

The future of EDF

Steve Thomas

New nuclear power plants in England:

The climate, siting, waste and finance risks of Bradwell B, Sizewell C and Hinkley Point C

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Steve Thomas (stephen.thomas@gre.ac.uk)

Emeritus Professor of Energy Policy

PSIRU (www.psiru.org), Business School

University of Greenwich

EDF: 2009

- 85% state-owned
- In top 5 utilities in Europe by size (with RWE, EON).
- Strong market positions in UK, Italy, Germany. Major holdings in Switzerland, Belgium, Poland, USA & China
- Largest capacity of nuclear in the world with 58 reactors. Aim to be world nuclear expert owning new plants. Target markets, USA, UK, South Africa, Italy, India
- Purchased British Energy in 2009 making it the largest UK generator
- Share price €42, credit rating (S&P) A+

EDF: 2019

- 83% state-owned
- RWE & EON already split into old businesses (coal, nuclear) & new businesses (renewables, retail, networks) expected to follow
- Sold stakes in Germany, Switzerland, USA, Poland
- All target nuclear markets failed except UK
- Share price €10, credit rating A-
- Forced by French government to buy Areva's reactor division, known as Framatome
- Where did it all go wrong?

Grand Carenage: Life extension

- All European reactors undergo safety review every 10 yrs. 40 yrs seen as design life of PWRs so 40th birthday review seen as approval for life extension (20+ years).
- French regulator unusual in demanding major upgrades to bring old plants nearer current standard. Demanding upgrades not required for Sizewell B
- French regulator hasn't decided if the plants can be life-extended & if so, what upgrades will be needed
- Its reactors mean it dominates French electricity market & until plant is retired, it cannot be challenged
- Estimated cost of life extension from 2018-30, €50-100bn - €1-2bn per reactor €4-8bn per year. How will EDF finance this?
- 2-8 reactors per year reach their 40th birthday from 2017-2028, up to €16bn per year.
- 2 oldest reactors (Fessenheim) will be retired in 2020. EDF receiving large ('eye-popping') compensation for cost of closure €400m plus loss of earnings it would have made if it had operated to 2041
- Life-extension expensive but tiny fraction of cost of building new reactors (€400bn?) so no alternative

Decommissioning/High level waste fund

- EDF forced to create actual (rather than accounting) fund in 2005. Previous contributions not segregated & used as cheap borrowing. Need to plough lots of money into an actual fund from 2005
- Estimated requirement €69.5bn (€22bn for decommissioning, €46.9bn for waste disposal), amount in fund €23bn.
- Fund now segregated internal. Not clear if they would be lost if EDF fails. If a company is bankrupted, any assets must be sold to pay debts.
- Not known what waste disposal will cost, little experience of decommissioning but decommissioning estimate lowest per kW (€330/kW cf €2700/kW in UK) in the EU

The French business

- EDF's debt is high, €37bn, less than 2009 (€42bn) but credit rating two notches lower so more expensive
- Profits in 2018, €1.2bn, down 63% on 2017, so little 'equity' to invest in projects even if shareholders willing to forgo dividends. It must borrow to finance Grand Carenage, Hinkley Pt C & Sizewell C
- EDF forced to sell a quarter of its French nuclear output to retail competitors (ENGIE, ENI, Leclerc, Casino) for €42/MWh, below its costs
- It must compete with new retailers so is losing money on most of its output
- What will be the costs of the reactor vessel QC problems, what will be the cost of defective steam generators? Costs for Flamanville going up & delays mounting

UK market position

- Losses in 2018 £382m, cf £213m in 2017
- Retail market share 11% cf 13% in 2015, no 4. Lost 200,000 customers in 2018
- Generation market share 27%, more than double next largest
- But Hinkley B & Hunterston B likely to close soon, can Heysham 1 & Hartlepool operate past 2024, Dungeness B offline for more than a year for repairs. 1 coal fired plant (Cottam) will close soon in 2 years leaving 1 modern gas-fired station
- By 2024, more than half its capacity could be closed. If it completes Hinkley and Sizewell, it will retain market share but will have no market power – it can no longer sell the output to itself & can't set the price

Operation Hercules

- EDF is not commercially viable in its present form so proposed to place nuclear assets in a renationalised company, EDF Bleu, & its other assets in EDF Vert
- EDF Bleu, probably renationalised, will include all nuclear (France, UK, China), French hydro, French transmission (assets assigned to decommissioning fund). Framatome might be included or separated off again
- EDF Vert, perhaps part-privatised, includes renewables, retail & distribution
- Strongly opposed by unions, will it be judged state-aid?

Hinkley Point C

- First concrete for unit 1, Dec 2018, for unit 2, Dec 2019, completion 2025-2027
- Cost £21.5-23.2bn + finance (+60%?). EDF 66.5%, CGN 33.5%
- Spend to 12/2018 when construction started, £6.8bn, equipment already bought
- All finance so far from equity/profits (<£100m in interest so far), but EDF must borrow to complete Hinkley Point C. Without loan guarantees this will be impossible.
- UK condition for giving loan guarantees (Flamanville in operation by end 2020) can't be met.
- Will the French government offer guarantees? Will EDF Bleu want the RAB model?

Sizewell C

- 2015 plan, 80% EDF, 20% CGN
- Generic approval for EPR design (ONR) expires Dec 2022
- Only feasible if the RAB model is viable because EDF does not have the money
- Cost estimate £20bn, depends on workers moving smoothly from Hinkley to Sizewell (2022?). Will Sizewell have approvals, investors etc in time?
- By end 2018, only €133m spent so no equipment bought yet
- Will there be investors? Do you want your pension fund invested in Sizewell? RAB will only attract investors if the risks fall on consumers. Would this be politically acceptable?
- Will EDF or CGN be investors?

Bradwell B

- 2 Hualong One reactors (1100MW each)
- 2015 plan, 66.5% CGN, 33.5% EDF (£4bn)
- EDF cannot afford this & little strategic advantage in this project. Now no sales prospects in China for EPR. Would CGN proceed without EDF?
- CGN said to favour CfD model not RAB
- Will the Hualong One design pass the ONR Regulator review & if it does, what costs will be added?
- Will concerns about CGN national security be overcome?