

Funding nuclear power and radioactive waste

Professor Gordon MacKerron
Director, SPRU, University of Sussex
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When is a subsidy not a subsidy?

- Subsidies are highly variable: some clear and visible (capital grants), some are less so (renewables subsidies)
- Some subsidies are paid by taxpayers (fairly transparent), others by consumers (often less obvious)
- Some subsidies are difficult to pin down e.g. fixed unit prices payable in future for radioactive waste
- Much linguistic contortion on the subject of subsidies

A new irregular verb (after 'Yes Minister')

- I facilitate (e.g. UK Government actions such as generic design assessments)
- You support (e.g. industry lobbying such as from EDF)
- S/he subsidises (e.g. NGO lobbying)

Economics of new build

- Are uncertain and country-specific
- Structure of electricity markets is a critical issue – how far can risks be passed on to consumers?
- *Financial* attractiveness of new build varies according to the extent of Government support, both political and financial
- So no single, generalisable view of new-build prospects, even in the EU, where some market rules are common

Financial and economic risks: (1) planning

- No new reactors in EU since early 1990s, until recent developments in Finland and France
- So safety approvals and local planning processes are untested
- Public mood difficult to gauge and may vary widely from country to country
- Risk of planning delays is real
- But this is not a major financial risk, though it may delay construction by significant periods and cause problems for Government climate change targets

Financial and economic risks: (2) construction

- High potential financial risk here. Why such uncertainty?
 - National safety requirements vary and some are not yet known
 - ‘first of a kind’ effects apply in each new country location
 - A programme costs less per kW than a single reactor
 - The economic cycle causes major variation in input costs
 - The scale of worldwide nuclear ambition will affect costs in each country

These factors lead to a relatively high cost of capital

Financial and economic risks: (3) power price

- This is the risk that varies most by country (different power markets) and can be the largest single problem
- Need is to have good knowledge of power price in 10-25 years' time
- This is possible in some markets (Finland) but not at all in others (merchant market in UK)
- Difficult to see investors agreeing to finance new build without guarantee of minimum, profitable power price for two decades or so in future
- Problematic (in UK) where Government says 'no subsidies'

Financial and economic risks: (4) decommissioning and waste management

- Decommissioning and waste costs are highly uncertain, especially long-term waste management costs
- This may seem to be a low risk, because costs are postponed and high discount rates may apply
- But investors nevertheless worry about open-ended costs of waste
- Investors first want to ensure that spent fuel is not reprocessed - this adds substantially to waste costs and has political risks (plutonium separation)
- UK Government expects reprocessing to be abandoned

Financial and economic risks: (5) decommissioning and waste management (cont. 2)

- Strong incentives to find solutions as both nuclear operators and Governments want more certainty about waste costs
- UK proposed solution is the 'fixed unit price' which operators will pay to have Government take over ownership of waste
- How high should this price be?: need to avoid under-charging (subsidy) and over-charging (handicapping the industry)
- Negotiation still very difficult because of radical uncertainty of waste costs and their timing, and need to define timing of payments

Conclusion

- Where Governments commit to avoiding subsidy there are serious problems in financing new build
- The major areas of difficulty in avoiding subsidy are in power prices and in decommissioning and waste
- The 'fixed unit price' for waste may work as a way of avoiding commitment to current subsidies (as costs are far in the future and unknown)
- The power price problem is much more difficult: best solution is probably to agree a limited subsidy (as for renewable energy now) as carbon prices are unlikely to be enough alone