

A global nuclear renaissance: Is the United States missing out? What is happening in Europe?

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The World Market for Nuclear Plants

- Talk of a nuclear renaissance premature
- Financial risk and escalating costs the main problem
- 426 reactors in service, but only 35 under construction, 5 on order
- Of these, 17 in China, 6 in India, 6 in Russia and 5 in Korea
- 2 in Western Europe (France, Finland) only Gen III+ plants under construction

Olkiluoto

- Finland has outstanding nuclear record
- Areva NP desperate for orders for their new design, EPR
- Finnish government trying to get new nuclear order placed since 1992
- Finland part of competitive electricity market. Seemed to prove nuclear could survive competition?
- Order for Olkiluoto in 2004 was a massive boost for the nuclear industry

Olkiluoto: What were the terms?

- Fixed price construction contract: €3bn (\$2800/kW)
- Penalty clause for late completion
- Export credit guarantee provided by French (€ 650m) & Swedish (€ 110m) governments
- 2/3 of cost provided by bank loans at 2.6% interest rate
- Customer, PVO, owned by Finnish industry. Output contracted for life of plant at cost
- Consumers, taxpayers & vendor took the risk

Experience at Olkiluoto

- Everything has gone wrong. After 4 years building, it is 3.5 years late, up to 60% over budget
- Turnkey contract is in dispute in court.
- Finnish industry cannot afford to buy high-price power
- Will PVO default?
- Olkiluoto is clear warning to consumers, vendors & taxpayers of risk of nuclear

France

- French government controls all nuclear
- EDF 85% state-owned, Areva over 90% state-owned
- Support from Coface (export credits) for nuclear exports
- French government decides electricity prices
- EDF has about 90% of French electricity market and 80% of supplies are nuclear.
- Not all nuclear output can be used

France

- First French EPR order, Flamanville, placed 2007. Already problems & 20% cost over-run
- ReplEDF wants to keep its nuclear capability alive so EDF investing in foreign nuclear markets
- UK: British Energy bought for \$18bn
- USA: 50% of Constellation Nuclear, \$4.5bn
- China: 30% of two EPRs, \$3-4bn

Financing EDF

- EDF had used nuclear decommissioning funds to invest outside France
- Now it must borrow, through special 'vehicles' (Lakeland Acquisitions, EDF Development) to fund purchases
- Long-term rating is still AA- but on credit watch
- To finance nuclear ambitions and protect its rating, it must sell some businesses, eg UK networks

Financing Areva

- Areva is over 90% state-owned
- Nuclear division, Areva NP 66% owned by Areva and 34% owned by Siemens
- In Jan 2009, Siemens announced it wanted to withdraw
- This will cost Areva about \$3bn
- Investment plans in USA will cost \$2.4bn
- Its credit rating at risk and it must sell some businesses

UK

- In 2006, Tony Blair announced nuclear power was 'back with a vengeance'
- Similar process of streamlining licensing and planning to USA but no subsidies offered
- EDF bought British Energy (nuclear utility) in 2009. Was this a wise purchase?
- Reactor reviews not complete before 2012
- Will political backing continue?
- Will government resist pressure for subsidies?

Western Europe

- Some politicians saying that phase-outs might be reversed in Sweden, Germany, Spain, Belgium, Italy etc
- But this is just talk
- Persuading public to reverse their decision difficult
- Process of rebuilding capabilities, finding sites, getting finance lengthy, problematic and uncertain

Eastern Europe

- Talk about completing old orders in Bulgaria, Romania and Slovakia
- Orders more 20-30 years old, designs 30-40 years old so not relevant to the 'Renaissance'
- Frequent reports of imminent work re-starts, but banks reluctant to lend

Conclusions

- The financial crisis may be the final straw for the 'Nuclear Renaissance'
- EDF & Areva are making serious errors with the two plants they are building in Europe
- Costs are escalating and there are continual conflicts with the safety regulator
- EDF and Areva are seriously over-stretched. Financing their plans will be difficult
- If things go wrong for EDF in UK or USA, how far will EDF go?