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# H.R. 1280 Amendment to the Atomic Energy Act: Doing More Harm than Good

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**Abstract:** *H.R. 1280—a new bill currently before the House of Representatives—is intended to ensure that America's commercial nuclear exports do not lead to the proliferation of nuclear weapons. Designed as an amendment to the Atomic Energy Act of 1954, the bill has a laudable goal. But, despite some positive aspects, the overall effects of H.R. 1280 would be counterproductive. Heritage Foundation nuclear policy expert Jack Spencer explains how the proposed amendment would prevent implementation of U.S. regulatory and safety standards, put U.S. businesses at a disadvantage in the global market, and could hinder, not support, U.S. and international nonproliferation efforts.*

H.R. 1280—the bill proposing to amend the Atomic Energy Act (AEA) of 1954—is flawed. It passed through the House Committee on Foreign Affairs, and may be considered by the full House of Representatives in the near future. The bill is intended to ensure that America's commercial nuclear exports do not lead to the proliferation of nuclear weapons. More specifically, the bill seeks to impose stricter standards, both substantive and procedural, on the international agreements governing U.S. exports of commercial nuclear technology, facilities, materials, and services.

While some of the proposals in H.R. 1280 may help control certain nuclear weapons–related technologies, it is all but impossible to know for sure. This lack of clarity leads to the overarching concern raised by this legislation: The specific proposals are not tethered to existing nuclear nonproliferation policy or to any new

## Talking Points

- H.R. 1280—intended to amend the Atomic Energy Act of 1954 to prevent U.S. commercial nuclear activities from leading to the proliferation of nuclear weapons—is a flawed bill.
- Some provisions of H.R. 1280 are worth exploring further. The bill attempts to close potential loopholes that would-be proliferators might exploit, creates needed liability protection requirements, and tries to better control enrichment technology.
- But many of the H.R. 1280 provisions could be counterproductive—preventing U.S. companies from engaging in legitimate commercial nuclear commerce, possibly even *hindering* nonproliferation efforts.
- H.R. 1280's attempt to balance commercial and security interests is commendable, but its approach is misguided. It does not recognize the global nature of the commercial nuclear industry and overestimates U.S. influence in the commercial nuclear sector.
- Before moving forward with H.R. 1280, Congress must further consider the bill's consequences, and whether there are better ways to achieve its nonproliferation objectives.

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set of principles or guidelines, leaving ample room for unintended consequences—both from a nonproliferation standpoint, as well as from a commercial standpoint. In general, principles in existing law such as maintaining the security of nuclear materials or not using commercial nuclear technology to construct explosive devices are found in the congressional declaration of policy under the Nuclear Non-Proliferation Act of 1978. H.R. 1280 makes no attempt to define how it should be integrated within current policy, or to replace it. This lack of connection with existing foundational nonproliferation statutes, such as the Nuclear Non-Proliferation Act, results in an unfocused legislative attempt that is sure to lead to unintended consequences.

Accordingly, the provisions in H.R. 1280 seem to be a random selection of proposals that share only one common attribute—to increase the opportunities for Congress to block future agreements for commercial nuclear exports negotiated under Section 123 of the Atomic Energy Act. Section 123 sets the guidelines under which American commercial nuclear technology can be exported. Agreements negotiated under this section are commonly referred to as 123 agreements. While circumstances may warrant an increase in congressional authority, it is impossible to determine whether such circumstances exist when specific problems with existing agreements are not described and the increased authority is not tied to providing remedies to specific problems that undermine nuclear nonproliferation policy.

Presently, Congress would be well advised to focus less on narrowly drawn modifications to Section 123 of the Atomic Energy Act and more on the broader principles of U.S. nuclear nonproliferation policy. Ultimately, Section 123 is a means to the end of nuclear nonproliferation, not an end in itself. The implications of proposals to modify Section 123, such as those in H.R. 1280, cannot be understood, let alone justified, if they are not grounded in essential policy goals. More broadly, Congress needs to keep in mind that its purpose is to establish policy. Offering limited proposals for remedying unidentified problems is not conducive to establishing clear and coherent policy.

## Impact on Legitimate Commercial Activity

The basic mistake in H.R. 1280 from a commercial standpoint is the assumption that the United States can compel specific behaviors from other nations by denying them access to U.S. commercial nuclear products. This assumption ignores the fact that there are multiple suppliers for commercial nuclear products. Indeed, the U.S. does not even offer all the commercial goods and services needed to sustain a commercial nuclear program.

According to the U.S. Department of Commerce, the international market for commercial nuclear goods and services will be between $500 billion and $740 billion over the next 10 years.[1] America's decline as a commercial nuclear leader followed the general decline of nuclear power plant construction in the U.S. However, domestic and international interest in new nuclear power plants has created an opportunity for U.S. suppliers to re-enter the commercial nuclear business. Access to global markets, however, will be critical as U.S. companies attempt to develop these business sectors—and H.R. 1280 will make that access more difficult to achieve.

