

Why is nuclear so difficult to finance?

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The essence of the problem.....

“What is clear is that it is completely impossible to produce definitive estimates for new nuclear costs at this time” Steve Kidd, World Nuclear Association, August 2008

Five years on, this industry statement remains valid

- Implication is that potential investors need Governments and/or consumers to bear the very large financial risks that flow from this..... and this is politically far from straightforward

Some international context

The 'nuclear renaissance' is a limited phenomenon

- World nuclear share of electricity peaked in 1993 (17%) and is now 10%
- World nuclear capacity/output have fallen from 2010/2002 peaks (not only because of Japan) – closures exceed new plant
- 6 worldwide construction starts in 2012, 3 so far in 2013
- UAE is the only new entrant to nuclear construction, yet, in 27 years, though others may follow
- Of the 66 reactors nominally now 'under construction' 13 have been listed for over 10 years, and 44 are in China (28), Russia (9) and India (7)

Financing outside the UK

- At 2 US sites where construction is going ahead, (southern) States have allowed full cost pass-through to consumers
- In Finland there was (nominally) a turnkey with risk apparently taken by Areva
- In France, state-owned *de facto* monopolist financed
- In Russia, China and India, large state resources/guarantees, in non-competitive markets. Russia taking financial risks where it is exporting technology
- In UAE, a low bid by Korea plus very large state resources

None of these is an analogue for England.....

UK context

- Some confusion in role of state
- Large swathe of Government documents in March 2013 outline two apparently contradictory arguments
 - That nuclear new build is an essential part of the low-carbon future: by 2050 we will have between 16 GW and 75 GW of new capacity (this involves, at the high end, some quasi-fantasies of 1970s-type vintage, including breeders, thorium small modular reactors etc)
 - That ‘the market’ will have to decide whether/how much to build

These arguments can only be reconciled if state intervenes in the market to reduce risks to very low levels

When are subsidies not subsidies?

- Further confusion on nature of Government support for nuclear, mostly due to historic LibDem opposition to nuclear
- Initial position that there would be no subsidy, then no *public* subsidy - and this has now evolved into 'no *public* subsidy *not available to other low-carbon technologies*'.
- So nuclear, like renewables, is to get a FiT with a CfD
- As only EDF has a currently active investment interest, this resolves into a behind-closed-doors bilateral negotiation to determine strike price
- To this, Treasury has added promise of a £10 bn. loan guarantee

The negotiations on strike price

- These are all rumours, but appear to be mostly fairly reliable
- Speculation is that strike price is being negotiated in range of £90-£100/MWh – up to double current wholesale price
- From EDF side this appears to be based on its expectation of a £14 bn. construction cost at Hinkley Point
- Length of contract also important – up to 35 years may be discussed, much longer than for renewables
- Also very important is question of whether EDF assumes all construction cost risk, or not

Construction cost risk

- This is the critical issue – the £14 bn. works out at just over £4,000/kW, or more than double (real terms) the top end of Government's expected range of costs in 2008
- One note of caution: developers normally have incentives to *underestimate* construction costs, but in negotiating a strike price, EDF may have an incentive to *overestimate*
- Nevertheless there have been strikingly large escalations in construction costs in Finland and (mostly unanticipated) France
- Costs appear lower in Korea and China, but data hard to verify and relevance to Europe limited

So why are construction costs problematic?

- Other risks manageable: market assured, back end manageable, availability has been improving markedly
- Long history of escalations e.g. even in France the last tranche of the 58 PWRs were more than twice as expensive as the first tranche of 900MW reactors
- In Finland, the escalations could be at least partly attributed to classic 'first of a kind' problems
- In France, where expected costs have more than doubled, plus 3-year delay, explanation is not so easy
- Generically, and compared to renewables, learning is harder as time-scales long, production runs short, regulation stringent and there is very little replication of a given design

Conclusion

- The international 'renaissance' has been very limited
- Where there is any investment activity in new nuclear, financing has mostly been done by Governments with deep pockets in non-competitive markets
- 'Western' European countries have poor historic and current experience of nuclear construction costs, with little capacity to control them – and this is only partly explained so far
- So financiers need solid guarantees that continuing high construction cost risks are underwritten by the State, whether taxpayers or consumers pay up

