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## **Book Review of *The International Atomic Energy Agency: Historical Reflections, Current Challenges and Future Prospects***

**Edited by Joseph F. Pilat, Global Security Studies Series, Routledge, 2021, 270 pages, ISBN 9780367749156 (hardback) or 9781003160205 (e-book), \$170 (hardback) or \$52.95 (e-book).**

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Edited by Joseph F. Pilat and published by Routledge, *The International Atomic Energy Agency: Historical Reflections, Current Challenges and Future Prospects* is an insightful and illuminating book. This collection is an updated and expanded version of 16 papers, as well as the keynote address, presented at the 2017 Conference on the International Atomic Energy Agency (IAEA) held at the Woodrow Wilson International Center for Scholars in Washington, DC.

The opening two chapters offer a preliminary introduction to the IAEA before moving into the two main sections. Chapter 1 features the editor's introduction to the IAEA, which was established in 1957 and stemmed from US President Dwight D. Eisenhower's visionary United Nations speech, "Atoms for Peace" (1953). Ultimately, the IAEA promotes "the peaceful use of nuclear energy, while acting as a watchdog to verify compliance of states party to the Nuclear Nonproliferation Treaty (NPT) through a system of legally binding safeguards against proliferation" (89). Chapter 2 encompasses an interview with IAEA Director General Rafael Mariano Grossi. In this interview, Grossi touches on the historical record of the agency, the challenges that the COVID-19 pandemic has posed for the agency, the evolution of the IAEA's safeguarding role and its prospects, and the significance of nuclear energy as low-carbon energy. He emphasizes that the IAEA's duty is to help its Member States "use nuclear power and nuclear technology to improve the lives and livelihoods of their people" (22).

The first section of the book, “Historical Recollections and Reflections,” contains five chapters, beginning with Chapter 3: James Goodby’s “Present at the Creation: Reflections on 60 Years of Interactions with the IAEA.” Goodby, a former member of the US Atomic Energy Commission, recounts the vital decisions made prior to the creation of the IAEA, as well as its later involvement with Euratom’s work. Chapter 4, written by Myron Kratzer, focuses on the evolution of international safeguards. Kratzer stresses that whereas the earliest safeguard system (INFCIRC/26) relied primarily on “nuclear materials accountancy,” subsequent ones—such as the INFCIRC/153, which facilitated the negotiation process to create the NPT—required nonnuclear states “to accept safeguards on all nuclear material in all peaceful activities” (47). In Chapter 5, Laura Rockwood explains how the discovery of the Iraqi clandestine nuclear program served as an “epiphany” for safeguards developers and resulted in the creation of additional protocol (53). In Chapter 6, Daniel Poneman, a former top-ranking US governmental official, reflects on the IAEA’s constructive role in tackling nuclear issues in the post-Soviet states, North Korea, Iraq, and Iran in the 1990s and 2000s. He concludes that “each of these four cases provided a front-row seat to the history of the IAEA and the important role it has played in advancing the peaceful use of the atom” (85). In the final chapter of this section, John Barrett, chair of the IAEA’s Board of Governors from 2012 to 2013, provides behind-the-scenes insights on the governance within the IAEA. Here, Barrett casts a new light on the agency’s limitations to effectively deal with Iran’s noncompliance and the Fukushima nuclear accident.

The second section, “Current and Future Issues and Prospects,” contains 11 well-structured chapters that provide a glimpse into the IAEA’s evolving issues and prospects. In the first two chapters, the authors adroitly unveil the significance and evolution of the IAEA’s safeguards. Massimo Aparo explains that they “provide assurances to the world that nuclear material remains in peaceful use and not diverted to make weapons” (109). Regarding the potential future of safeguards, John Carlson emphasizes, among other things, the importance of greater transparency; the need for a long-range, wide-area monitoring to detect proscribed activities at undeclared locations; and the importance of prioritizing international cooperation over national sovereignty. In Chapter 10, Pierre Goldschmidt draws six critical lessons from the noncompliance cases of Iran and North Korea’s withdrawal from the NPT. He points out a major safeguard loophole, mainly “the absence of a requirement for IAEA safeguards to irreversibly remain in force should a state leave the NPT” (139). Such an omission demands the adoption of measures that would protect against nonproliferation.

