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International Atomic Energy Agency: A Model for Proto-Planetary Governance

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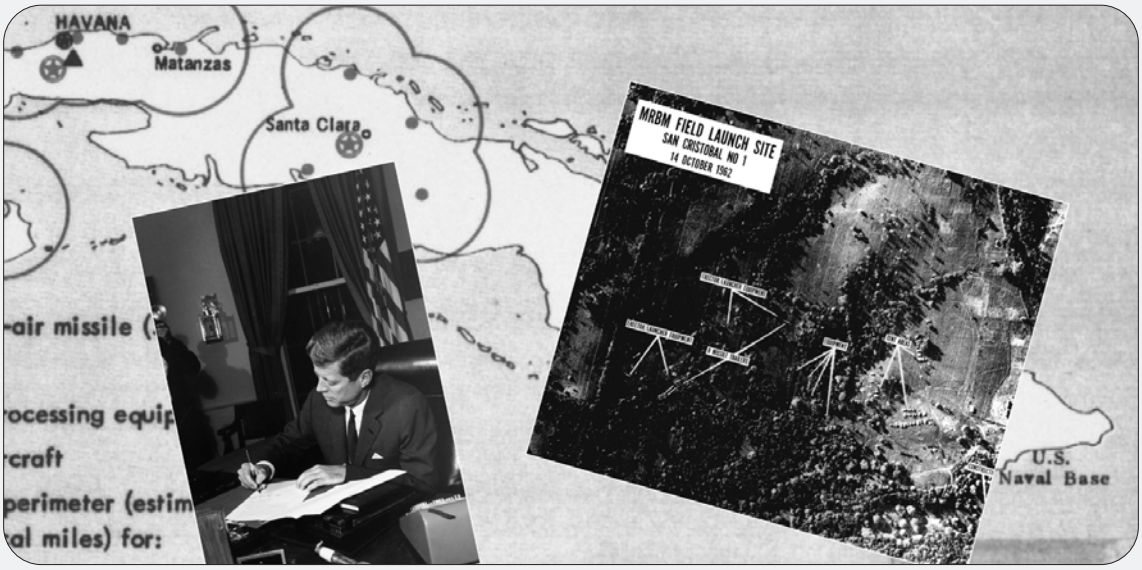

Figure 1. Illustration by Anahat Kaur and Arianna Smaron.

A story of how the atom forced the world to think as a single system. It describes how the fear of mutually assured destruction exposed the limits of sovereignty and produced the first institution with real authority inside national borders. The IAEA shows that once a threat becomes ungovernable by states alone, new architectures inevitably emerge. Read alongside the more speculative cases, it anchors the Compendium in something stubbornly real: institutions already exist that govern beyond borders.

"Nuclear weapons are unique in that they attack the support systems of life at every level," wrote Jonathan Schell in 1982. As he laid out in exquisite and excruciating detail in *The Fate of the Earth*, a nuclear holocaust would, beyond annihilating the human species, mark the planet itself, including through the effects of worldwide radioactive fallout, stratosphere particle pollution, and damage to the ozone layer. "A full-scale nuclear attack," Schell concluded, "would devastate the natural environment on a scale unknown since early geological times, when, in response to natural catastrophes whose nature has not been determined, sudden mass extinctions of species and whole ecosystems occurred all over the Earth." The elimination of the Earth's life-supporting capacities—to our knowledge, unique in the universe—was, he feared, "the largest of the perils posed by nuclear weapons."[1]

The unique and severe threat of immediate annihilation has prompted the development of a unique and, to some eyes, severe international response. Unlike so many problems that face humankind, the international community has responded with a global body that can violate state sovereignty for the sake of the common good. The International Atomic Energy Agency—the Vienna-based autonomous UN organization mandated "to promote the safe, secure, and peaceful use of nuclear technologies"—can surmount the "organized volunteerism" that characterizes most global governance.[2]

The IAEA's toolkit to prevent nuclear proliferation is wide, including tools to reduce both supply and demand. But one feature stands out as exceptional in the repertoire of the international community:

mandatory nuclear safeguards. Since the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) entered into force, in 1970, non-nuclear weapons states are obligated "to accept safeguards" conducted by the IAEA "for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices."[3] Put plainly, all non-nuclear-weapon state signatories—that's all the countries besides the five recognized nuclear powers: US, Russia, China, France, and UK—must account for all their nuclear material to the IAEA, including allowing for on-site inspections.

These obligations are intrusive and onerous to nation-states, who often perceive them as a clear violation of national sovereignty. But, again and again, states allow IAEA inspectors through the door of their tightly secured nuclear facilities. In 2021, about 275 international inspectors scrutinized 27,900 items across over 1,300 nuclear facilities around the world.[4] States may grouse, but the system works. How did this come to be?

