5 Regulatory Risks

Public safety concerns around nuclear power necessitate high levels of regulation. From a risk perspective, this means that projects may be subject to delays and cost overruns as safety regulations are subject to changing and more stringent regulatory requirements. In addition, the 'politicisation' of nuclear energy adds significant political risk through political interference or outright turnaround in government support for nuclear power after electoral changes. The recent decision by the Obama administration to reject the planned nuclear waste storage site at Yucca Mountain in Nevada, after 20 years of planning and at a cost of at least $ 9 billion (US dollars), is illustrative of this.

Delmas and Heiman[1], describe regulatory and licensing risks arising from the following four key areas:

- Safety regulation, both for certification of reactor technology and for stabilisation of safety regulation;
- The nuclear waste disposal issue;
- Stability of the legal framework on limited liabilities and insurance provision in case of nuclear accident; and
- Political process for building acceptability on plant sitting and nuclear waste management.

New US licensing framework remains untested

Recognising the significance of regulatory risk on project timescales and costs, the US Nuclear Regulatory Commission introduced a new licensing framework in 1989. The new three-part licensing process has been generally welcomed by the industry as a means to mitigate risks encountered in previous periods of construction. However, Standard and Poor's sound a note of caution: 'this licensing framework remains untested and is bound to be challenged by nuclear energy opponents on many fronts, presenting potential credit risks to the first round of participants.'[2]

Standard and Poor's concerns are[3]:

1) The combined construction permit and operating licence (COL) process is not yet tested and may be open to challenge and interventions by nuclear energy opponents.

2) The new licensing framework introduces a series of quantitative inspections and tests, which in turn introduce the potential for regulatory disruptions after a company has spent significant amounts of money.

3) The expectation for standardised applications may not be realised as companies modify aspects of their application.

4) Delays may arise due to the increasing number of reactor designs that the NRC needs to approve before they can be included or referenced in a COL application.

Anticipation of potential delays outside a company's control, such as litigation or failure by the NRC to meet licence review schedules, has led to the measures provided through the Energy Policy Act of 2005. Through the act, the federal government can provide standby support that will pay for debt service and other costs, including open market power purchases necessary to meet supply obligations, for the first six new plants (up to $ 500 million (US dollars) for each of the first two new plants and up to $ 250 million for each of the next four)[4].

Rise in costs in the 1970s and 1980s mainly resulted from regulation.

In the past, public enquiry processes into nuclear new-build have been complex and lengthy and added to uncertainties during the licensing phase.[5] Specifically in the US and Germany, disputes about licensing, local opposition, redesign requirements and quality control have delayed the construction and completion of plants.

The delays and complexities that regulation brings to the process invariably translate to liabilities on the balance sheet. A Chicago University study into the economics of nuclear power found that the consensus among several studies is that the rise in costs, in constant dollars, of nuclear plants in the 1970s and 1980s, was 'mainly a result of increased environmental and safety regulation'. The study goes on to state that 'the cost effects from regulation were compounded by the fact that regulations 'frequently were mandated during construction, causing changes in design requirements that made it difficult for utilities to control schedules and costs" (Komanoff 1981, p.202).[6]
A more stable regulatory environment may reduce regulatory risk although with the number of new designs being preferred stability and streamlining regulation may prove elusive.

1 Delmas M., and Heiman H. (2001), 'Government Credible Commitment to the French and American Nuclear Power Industries', Journal of Policy Analysis and Management, Vol. 20, No. 3, 433–456 (2001).Quoted in Dominique Finon, CIRED & Gis Larsen, Fabien Roques, 'Contractual and financing arrangements for new nuclear investment in liberalised markets: Which efficient combination?' April 2008.

2 Standard & Poor's, 'How the NRC's New Licensing Process Will (And Won't) Smooth the Way for Nuclear Plant Construction', February 7, 2008. http://www2.standardandpoors.com/spf/pdf/events/art3util2008.pdf.

3 Ibid.

4 Ibid.

5 Dominique Finon, CIRED & Gis Larsen, Fabien Roques, 'Contractual and financing arrangements for new nuclear investment in liberalised markets: Which efficient combination?' April 2008

6 University of Chicago, 'The Economic Future of Nuclear Power' August 2004

image Greenpeace radiation experts check for nuclear contamination on the beach beside the Kashiwazaki Kariwa nuclear power plant following an earthquake 10km out at sea. The plant suffered damage, resulting in leaks of nuclear materials.

Additional regulatory risks in case of accidents and incidents

The accident at the Chernobyl Reactor 4 in 1986 , as well as other large accidents in the past such as those at Three Mile Island, Browns Ferry, Kashiwazaki-Kariwa, have shown that such incidents have a major influence on the regulatory environment. As a result, throughout the world, nuclear operators have had to upgrade their safety systems, often at large cost. Within a market environment, these costs are carried by the operators.

Not only large accidents lead to regulatory changes. Basically, every incident in the industry can lead to adaptations. For example, the earthquake that hit the Japanese Kashiwazaki-Kariwa nuclear power plant in 2007 has led to worldwide regulatory updates for earthquake resistance.

It is fair to say that any major incident and certainly every accident can have a significant impact on the regulatory environment and therefore on costs.

"…the long-term nature of a nuclear construction program exposes a utility to risks surrounding the regulatory approvals necessary to recover the investment and changing market conditions, political agendas and technology developments (on both the supply and demand side). "

Moody's, May 2008

"The scanty construction track record for the new technologies and an untested regulatory process only complicate the risks."

Standard and Poor's October 2008

Sarcophagus over the exploded reactor at Chernobyl nuclear power station, Ukraine