7 Steps

Sharon Squassoni of the Carnegie Endowment for International Peace suggests that some of the risks related to a rapid expansion of nuclear power could be minimized by adopting the following measures:

❶ Compare All Energy Options, Including Efficiency

Because moving world energy use away from dependence on carbon-based fossil fuels will require enormous investments, it will be essential to carefully weigh the costs and benefits of all possible solutions, including drastically improved efficiency. The only sensible approach to climate change is to prioritize investment in the lowest carbon energy options with the biggest impact that can be deployed immediately. These three criteria should be applied to assessing where nuclear power fits in among states' possible energy options. The IAEA and the International Energy Agency could collaborate on such an approach. Alternatively, a new global energy agency might be organized to perform this task, among others, if needed.

❷ Take the Glamour Out of Nuclear Cooperation

Nuclear energy is often regarded by countries as a symbol of national prowess rather than simply as a way to produce electricity. Because nations have an inalienable right to pursue nuclear energy for peaceful purposes, part of the challenge in levelling the energy playing field will be addressing the allure of nuclear power.

In part, the glamour of nuclear power is enhanced by the perceived prestige of nuclear cooperation agreements. Some might argue that framework agreements provide the prestige that some states seek, even if little nuclear trade results. However, this approach is not sustainable over time. A more promising path would be to subsume discussions about nuclear cooperation under the broader rubric of energy cooperation, rather than pursuing them as technology-specific diplomatic initiatives.

❸ Adopt the Model Additional Protocol as a Requirement

The IAEA's Model Additional Protocol, which contains measures to strengthen the international system of inspections on nuclear material and facilities, was approved in 1997. However, because the protocol's adoption is not mandatory, around 100 states do not yet have it in force. Its measures—which include increased access for inspectors, a wider array of information about a state's entire fuel-cycle, provisions for short-notice inspections, and new monitoring techniques—are essential to enhance the IAEA's ability to detect undeclared nuclear activities.

The Model Additional Protocol needs to become the new benchmark for nuclear supply within the Nuclear Suppliers Group (NSG). All countries should incorporate a requirement for an additional protocol into their nuclear cooperation agreements as well as in vendor contracts.

❹ Supply Nuclear Reactors and Their Components Responsibly

The nuclear industry understands its own interdependence, particularly in the area of nuclear safety. The common refrain of "a nuclear accident

anywhere affects everyone everywhere" can be extended to nuclear security and to proliferation. Yet in an expanded nuclear world, there will be tremendous commercial pressures to supply nuclear reactors and their components to states that may not yet have all their regulatory, safety, and security infrastructures in place. To mitigate risk in such situations, vendors will need to agree on minimum requirements for the sale of nuclear reactors and components and include these requirements as standard clauses in contracts. It will be important to reach vendors outside the Nuclear Suppliers Group, particularly in India and Pakistan.

❺ Increase Transparency in Cooperation and Tighten Restrictions on Sensitive Technologies

Although US agreements are a matter of public record because of the requirement for congressional approval, this is not the case in other countries. Sharing the texts of cooperation agreements could help promote the standardization of nonproliferation requirements, including restrictions on sensitive technologies.

The NSG needs to make progress on tightening restrictions on sensitive technologies—that is, uranium enrichment, spent-fuel reprocessing, and heavy water production.

❻ Give Priority to Small, Proliferation — Resistant Reactor Designs

New emphasis and funding should be devoted to commercializing small, proliferation-resistant reactor designs that incorporate passive safety features. Although Russian floating reactors have been touted as proliferation resistant because they can be removed from a country once their operational lives have ended, their potential vulnerabilities with respect to security and protection against terrorist attacks need to be assessed more carefully.

And other possible designs—like the Pebble Bed Modular Reactor, under development by South Africa—should be internationally vetted against safety and safeguards standards. The Global Nuclear Energy Partnership could play a key role here, as the international forum known as Generation IV has in the technical development of the next generation of reactors. The partnership should focus more directly on helping commercialize the kinds of reactors that new nuclear states could deploy most profitably.

❼ Phase Out National Enrichment Capabilities Under a Fissile Material Production Cutoff Treaty

One of the most difficult aspects of restricting access to sensitive nuclear technologies like enrichment and reprocessing is the element of national prestige that is often attached to these high-profile projects. One way of divorcing the element of national pride from sensitive nuclear technologies is to ultimately "denationalize" these technologies. Existing plants would need to be converted to multinational ownership and, perhaps, operation. Such an approach would face heavy resistance, but it could be broached within the context of a fissile material production cutoff treaty (FMCT).

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An FMCT treaty could ban not just the production of fissile material for weapons, but could require all — existing and future — enrichment plants to be multinational. In addition to deflecting the element of national prestige, multinational enrichment facilities would raise the probability of detecting clandestine enrichment and hence substantially lower the risk of a national breakout from FMCT restrictions. Some countries, including the US, might need to alter laws or regulations regarding foreign ownership of these sensitive technologies or plants.