The initial proposal for controlling the potential devastation of future nuclear war came just months after the actual devastation of Hiroshima and Nagasaki. In June 1946, the Americans proposed to UN disarmament negotiations the creation of an International Atomic Development Authority with "managerial control or ownership of all atomic-energy activities potentially dangerous to world security." The idea was to remove all nuclear material and technologies from national control and give them to an international agency with the power of "enforceable sanctions" and no national veto. It would be, in the words of the plan's architect, Bernard Baruch, "an international law with teeth in it."[5]

The Soviets, who were then secretly working on their own nuclear bomb, immediately rejected the Baruch Plan. Giving a UN agency authority over what the Soviet Union saw as the domestic concerns of a sovereign state was anathema. "This principle of sovereignty is one of the cornerstones on which the United Nations structure is built," objected the Soviet ambassador. "If this were touched, the whole existence and future of the United Nations would be threatened."[6] Any plan to place nuclear activities under the control or ownership of an international authority was dead in the water.

The next major initiative for global nuclear order began with US President Dwight Eisenhower's 1953 "Atoms for Peace" speech at the UN. In it, Eisenhower proposed a new international organization focused on promoting the peaceful use of nuclear energy to "provide abundant electrical energy in the power-starved areas of the world."[7] The IAEA, founded in 1957 on the basis of Eisenhower's framework, initially aimed to do just that. Through the transfer of nuclear material and technical assistance to non-nuclear states, the IAEA's mission was to share the benefits of power "too cheap to meter." Amidst these dreams of abundance, fears of nuclear material being diverted for military uses were downplayed. Eisenhower's speech even touted that "the great virtue" of his plan was that it did not require "the irritations and mutual suspicions" of a "system of worldwide inspection and control." [7]

By the mid-1960s, however, fears of nuclear war could no longer be ignored. The escalating Cold War, the Cuban Missile Crisis of 1962, and China's first nuclear test in 1964 dramatically shifted the perceived threat landscape. The prospect of widespread nuclear proliferation became an existential concern: in 1963, US President John Kennedy foresaw "a world in which fifteen or twenty or twenty-five nations" have nuclear arms by the 1970s.[8]

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1 Jonathan Schell, *The Fate of the Earth* (Stanford, CA: Stanford University Press, 2000), 23, 64–65.

2 International Atomic Energy Agency, "About," accessed October 2025, https://www.iaea.org/about; Scott Barrett, *Why Cooperate? The Incentive to Supply Global Public Goods* (Oxford: Oxford University Press, 2007), 19.

3 *Treaty on the Non-Proliferation of Nuclear Weapons*, art. III (July 1, 1968), 21 U.S.T. 483.

4 Rafael Mariano Grossi, "IAEA Safeguards for International Peace and Security," *IAEA Bulletin 63*, no. 2 (October 2022): 1.

5 Bernard Baruch, quoted in Elisabeth Roehrlich, "Negotiating Verification: International Diplomacy and the Evolution of Nuclear Safeguards, 1945–1972," *Diplomacy & Statecraft* 29, no. 1 (2018): 32–33.

6 Andrei Gromyko, quoted in Schell, *Fate of the Earth*, 42.

7 Dwight D. Eisenhower, "Atoms for Peace Speech," *International Atomic Energy Agency*, December 8, 1953, https://www.iaea.org/about/history/atoms-for-peace-speech.

8 John F. Kennedy, "The President's News Conference of March 21, 1963 (No. 107)," *Public Papers of the Presidents: John F. Kennedy, 1963*, John F. Kennedy Presidential Library and Museum, https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-press-conferences/news-conference-52.

9 The phrase is from Albert Wohlstetter, "The Delicate Balance of Terror," *Foreign Affairs* 37, no. 2 (January 1959).

Leaders realized the need to govern the "delicate balance of terror" and prevent nuclear war was a matter of human survival.[9] This existential fear catalyzed a change among political leaders and, therefore, the structure of the global governance of atomic energy. After standing perilously close to the abyss during the Cuban Missile Crisis, politicians were willing to make concessions they previously refused, including allowing IAEA inspections of their nuclear activities. Compared to the thirteen days spent on the brink of nuclear annihilation in October 1962, international inspectors didn't seem so dangerous. Even the most powerful states accepted a tailored curtailment of sovereign prerogatives, understanding it as the only viable solution to a threat that is both existentially grave and structurally impossible for them to control on their own.

After both the US and USSR agreed to a regime of international inspection and verification, diplomats hammered out the NPT, which entered into force in 1970. "Considering the devastation that would be visited upon all mankind by a nuclear war," the treaty began, clarifying the stakes, the signatories committed "to make every effort to avert the danger of such a war and to take measures to safeguard the security of peoples."

The NPT fundamentally transformed the IAEA's role, making the agency the implementer of mandatory nuclear safeguards for non-nuclear-weapon states party to the treaty. The IAEA evolved from a promoter of the atom's peaceful potential to the primary international body responsible for controlling the atom's destructive potential.

As a result, the IAEA came to have authority that is unmatched among international organizations. The IAEA represented, in the words of its longtime head Hans Blix, "the first instance in the history of sovereign States inviting an impartial international organization to audit their accounts and carry out inventories and other inspections on their own territory."[10] States have learned to accommodate their cherished sovereignty to the necessity of international governance of an existential risk.

