a brief but fairly comprehensive analysis of the likely effect on the Vietnamese economy. He predicts a modest decline in FDI and trade and some disruption in parts supplies, but a larger dip in tourism in both directions. It is reassuring for Vietnam, however, that Japan's development assistance is likely to remain at planned levels and Japanese investors will probably continue to view it as an attractive destination.

Lessons from Other Nations

Yu shares her experiences from China, which has had its share of devastation from earthquakes. She suggests that it is best to hold divisive forces in abeyance till necessary action is taken to address an emergency and get rebuilding underway. Instead of undue questioning, emphasis should be placed on building trust and bringing parties together for concerted action. "Moral virtue and collective consciousness," more typical of communitarian societies than individualistic ones, ought to take precedence over "market forces and individualism."

Chile, like Japan, has suffered a great deal from severe earthquakes and tsunamis. Romero-Meza and Blanco-Vidal share a valuable Chilean perspective—that the major shortcomings in dealing with disasters and their aftermath are: "communications, public order, funding for victim's relief, and the design along with the implementation of rebuilding programmes." They acknowledge the role that public pressure can play in motivating responsible stakeholders to step up with disaster relief.

Japan's remarkable "social mores" enable it to create a smoothly functioning society. Her people possess the will, admired around the world, to face up to disaster stoically and bounce back from it with resilience.

While some nations, like Germany, are phasing out nuclear power, others, like China, will continue to rely on it to meet rising needs. Even in Japan, where the Fukushima disaster has made people pause and question reliance on nuclear power, it remains to be seen where public sentiment and political resolve will settle with the passage of time.

Managerial Perspectives

Banaji reminds us of the debt the manufacturing world owes to Japan for crystallizing techniques to improve quality and efficiency. Japan's remarkable "social mores" enable it to create a smoothly functioning society. Her people possess the will, admired around the world, to face up to disaster stoically and bounce back from it with resilience.

Hatten and Post, as well as Romero-Meza and Blanco-Vidal, commend Ja-

pan on having used its learning from past experience with earthquakes and tsunamis to install monitoring systems and develop expectations with regard to quickly seeking high ground in anticipation of tsunamis. Japan's meticulous preparation probably saved tens of thousands of lives. As Hatten and Post note, however, the handling of the Fukushima plant's crisis was marked by confusion, which highlights the need for managerial preparedness. Hatten and Post, who have systematically studied risk management, provide a managerial perspective on how to prepare for and address challenges presented by disasters. It is crucial that personnel be "empowered to *act*, able to *assess* their situation, *prioritize* the problems they face, and *mobilize* the needed resources."

Pillai places importance on the role of sound judgment and advocates that organizations strive to achieve it by creating robust processes to empower managers. This calls for "ensuring that the environment is one conducive to the application of the quality gates to secure the soundness of the judgments". Though anticipated response times are typically short during crises, making it necessary for disaster response plans to stipulate rigid procedures for responses, this can "smother the individual manager's judgments," creating tensions between the need for quick response and sound judgment. Another important factor that Pillai draws attention to is the importance of

empowering personnel close to the site of the disaster to act on their judgment.

Kitamura, from Japan, stresses on the need to systematically map anticipated damage from disasters such as earthquakes, tsunamis, volcanic eruptions, and failed dams, as a way to enhance preparedness. His compatriot, Morimoto, also urges that various aspects of city planning, such as building standards and highway designs, should be periodically reviewed to prepare for natural calamities. These views are echoed from Chile by Romero-Meza and Blanco-Vidal, who also underscore the importance of “establishing cross-country inter-disciplinary teams” so that the best technology can be utilized for rescue. Within the country, they recommend creation of “parallel communications networks,” hoping that redundancy can improve the odds of securing essential communication during crises, providing a lifeline to support rescue.

Critical Questions for Future

Nuclear Energy – Bhandari explains how nuclear power is generated in a layman’s terms. He acknowledges the risks associated with nuclear power, but suggests that given the world’s energy appetite and limited resources, it would be smarter to focus on enhancing safety of nuclear power generation rather than abandoning it. While some nations, like Germany, are phasing out nuclear power, others, like China, will continue to rely on it to meet rising needs. Even in Japan, where the Fukushima disaster has made people pause and question the reliance on nuclear power, it remains to be seen where public sentiment and political resolve will settle with the passage of time.

Climate Change – Usmani and I draw attention to the urgent need for countries across the world to implement adaptation measures to protect the coasts from devastation that will be caused by the oceans as climate change causes them to rise. Tsunamis

Tsunamis can cause a lot of damage but they occur rarely. Sea surges and hurricanes, which are slated to become more frequent and violent in the coming decades will pose a greater threat.

to its one-child policy will run into this challenge in coming decades. Mittal discusses this challenge in Japan’s context, and touches on remedies such as immigration, higher retirement age and inclusion of more women in the workforce.

Fiscal Preparedness – A number of authors, including Romero-Meza and Blanco-Vidal from Chile, and Morimoto from Japan, stress the need for nations to set aside savings as part of preparedness for disasters. Hou takes this further to suggest that governments’ repertoire of fiscal policy tools should include creation of contingency funds by companies that present risks to society, just as banks are required to maintain deposits to cover the possibility of a run on the bank. The size of the funds would depend on probability of occurrence of accidents, and scope and duration of predicted damage, data that could perhaps be drawn from Kitamura’s “damage forecast maps.”

Japanese companies are likely to move some of their manufacturing out of Japan to reduce risk, combat the effect of the higher yen, and access scarce specialized labour skills. Under these circumstances, Japan may be tempted to resist opening its markets – perhaps receding into greater isolation.

can cause a lot of damage but they occur rarely. Sea surges and hurricanes, which are slated to become more frequent and violent in the coming decades will pose a greater threat.

Ageing Society – Changing demographics, with far fewer youngsters projected to support higher proportion of retirees, are threatening a number of societies, especially Japan and many other developed countries, including the US. Even China, owing

Globalization and Trade Policy – Japan has long been criticized for being relatively closed to international trade. Mittal presents the example of contemporary practices in the IT industry where Japanese companies still seem to work on the *Keiretsu* model of favouring companies with which they are connected as members of a formal or informal business group. This can have the result of penalizing Japanese companies if they deny themselves access to cost-effective IT offshoring that has become so common in recent decades with globalization.

The current crises will bring new challenges. Japanese companies are likely to move some of their manufacturing out of Japan to reduce risk, combat the effect of the higher yen, and access scarce specialized labour skills. Under these circumstances, Japan may be tempted to re-

sist opening its markets – perhaps receding into greater isolation. The world can hope, however, that Japan will bounce back with confidence and take bold steps to reassert itself as one of the economic leaders of the world. 🐼

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*We live in the midst of alarms; anxiety beclouds the
future; we expect some new disaster with each
newspaper we read.*

— Abraham Lincoln