

Financing and managing nuclear energy risks: The UK model

By Jennet Orayeva



Workers at Hinkley Point C construction site

(Photo: EDF Energy)

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— Paul Murphy, Managing Director,
Gowling WLG

Nuclear Power Plants (NPPs) have long lifetimes and low running costs, but they require high up-front capital expenses and a long planning and construction time. This means the economics of NPPs are sensitive to the cost of financing and overruns, and project delays can be costly. Successful financing is a major challenge and typically requires significant government involvement.

Traditionally, the costs of constructing and operating nuclear power plants were mostly passed on to electricity consumers in the form of regulated tariffs, minimizing the risk to lenders, investors and operators of exposure to price fluctuation. This traditional approach characterized most pre-liberalization electricity markets, where many of the utilities were integrated monopolies combining generation, transmission, distribution and retail, and the level of government involvement in regulation was high.

However, the market liberalization that started in the developed world in the 1990s has led to increased price and revenue uncertainty, causing reluctance among lenders and investors to commit the significant resources needed for NPP construction.

In an attempt to address this reluctance, stakeholders have come up with innovative approaches to risk sharing in nuclear power projects that aim to give additional assurance to potential lenders and reduce capital costs.

These include reducing revenue volatility by guaranteeing electricity prices and providing various forms of government guarantees.

Replacing nuclear with nuclear: Why the UK model matters

Around 20 percent of the UK’s electricity supply today is produced by nuclear.

Within the broader context of its Electricity Market Reform, the Government has decided to continue to rely on nuclear rather than only on gas or renewable energy sources, and is seeking to replace its existing nuclear fleet.

Currently, developers have up to 11 reactors proposed or planned at six sites. The power plant at Hinkley Point C has already passed through several stages of the decision-making process and is expected to be commissioned in the early 2020s.

The UK model features three main mechanisms in support of nuclear: a price guarantee scheme known as contract for difference (CfD); a government guarantees scheme; and a mechanism for limiting investor exposure to the costs of disposing of higher activity waste, including spent nuclear fuel.

Contract for Difference

The CfD features a ratepayer-backed guaranteed price for electricity generated by low-carbon technologies. According to

the terms of its CfD, Hinkley Point C, once operational, will be paid the difference (on a ‘per megawatt hour’ basis) between a ‘strike price’ (the electricity price that reflects the cost of investing in a particular low-carbon technology) and the ‘reference price’ — a measure of the average price for electricity in the UK market. When the average market price (the price that a generator such as Hinkley Point C might expect to receive directly from the sale of its electricity in the market) is lower than the strike price, the generator receives a ‘top up’ payment to make up the difference. When the average market price is higher than the strike price, the generator must pay back the difference.

“In the Hinkley Point C project, the CfD substantially mitigates the so-called ‘market risk’ faced by lenders and investors,” said Anurag Gupta, Director and Global Sector Head for Power Infrastructure and Corporate Finance at KPMG.

This gives electricity generators greater certainty and stability of revenues by reducing their exposure to volatile wholesale prices, while protecting consumers from paying for higher than necessary support costs when electricity prices are high.

“By creating greater certainty, investors and lenders are able to model the project, which in turn allows them to make more informed decisions,” explained Paul Murphy, Managing Director of Gowling WLG. “Furthermore, taking a 35-year tenure, as opposed to a classic 20-year tenure, facilitates further long-term equity investment as well as refinancing options.”

The UK Guarantees Scheme

The UK Guarantees Scheme (UKGS) is a mechanism developed by the UK Government to provide credit enhancement through debt guarantees. The scheme was introduced in 2010 with a budget of £40 billion in guarantees to be invested across a range of UK infrastructure categories, including energy, transport and social infrastructure. Support from this scheme has been made available to the Hinkley Point C project (for up to £2 billion worth of debt).

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WOMEN IN NUCLEAR

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Ms. Cook advises clients on the establishment and implementation of civilian nuclear power programmes and on the procurement, construction and financing of new nuclear power plants and associated nuclear fuel facilities and transactions. She is the author of *The Law of Nuclear Energy* and the Chair of the Law Group of the World Nuclear Association. Ms. Cook was recently named to the National Law Journal’s 2017

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“The future of the global nuclear industry requires that new sources of finance are attracted to nuclear power projects. This means managing the unique and highly complex risk profile presented by nuclear power plants, which encompasses both financial and reputational risks, and recognizing that the character of these risks changes over the lifetime of a project.”

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Limiting investor exposure to the costs of disposing of higher activity waste

One of the key issues associated with nuclear power is uncertainty with regard to the costs of disposing of higher activity waste, including spent nuclear fuel. The UK Government has put in place a mechanism to effectively cap such costs, thereby reducing operators’ exposure to the risk of cost escalation. The mechanism operates by setting an upper limit (or ‘cap’) on the ‘waste transfer price’ that an operator will have to pay in return for the UK Government taking ‘ownership’ of the higher level waste (and thus responsibility for its disposal).

“By effectively capping the ultimate waste transfer price, the UK Government has provided reassurance to potential investors regarding a very ‘difficult to quantify’ project risk,” explained Paul Warren, IAEA Senior Nuclear Engineer for Nuclear Power.