Review - Nuclear Energy and Global Governance

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Nuclear Energy and Global Governance: Ensuring Safety, Security, and Non-Proliferation
By: Trevor Findlay
Routledge Global Security Studies, 2010

Trevor Findlay's *Nuclear Energy and Global Governance: Ensuring Safety, Security, and Non-Proliferation* is for anyone interested in understanding the direction of today's much contested, worldwide 'nuclear renaissance'. This is a very well-researched manuscript that initially deals with the drivers and the constraints of a possible global nuclear energy revival. The initial three chapters posit a technological assessment of nuclear energy through analysing the enablers, obstacles, and possibilities; the fourth and fifth chapters look at the global governance regimes of nuclear safety, security, and non-proliferation, as well as the main institutions and actors, all the while assessing strengths and weaknesses; and the final substantive chapter focuses on the impact of a possible nuclear revival on the existing governing regimes, with an emphasis on tying together technological changes and political developments. The conclusion outlines policy recommendations for the global governance regimes.

As a whole, the entire book deserves commendation for a very packed, yet skillful and structured weaving of established facts and competing studies in one coherent narrative. In sum, he argues that the likelihood of a nuclear revival—a term he would rather use than the pundit's term 'renaissance'—while not impossible, is extremely unlikely. Findlay's conceptual and organisational choices cohere seamlessly; particularly the way it links together yet simultaneously analyses the separation of safety, security, and non-proliferation, where complex, competing, and somewhat overlapping of regulatory regimes intervene and influence one another through intergovernmental and supranational imperatives.

Nuclear Revival?

The first chapter deals with the drivers of a nuclear revival through a careful analysis of economic, technological, and environmental factors. For the purpose of assessing and weighing the factors, Findlay concentrates on the discreditation of myths regarding electricity demand, the windfall profits of nuclear energy, the efficiency and flexibility of nuclear energy, as well as its environmental, carbon emissions reduction credentials. As a whole, he writes that in these drivers, there are 'hidden costs' found in nuclear energy through the actualisation of certain key assumptions, such as the continuity of economic growth in many countries and the rising fossil fuel costs. If these assumptions do not continue, the existing nuclear projections would most likely be invalid. Furthermore, there are many weaknesses in nuclear energy that cannot respond to the demands of a national economy and existing technological regimes; for example the inflexibiligy of nuclear energy to demand during peak times—specifically, higher generation capacities need to remain at a high level all the time, and a decision otherwise would result in reactor malfunction. He then discusses the newest and most promising improvements and innovations that nuclear energy could bring, but also proceeds to debunk these alternatives one by one.

This initial chapter is strengthened by the second one, which carefully analyses constraints in nuclear energy governance: (1) the massive initial costs of nuclear energy; (2) the rising costs of nuclear energy vis-à-vis other alternatives; (3) the reliance on government subsidies and the incompatibility of market structure and regulation; (4) the susceptibility to political, economic, and environmental issues, such as the financial crises, carbon reduction, and nuclear waste; and (5) the industrial issues of bottlenecks, personnel, materials, and cost overruns. Summarily, the second chapter was successful in portraying nuclear energy's massive and numerous problems in contrast to cheaper, faster, regulatory tested, and flexible energy alternatives.

In the third chapter, Findlay synthesises the arguments made in the first two chapters to assess the revival at the worldwide and the state levels. By contrasting various nuclear projections made by numerous international nuclear agencies, he shows that these studies held important assumptions that most likely would not hold, given the shaky and unpredictable nature of these variables. While in most cases, the share of newly built nuclear power plants was projected to increase, albeit these were planned to replace old and soon to be decommissioned nuclear power plants. Situating the revival in the level of states, he groups countries between the current players and likely entrants; he then projects the assessment of present and forthcoming nuclear projects using the current political and economic situations of these countries.

Global Governance

The final three chapters mark a substantive shift in Findlay's narrative. Instead of assessing the likelihood of a revival, he instead surveys the governance structures regime influencing, regulating, and politicising nuclear safety, security, and non-proliferation. Chapter four deals with the civilian issue of nuclear safety, where the regime is considered to be highly effective since the Chernobyl accident. Specifically, the peer-review mechanism by the International Atomic Energy Agency (IAEA), as well as the Additionality Protocol, which gives several international bodies more power in monitoring and complaints, is a surprisingly effective mechanism despite the absence of a legally binding treaties. Furthermore, governing mechanisms have seen vast improvement in the realm of spent fuel and nuclear waste. However, some limitations still exist; particularly, the lack of consensus on the legally binding safety standards in the Civilian Nuclear Cycle, a multilateral mechanism that allows civilian nuclear energy sharing . All in all, the current global governing regime is complex, marred, and dependent on treaties, as well as the willingness of states. Findlay argues that even then there is no real need to structurally change the governance of safety; rather, he insists that the improvement of global governance through the cooperation of state and non-state actors is integral. In order to do so, improving state capacities is an important pre-requisite to the demands of nuclear safety and nuclear cooperation.

