NUCLEAR ECONOMICS: ONE SIZE CANNOT FIT ALL

Dagher, Leila

2013

NUCLEAR ECONOMICS: ONE SIZE CANNOT FIT ALL

Leila Dagher*

6/28/2013

Literature on nuclear power reveals a clear lack of consensus on its economic viability. Claims as contradicting as “nuclear power offers electricity too cheap to meter” to “nuclear power is the most expensive source of electricity” abound. Clearly, such discrepancies arise from differing assumptions and inconsistencies in the types of costs factored in or left out.

The final disposal of nuclear wastes has remained a tricky question.The United States, being the first country to have produced nuclear based electricity and the one that has produced the largest amount of nuclear power, is a very relevant example. After 20 years of research and a cost of US$10 billion dollars, the Obama administration has decided to cancel the Yucca Mountain project which was supposed to serve as final repository for all spent nuclear fuel. Moreover, additional costs have to be taken into account; the Blue Ribbon Commission (BRC, 2012) estimates that as of 2012 taxpayers have paid US$2 billion to nuclear utilities to compensate them for the costs of storing spent fuel, a figure that is estimated to reach US$20 billion by 2020.The Energy and Commerce Committee of the United States House of Representatives (2013) estimates that every year of delay thereafter would cost US$500 million. These costs have to be factored in any nuclear electricity cost estimates in the US.

The picture varies in other parts of the world. Although no geological repositories for long-lived nuclear waste are expected to be operational in the near future, Finland, France, and Sweden have made some progress in that direction. After several decades of research, billions of dollars spent, and several delayed deadlines, the first permanent repository is expected to open in Finland by 2025. Consequently, it is too early to discuss the success of these projects, and hence the jury is still out on them. Just as costs of CO_2 emissions are being increasingly identified with fossil-fuel based electricity, so should the costs of permanent waste disposal be internalized into the cost estimates of nuclear electricity. Other relevant costs to be considered are the cost of preventing nuclear proliferation and terrorism, cost of government subsidies, and health costs due to a nuclear accident.

Turning to health cost estimates, here again we find a wide divergence. For example, the death toll estimates due to the Chernobyl accident (and consequently the associated monetary values) exhibit an alarming disparity, ranging from fewer than 50 to around 1.79 million lives. According to the Chernobyl Forum (WHO, 2006), as of mid-2005, 50 workers had died of acute radiation syndrome and nine children of thyroid cancer, with 3,940 deaths still expected from radiation-induced cancer and leukemia. Some nuclear proponents argue that only fewer than 50 lives can be directly considered to be caused by the accident, claiming that there is no scientific evidence that the cancer fatalities are attributable to radiation exposure. At the opposite end of the spectrum lies the range of 899,300 to 1,786,657 fatalities estimated by Dr. Rosalie Bertell (2006), a prominent epidemiologist. Yablokov *et al.* (2010) reach a similar conclusion; in their book published by the New York Academy of Sciences they estimate the total death toll as a result of the nuclear accident in Chernobyl at 985,000 people only between 1986 and 2004.

Health costs arenot limited to fatalities; non-fatal cancer and other health problems require long-term health care putting an additional burden on society. For example, in the case of Chernobyl, a substantial number of thyroid cancer patients have been diagnosed early enough and treatment has been highly effective (WHO, 2006). However, these patients will have to be on medication for the rest of their lives. Other health costs attributable to the Chernobyl catastrophe, also to be taken into consideration, include psychological treatment and routine screening tests for radiation and cancer, among many others. WHO (2006) expects that the increased incidence of thyroid cancer from Chernobyl will continue for many years, and hence only time can tell what the true health effects and their costs will be.

For countries contemplating joining the "nuclear renaissance" as it has been dubbed, there is an important lesson to be learned. Nuclear electricity has been and remains to be a very controversial topic characterized by wildly conflicting statistics. Multiple issues remain the subject of fierce debate, as spectacularly divergent numbers are plentiful in the literature. When performing any economic analysis of nuclear power it is critical that policymakers, scientists, and nuclear experts do so with eyes wide open and not simply pass on published results without questioning the assumptions, models, and methodologies used. When it comes to nuclear power, "one size cannot fit all" and any economic analysis should be custom-made to the specific country and location under study.

*Dr. Leila Dagher is an Associate Professor of Economics at the American University of Beirut.

References

Bertell, R. (2006). The Death Toll of the Chernobyl Accident. In *Chernobyl: 20 Years On*, Editors: C. Busby and A. Yablokov. Published by the European Committee on Radiation Risk.

Blue Ribbon Commission (BRC), 2012. Report to the Secretary of Energy.

Energy and Commerce Committee of the United States House of Representatives, 2013. Retrieved 6/27/2013 from http://energycommerce.house.gov/press-release/unhappy-anniversary-15-years-broken-promises-nuclear-waste-and-liability-costs

World health organization (WHO), 2006. Health Effects of the Chernobyl Accident and Special Health Care Programmes, Report of the Chernobyl Forum Expert Group "Health" (EGH), WHO, Geneva.

Yablokov, A., Nesterenko, A., Nesterenko, V., 2010. Chernobyl: Consequences of the Catastrophe for People and the Environment. Published by the New York Academy of Sciences.