An Economic Perspective of Nuclear Power Plants

Is a nuclear power as cost effective as often portrayed? When promoted are all real costs included? Three major issues about nuclear power plants are not always mentioned when they are promoted are.

1. Insurance
2. Construction
3. Decommissioning

Regarding point 1, there is no commercial insurer that will ever insure a nuclear power plant. As a result it is the government that is the insurer. So the taxpayer will foot the bill in case of a disaster. In the Fukushima case the cost is up to **500 Billion** dollars. What would the insurance premium be for this amount?

Point 2 is about the construction costs of nuclear power plant. History of the last 50 years shows that most plants **cost 3 to 4 times more** than the original cost estimate. That is not a good business model to start with.

The cost of decommissioning (point 3) is totally born by the taxpayer. None of the material from a decommissioned nuclear power plant can be recycled due to radioactive contamination. In contrast a wind turbine can nearly be recycled totally.

For the above reasons nuclear power plants are not a good economic proposition, especially since the cost of renewable energy is getting lower all the time.

Notes from various sources on Costs of Nuclear Power Plants

The Economist 6 December 2014

China's rush to build nuclear power plants is dangerous.

For most countries nuclear power is a poor option. Big reactors invariably cost more and take longer to build than predicted. As alternative sources of energy have proliferated , the economics of nuclear have worsened. The other worry is just safety. …… Such worries increase the risk of politicians cancelling projects, which also raises the costs. ….China, however, faces none of these constraints. The government is willing to pay for countless loss-making infrastructure projects, .

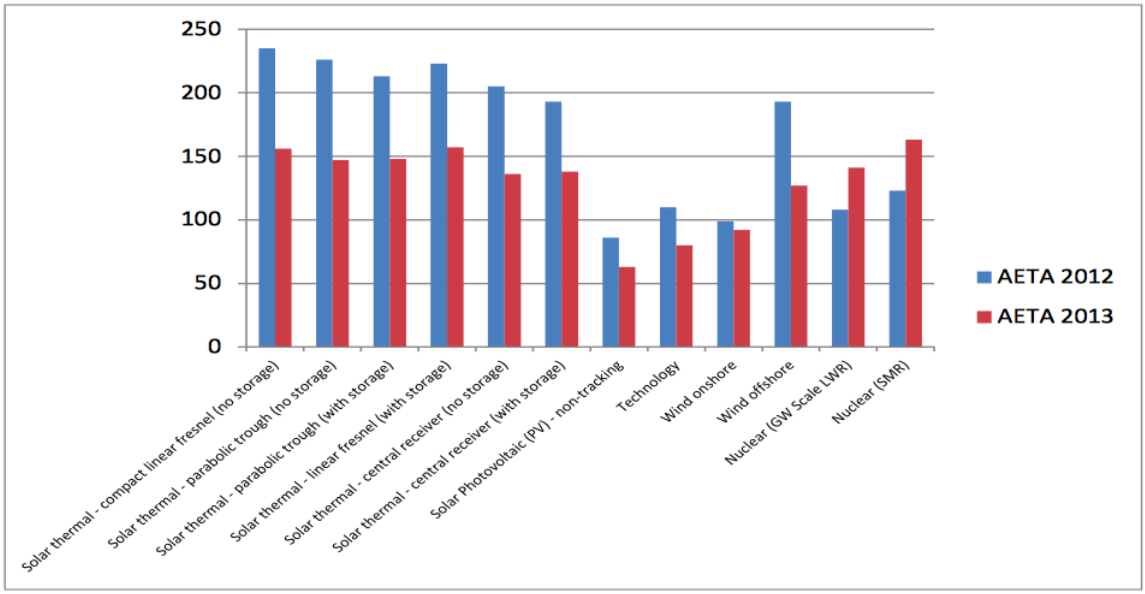
…..The cost of renewable energy is dropping quickly and its efficiency rising sharply. Last year, over half of all new power-generation capacity installed in China was hydro, wind or solar. If China wants to accelerate its moves away from coal, ramping up those alternatives yet more would be a lot safer.

From Renew economy : http://reneweconomy.com.au/2014/a-dose-of-reality-for-australian-energy-cost-estimates-94767

Note the increase in costs for nuclear power in the Australian Energy Technology Assessment (AETA) December report the Bureau of Resource and Energy Economics (BREE).

The graph below highlights the changes made by BREE for its energy cost estimates. It is for median LCOE (levelled cost of energy) estimates of various technologies in 2050 – the blue lines represent last year's estimates, the red lines the latest revisions. Note how cheap solar PV will be. (The adjoining bar should read Solar PV – single axis tracking technology).

Figure 14: Comparison of AETA 2013 Model and AETA 2012 Model LCOE estimates, selected technologies



Indeed, the report recognizes that onshore wind energy is already cheaper than new build fossil fuels. BREE likes to frame the future by suggesting wind and solar will be cheaper on average than fossil fuels by the mid-2030s. And by 2020, the lowest cost wind and solar installations (which are already being achieved overseas) will be cheaper than the lowest cost coal and gas (even without pricing carbon).

From Nuclear-news , The news that matter about the Nuclear Industry 22 December 2013

Fukushima disaster : The precise value of the abandoned cities, towns, agricultural lands, businesses, homes and property located within the roughly 800 sq km of the exclusion zones has not been established. Estimates of the total economic loss range from US$250-US$500billion.

From http://www.globalresearch.ca/the-trillion-dollar-costs-of-a-nuclear-catastrophe/24448

Why would the Fukushima disaster cost any less than the estimated US$10 TRILLION US dollars estimate for a worst case disaster in Germany? The Fukushima nuclear disaster involved multiple reactors and spent fuel pools, plus multiple melted coriums, multiple out of control radioactive fires, and massive nuclear and/or hydrogen explosions.

From *http://fukushimaupdate.com/fukushima-disaster-bill-more-than-105bn-double-earlier-estimates/* and *http://rt.com/news/183052-japan-fukushima-costs-study/*

The tragedy at the Fukushima nuclear plant will cost US$105 billion, twice as much as Japanese authorities predicted at the end of 2011. The research was led by Kenichi Oshima, environmental economics professor at Ritsumeikan University, and Masafumi Yokemoto, professor of environment policy at Osaka City University. They calculated the costs based on the data released by the Tokyo Electric Power Company.

From *http://www.nytimes.com/1986/11/25/science/nuclear-power-plant-dismantled.html*

The decommissioning of the Shippingport Atomic Power Station, the world's first commercial nuclear generating facility, is expected to cost $98.3 million. And it will take five years to complete, more than twice what it took to build it three decades ago, when it was hoped that the plant would usher in an era of electricity too cheap to meter.

A three-year study in Switzerland concluded that retiring a nuclear plant would cost, adjusted for inflation, 20 percent of the price of building it, while an analysis conducted for New York State concluded it would cost 24 percent, or more than $500 million for recently completed plants. Other estimates are higher.