In contrast to the effectiveness of safety, chapter five moves on to discuss the absence of global governing mechanisms in nuclear security and non-proliferation. Findlay argues that precisely because of the national character of nuclear weapons processing, as well as the implications on terrorist threats, global governing regimes in nuclear security are severely lacking. Nuclear security is directly related to state secrets and mechanisms, which are often

classified, not to be shared. International organisations are moving towards integrating compatible and existing regulatory treaties from civilian energy to nuclear weapons and non-proliferation. There are strong legal and treaty grounds in the global regimes to limit the proliferation of nuclear technology. However, if states do not comply—as in the case of Iran, India, and Pakistan—the global governance regime lacks follow-up measures. At some point, even if the IAEA does have the power to inspect, the lack of a comprehensive and overall monitoring programme enabled some states, such as Iraq and Iran, to hide their nuclear processing capacities during inspection.

As a whole, the final chapter concludes with an analysis on the implications of a nuclear renaissance on the global governing regimes in these three important nuclear domains. Although Findlay believes that global governing regimes will remain stable because the chances of a nuclear revival are low, he still argues that in the event of a revival there will be severe implications on the global governing regimes. The existing safety, security, and non-proliferation regimes lack the institutionalisation, mechanisms, and capacities to deal with issues resulting from the revival. The overall impact from these risks could be catastrophic if necessary measures are not taken. However, as a whole, there is no need to change the structure of the regime, rather the key is to strengthen its existing mechanisms.

Findlay concludes with several policy recommendations to be taken. The specific policy recommendations are targeted for the three domains. For instance, while peer-review remains effective, he believes that additional mechanisms such as enhancing the Joint Convention, harmonisation of national safety regulations, and the improvement of operation and regulatory practices would improve safety as a whole. In nuclear security, the strengthening of international meetings and cooperation, such the nuclear summit, and solidifying bilateral treaties, such as the US/Russia Global Initiative to Combat Global Terrorism, would be very useful. As a whole, he believes that there is a real need to create a truly universal nuclear security regime that could subsume all of these interested, yet disparate actors in the nuclear regime. For nuclear non-proliferation, the improvement of the IAEA in terms of personnel, funding, and political capacities remains to be very important, as well as the inclusion of other mechanisms from other governing regimes—for instance, export constraints from the Nuclear Security Group. In sum, the integration of these three domains needs to be understood as integrated yet dealt with separately. His conclusion ends by highlighting a contradiction of nuclear energy. Although nuclear club members believe that nuclear technology should only be utilised for civilian uses, these members or powers refuse to disarm their weapons and still resist the multilateralisation of fuel cycle.

Some Comments

However, some shortcomings still exist, even to the book's own standards. The understanding of nuclear energy misses the contrast with other promising energy alternatives from region to region. While Findlay posits that it is one of the limitations of this book, and that he would only discuss the alternatives to nuclear energy if it becomes relevant to the focus on nuclear revival as a whole, Findlay's assessment of nuclear energy's revival is weakened by this lack of discussion on energy alternatives. Similar to nuclear energy, fossil fuels and gas rely on key assumptions, the interdependence and complementarity of certain institutions. The obstacles to nuclear energy might be lessened if these alternatives were more untenable than what Findlay believes. While it is impossible to discuss all the alternatives to nuclear energy, his conclusions could have been stronger if he showed that the assumptions of nuclear energy are shakier and harder to hold on to than gas or fossil fuels. Similarly, the increasing saliency of unconventional energy in the United States, China, and the EU are very promising alternatives that could have been discussed even if briefly.

With that said, there are two important shortcomings in the book's analytical strategy. First, if the aim of the book is to further readership, the clearest issue is the method of the book; there is a noticeable reliance on policy documents and articles about the subject. Although I understand that the audience is the general readership, I feel that the method limits the understanding of the energy to narrow dimensions. Further interviews with policy makers and actors in energy could further show the validity of potentially effective propositions. At the same time, since nuclear energy is a continuously evolving topic, a politically salient one, any policy documents or online chapters available to the public would have been screened to be politically neutral and must have already occluded the most salient points of the issue. Thus, there is a limit to the insights that could be acquired from such filtered literature.

Second is the lack of any attempt to test or contribute to theory. The whole manuscript aims to understand nuclear energy's revival, but lacks a coherent theoretical basis to do so. While governance regimes were discussed more than sufficiently in terms of effectiveness, the empirical chapters do not seem to tie back well to a theoretical component. There are times that the revival portion and the global governance read as independently developed manuscripts. The downfall of this strategy is that most chapters conclude the technological limitations of nuclear energy with an allusion to the failure of global governance, whether due to state interests or to the lack of IAEA funding. In a broader outlook, it is widely known that states would protect their interest, whether in intergovernmental or supranational circles, and it would take some time before enacting the full institutionalisation of governance in international organisations. In this case, the question of how and what could further this institutionalisation are missing from his governance chapters. This, I believe, is fundamentally centered on the lack of clear elaboration of a proper theoretical perspective and a reliance on secondary sources.

Overall, this is a very good book when it comes to consolidating issues, debates, and reports in a single manuscript. This is a much-needed manuscript in a significant policy sector with logical recommendations at the very end. However, the lack of attempt to build theory, to situate the book in theoretical literature, or to extract new data from the field limits the contribution to governance theory as a whole.

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