Chapters 11 to 14 offer captivating discussions of how nuclear energy and safety can be applied toward peaceful ends. Mark Hibbs touches upon the aftermath of nuclear accidents. In particular, he focuses on Fukushima and points out that “Fukushima occurred at an installation operated in a state with extremely high levels of wealth, political organization, infrastructure, technology, and great nuclear power experience” (155). The result was that the prospect of nuclear power lost popularity among the countries previously expressing interest (155). Nobuyasu Abe further substantiates the backlash following major nuclear accidents and examines the insecure future of nuclear power generation. Abe proposes additional measures to counteract this backlash, such

as the introduction of a carbon tax. In the following chapter, Bernard Bigot, director-general of the International Thermonuclear Experimental Reactor (ITER), elaborates on the tokamak project and highlights the enormous potential of fusion energy, arguing that it releases no greenhouse gases, is inherently safe, and does not produce any radioactive waste (179). In Chapter 14, Joseph F. Pilat assesses nuclear safety and security in the aftermath of Fukushima, arguing that "if it is to be sustainable, nuclear energy will have to address safety, security, and proliferation risks, ensuring they are all minimized" (187).

The ensuing three chapters explore the mounting importance of nuclear security (NS) (i.e., "protecting nuclear (and radioactive) material against theft and other malicious acts" [189]). In Chapter 15, Piet de Klerk explores the evolution of NS over four phases dating back to the 1970s. Klerk also focuses on the IAEA's role in these phases, calling attention to the threat of potential nuclear terrorism. Laura S. H. Holgate in Chapter 16 focuses on the fourth phase, which began with US President Barack Obama's Prague Speech (2009) and culminated in the four Nuclear Security Summits (NSS) held between 2010 and 2016. Additionally, Holgate mentions postsummit challenges, especially the role of maintaining momentum, which was the responsibility of the IAEA's Nuclear Security Ministerials and Nuclear Security Contact Group (NSCG). In Chapter 17, Heidi Hulan examines the origins, objectives, and orientation of the NSCG in the aftermath of the summits, emphasizing the need for sustained, working-level efforts and international collaboration to advance NS. The four authors of the last chapter reflect on the decades-long collaboration between IAEA and Euratom, stressing their joint efforts in the fields of "nuclear security, radiation protection, emergency protection, nuclear waste management, and nuclear decommissioning" (229). The book closes with an appendix containing Yukiya Amano's, who is the former IAEA director general, keynote address. This was a commendable way to conclude the book and pay tribute to Amano's memory.

This edited volume serves as an invaluable and much-needed guide for readers interested in gaining in-depth comprehension of the historical, current, and future missions of the IAEA. This collection of papers from the most recent premier conference definitely expands the scope and depth of academic research on nuclear energy and the historical role of the IAEA. Most presenters (contributors to this volume) were prominent members of the governance within IAEA or related organizations and high-ranking US officials, who not only bring in their career-long expertise to the project but also enliven the chapters with their absorbing first-hand accounts and occasionally critical voices.

Although the book is comprehensive and embraces a wide range of little-known topics, it might come as a surprise that there is no particular chapter devoted to the IAEA's involvement in handling the post-Fukushima crisis and the high-priority challenge to protect nuclear power plants against natural disasters in the light of the Fukushima disaster. Additionally, it would have been helpful to see a chapter on the application of nuclear science in healthcare, agriculture, and environmental protection as a part of the IAEA's Technical Cooperation Program, which helps developing countries cope with

socioeconomic challenges. While Yukiya Amano, in his keynote address, brings up these issues, it could be eye-opening for the readers to gain insight into the IAEA's gradually expanding activities in these areas in more detail. Moreover, the readers might notice that the book focuses entirely on perspectives within the agency; hence, in some cases, the book avoids critical discussions, which could limit its utility. For instance, whereas Nobuyasu Abe in Chapter 12 acknowledges that major slowdowns tend to occur after big accidents, he attributes the decline in nuclear power to the high maintenance costs of the aging reactors, newly introduced stringent safety regulations in the post-Fukushima era, and concerns about proliferation and nuclear terrorism rather than anxiety over potential accidents. Likewise, Bernard Bigot praises fusion energy in Chapter 13, but he fails to mention that it has yet to achieve a viable path toward making functional reactors.

These notes aside, this edited volume will be of great value and is a must-read for scholars and students interested in nuclear energy, nuclear history, nuclear arms control, global governance, and international security. Additionally, its lucid and accessible language makes it easier for a layperson to connect. Overall, *The International Atomic Energy Agency: Historical Reflections, Current Challenges and Future Prospects* emphasizes previously unexplored aspects of the IAEA's contribution to nuclear cooperation and security. As a result, it enables us to better understand the complex and central role the agency plays in promoting the safe, secure, and peaceful use of nuclear energy. The volume certainly shows how the agency has grown into what Eisenhower envisaged nearly 7 decades ago.