

# The Fallout from the Fukushima Tsunami Disaster

**“Gaps in communication and understanding can undermine the whole undertaking.”**

— Deepwater Horizon National Commission Report

**“At one pole we have the literary intellectuals, at the other scientists ... Between the two a gulf of mutual incomprehension”**

— C. P. Snow, “The Two Cultures”, Rede Lecture, 1959

By Kazumasa Kusaka

## Trade Deficit

In the first half of this year Japan recorded a trade deficit of 4.8 trillion yen due to the J-curve effect and also the increased cost of fuel imports, at an annual 3.8 trillion yen (approximately \$38 billion). After two decades of trade surplus, Japan started to record a deficit when nuclear power reactors were suspended. Because Japan imports 96% of its fuel, the shift from nuclear power generation to LNG, oil-fired and coal-fired plants meant an increase in imports and at a higher than normal price due to the tight market. Dividends from the U.S. shale revolution have yet to appear.

Only two out of Japan's 54 nuclear power plants are in operation. As with airplane accidents, the regulatory authority has to identify the cause and take remedial measures before it can declare safety again. In the tsunami-hit region in Fukushima, three nuclear reactors of an older type built in the late 1960s suffered failures in their emergency cooling systems due to a lack of waterproof power generators, while eight other nearby power plants escaped the disaster. A newly organized independent regulatory commission has now started to examine applications to restart nuclear plants under new guidelines.

## Energy Policy

One immediate casualty of the disaster was energy/environment policy. Historically, energy supply security came first. With economic growth, affordable and competitive costs — i.e. economics — became the next objective, and finally around the 1992 Rio Earth Summit the environment was added to create the “Three E” objectives of energy security, economics and environment.

Since then, depending on the achievements of each of these three factors, policy resources have been devoted to the one performing the poorest. In nuclear power generation, a safety culture has been a mandatory course within the nuclear family, but now, for the rest of the world, the long-earned trust in safety has disappeared overnight with the Fukushima disaster.

Scientists can develop guidelines and can declare something to be “safe enough” — but the public is a different animal. What has been lost is public acceptance, and we are now in the middle of a long process of reconstructing a national consensus on a resilient energy policy in Japan with its earthquake-tsunami risks.

## Economy

In addition to macroeconomic statistics, the competitiveness of enterprises located in Japan is threatened by unstable electricity

supply and a 20% higher tariff than normal. Japan's growth strategy needs investment from local Japanese and inward investment from abroad, but with energy supply risks both in volume and cost there is little chance of this.

For the Abe administration, following the big win for his Liberal Democratic Party in July's upper house election, the strategic implementation of Abenomics is the foremost priority and the growth strategy is yet to be developed. For that growth strategy, it is essential to secure energy supply at affordable costs. On the outlook for energy, the government says it may take up to 10 years to explore the best energy mix.

## Complex Industrial Systems, Organization & Communication

Governments regulate risky industrial systems in the hope of making them less risky. Nevertheless, accidents will inevitably occur in complex, tightly coupled systems, resulting in unpredictable and cascading developments. Some people are skeptical that we can live with big high-risk technologies, but I believe that learning is continuous. In the field of energy, we have learned from the Three Mile Island accident of 1979 and BP Deepwater Horizon accident in 2010.

However, this time what directly triggered events at Fukushima was a natural disaster rather than human error within the system. So accidents can take unanticipated forms, and how we learn lessons from such failures is vitally important.

“Generals always fight the last war” means that military strategy often focuses on what has happened rather than what will happen. In order for us to be better prepared to deal with future accidents, and to discover their causes, we should not focus narrowly on events that developed on the day of accident, but should also consider an indirect “safety culture” and organizational factors. Communication within each company, within groups of companies and with the “outside” — i.e. the public, the media and local communities — will be essential in preventing accidents or minimizing the damage they cause.

Japan's responsibility and obligation are to share the lessons learned from the Fukushima disaster with the rest of the world to help make existing and planned nuclear power plants much safer in their design, construction and operation.

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