The economics of new nuclear build – do the benefits outweigh the risks?
Nuclear Free Local Authorities
Welsh Forum Seminar 25th November Ceredigion County Council
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Construction costs
- 10 years ago industry forecast cost $1000/kW – so cost of 1600MW plant like EPR $1.6bn
- 2004: Olkiluoto ~$3000/kW
- 2007/08: US utility estimate $5000/kW
- 2008/09: Areva/Westinghouse bid for Ontario, S Africa, UAE >$6000/kW

Costs
- 2008 White Paper & NPS assume £1250/kW or $2000/kW
- In 2008, E.ON said cost 70% higher than government
- Estimates before construction always under-estimate
- Why does government think industry will build UK reactors at 40% of price charged elsewhere?
So...

- Nuclear construction cost assumptions are gross under-estimates
- More realistic assumptions on construction cost and cost of borrowing would triple the expected kWh cost

And EPR construction experience?

- July 2010, Areva announced losses of €367m on the Olkiluoto contract, originally priced at €3bn, but now estimated at €5.7bn.
- EPR Flamanville: EDF confirmed the project was running two years late and increased its estimate of the cost overrun from 20% to more than 50%.

Over-runs

- Withdrawal by US EdF partner Constellation Energy from their project to build a French-designed EPR reactor at Calvert Cliffs, Maryland.
- Constellation forced to withdraw because of 'high cost of financial support from the US government'.

US pull-out
Waste and decommissioning very expensive: £70bn - £100bn so far...

• So Government proposal for ‘fixed unit price’ at which Government takes ownership of waste - potentially a subsidy
• But we haven’t met the ‘Flowers criterion’ from 1976 – no new build until a clear route for final solution waste exists

Geological ‘disposal’

• Nowhere in the world has intermediate or high-level radioactive waste been safely disposed.
• GDF R&D required by CoWRM have not been undertaken.

High burn-up fuel

• Much hotter – more radioactive
• 3 x existing waste burden
• Performs very poorly when subject to abnormal conditions.
• Liable to release a much higher content of its fission product inventory than its Generation II counterpart.
Immediate release fraction

• Over the six days of open containment 30-60% of the Chernobyl reactor core fission products were released to the atmosphere.
• AREVA EdF EPR ‘worst case’ estimates - including terrorist attack – insist that no more than 0.2% of the core content would be released over six days.

Sea rise, storm surge, flooding

German Childhood Cancer Registry, KiKK Study, 2008

• Risk of tumour or leukaemia in children under 5 years of age significantly increases the closer they live to a nuclear power plant
Bystander effect

Chernobyl

proliferation

WARWICK
If things go wrong, who pays?

- Taxpayers are always the last recourse if things go wrong
- British Energy was privatised but rescued at a cost to future taxpayers of more than £10bn when it went bankrupt
- Electricity consumers contributed for 25 years for decommissioning. In 2003, found to be no money.

‘It’s the poor what get the blame’

- Future taxpayers now face a bill of £80bn and rising
- Taxpayers always pay to clear up after accidents

What could happen

- E.ON/RWE/EDF lobby - no new build without levy/fixed carbon price and loan guarantees
- Energy Market White paper Dec 2010
- Maybe 2-4 of reactors could be built at very high cost by 2025
- Government support for energy efficiency & renewables weak up to 2025