The diminution of sovereignty for the express purpose of mitigating worldwide risk is what makes the IAEA a *proto-planetary institution*. Unlike most international organizations in the UN system, the IAEA requires states to trade a segment of their sovereignty for membership. Member states accept IAEA political authority over a limited issue-area that supersedes the norm of national sovereignty. States retain the right to withdraw from the NPT—and with it, IAEA mandatory safeguards—but the consequences of nuclear proliferation are so devastating and, crucially, not something that any one state can prevent on its own that the ability to exercise that right is practically compromised. (Even when the US, after several threats, withdrew from the IAEA in 1982 over sharp disagreements with the agency, it was forced to fully rejoin several months later because, as the Reagan Administration admitted, "there is no present alternative to [the IAEA] safeguards system," a system that "performs a role critical for US national security, nonproliferation and peaceful nuclear commerce interests"[11]).

At the same time, the IAEA doesn't entail a wholesale abandonment of sovereignty. The IAEA, rather, represents an attractive model of *segmented sovereignty.* In this model, nation-states retain sovereignty over most affairs but voluntarily delegate authority over a specific, narrowly defined functional domain to a dedicated institution. Critically, from a political perspective, the functional domain is one that individual states inherently *do not* and *cannot* control effectively on their own. States may be giving up sovereignty in name, but in practice these are matters they never had control over in the first place—like whether other states have the capabilities to detonate the planet. It may be preferable to frame this tradeoff not as relinquishing authority, but as *pooling* authority to *gain* control to manage risks that already transcend their individual capacities.

In addition to segmented sovereignty, the IAEA embodies key characteristics of planetary institutions:

- **Narrow Functional Scope**

  The IAEA's mandate centers specifically on nuclear technology, safety, security, and particularly, safeguards against military use. It doesn't attempt broad political governance, but focuses on a defined technical domain. It operates as an international bureaucracy that is supposed to be a non-political and technical institution.

- **Technocratic Expertise**

  The Agency relies on specialized, technical expertise, employing international inspectors to conduct on-site verification, audits, and monitoring of nuclear materials and facilities. Mechanisms exist to bolster impartiality, such as using inspectors who are not nationals of the inspected state.

- **Addressing a Planetary Threat**

  The IAEA's safeguard regime directly addresses the planetary risk of nuclear weapon proliferation and potential nuclear war. The international norm against proliferation, largely established by the

Figure 2. Illustration by Anahat Kaur and Arianna Smaron.

NPT and monitored by the IAEA, has been critical in preventing the cascade of proliferation feared in the 1960s. While predictions once foresaw 25–30 nuclear states, and today 40 countries or more now have the know-how, the actual number remains far lower (fewer than 10 as of 2025), due in significant part to this regime.

Lessons and Limitations

The IAEA's history demonstrates that states, even major powers, can agree to delegate a segment of their sovereignty to a technocratic international body when faced with a sufficiently grave and undeniable shared existential threat that they cannot manage alone. But this arrangement emerged out of institutional evolution after a crisis. The Cuban Missile Crisis served as a critical catalyst, scaring superpowers into accepting verification measures they had previously rejected.

The IAEA's significant political authority in non-proliferation policy is a far cry from "its origins as a failed provider of civilian nuclear energy services."[12] Initially dependent on states and facing the typical limitations of voluntary global governance, as political scientist Robert L. Brown has demonstrated, it "acquired the independent power to issue rules and make commands in some areas of nuclear policy with which states feel pulled to comply."[13]

This authority stems not from coercion, but from its demonstrated ability to facilitate cooperation and provide credible verification. The IAEA, in other words, is a consistent and effective mechanism for resolving high-stakes international collective action problems. Unique among multilateral organizations, the agency's authority in non-proliferation arguably supersedes the otherwise-ironclad international norm that each state holds the power to determine compliance with global commitments. And this authority has only increased over time, with the 1997 Additional Protocol granting the agency stronger inspection rights.

The IAEA is a vital, functioning example of the *type* of institution necessary for managing other planetary risks. It demonstrates that institutions can evolve to overcome the strictures of state sovereignty in specific and limited technical function areas. Similarly structured institutions might be needed for climate change (an "IPCC with teeth") or pandemic prevention (intrusive inspections of high-level biolabs). Certainly, the political will for such intrusions into sovereignty for climate or biosecurity is currently lacking. But it once was for international inspections of nuclear facilities as well. Yet, just as nuclear near-catastrophe spurred acceptance of the IAEA's role, future planetary crises—a pandemic far deadlier than COVID-19, or a truly catastrophic climate event—might one day force nations to reconsider the trade-offs between absolute sovereignty and collective survival, potentially paving the way for new planetary institutions modeled, in part, on the IAEA's experience.

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10 Hans Blix, quoted in Robert L. Brown, *Nuclear Authority: The IAEA and the Absolute Weapon* (Washington, DC: Georgetown University Press, 2015), 95.

11 U.S. Department of State, *Report to the Congress Pursuant to Section 601 of the Nuclear Nonproliferation Act of 1978: For the Year Ending December 31, 1982* (Washington, DC, January 1983), V-2.

12 Brown, *Nuclear Authority*, 1.

13 Brown, *Nuclear Authority,* 2.