H.R. 1280's attempt to balance commercial and security interests is commendable. Its approach, however, is misguided. The proposed legislation does not seem to recognize the global nature of the commercial nuclear industry, overestimates U.S. influence in the commercial nuclear sector, and tries to create an inflexible approach to a multifaceted and complicated problem. In addition, the bill creates a new system of congressional review and reporting requirements that will seriously hinder the ability of future Administrations to efficiently negotiate commercial nuclear cooperation agreements.

## Good Intentions

Though H.R. 1280 lacks clarity of purpose, some of its provisions are worth exploring further. The

1. U.S. Department of Commerce, "Commerce Report: Small Modular Nuclear Reactors Can Help Meet Future Energy Demands, Create American Jobs," February 16, 2011, at *http://trade.gov/press/press-releases/2011/commerce-report-small-modular-nuclear-reactors-can-help-meet-future-energy-demands-create-american-jobs-021611.asp* (June 6, 2011).

bill attempts to close some potential loopholes that would-be proliferators might exploit, creates needed liability-protection requirements, and tries to better control uranium-enrichment technology. H.R. 1280:

**Clarifies Legitimate Uses for U.S.-Supplied Materials.** One of the provisions specifies that neither material with a U.S. origin nor material obtained from non-U.S. suppliers may be used to manufacture explosive devices. The provision further stipulates that any nation deemed a proliferation concern as defined under section 1055(g)(2) of the 2010 National Defense Authorization Act should not be eligible to receive U.S. commercial nuclear exports. This provision can help tighten the rules to ensure that U.S. companies do not inadvertently support nuclear proliferation.

H.R. 1280 also reasonably demands that cooperating parties maintain the physical security of nuclear material attained or produced either through a 123 agreement or from a third party. While maintaining the physical security of nuclear materials should be part of normal operating procedures for all nuclear nations, adding the additional stipulation can induce further protections to prevent dangerous transfers. It also provides the United States with additional leverage should a state become a proliferation threat after signing a 123 agreement. However, it must be noted that Section 123 already provides numerous protections against such behavior, and the United States should not enter into 123 agreements with nations that pose proliferation threats in the first place, except under specific circumstances where clear criteria are applied. For example, U.S. companies may sell fuel to a nation that has a checkered nonproliferation past in order to control the fuel cycle of an existing nuclear program. Such circumstances would be extremely rare, however.

**Provides Liability Protection.** Many nations do not have adequate liability regimes in place to protect U.S. companies from unlimited and frivolous lawsuits. This presents a major obstacle for many American companies as the liability risks outweigh the potential benefits of conducting business in countries without liability protection. The Convention on Supplementary Compensation for Nuclear Damages (CSC), to which the U.S. is a signatory, was put in place to provide a common liability regime for all nations, though not all commercial nuclear nations have signed on to the convention. H.R. 1280 attempts to remedy this situation by demanding that any nation entering into a 123 agreement with the United States must have liability protection in place equal to that stipulated by the CSC.

While liability protection is critical, attaching it to the 123 process is the wrong approach. Individual companies should be free to decide whether the liability protection offered by specific nations is adequate to allow them to do business there. There may well be instances in which a country may not provide liability protection consistent with the CSC regime, but could still be sufficient to allow certain business activities. Individual firms are better positioned to make this determination than bureaucrats and politicians.

Leaving liability protection outside the realm of the Atomic Energy Act does not mean that U.S. negotiators should not pursue CSC-like protections as part of future 123 agreements. Nor does it mean that the U.S. should not work to build international support for the CSC. But forcing CSC-consistent liability as a legal condition of future 123 agreements could prove unnecessarily restrictive to future negotiations.

**Controls Enrichment Technology.** In its natural state, uranium consists of several isotopes. The isotope needed to conduct fission—the process that creates the heat necessary to produce nuclear power—is uranium-235 (U-235) and makes up 0.7 percent of naturally occurring uranium. The remainder is primarily uranium-238 (U-238), which alone cannot fuel U.S. power reactors. In order to sustain fission in U.S. reactors, the uranium fuel must consist of approximately 3 percent to 5 percent U-235. To reach this level, natural uranium must be enriched.

The capacity to enrich uranium is measured in separative work units (SWUs), the measurement of energy needed to separate U-235 from U-238. Total global capacity is approximately 52 million SWUs, although national policies limit available capacity

to about 43 million SWUs.[2] H.R. 1280 attempts to limit the spread of uranium-enrichment technology. While this is a laudable objective, tying it to the 123 process will likely not work.

Primarily, the legislation does not recognize the realities of the global enrichment market and the general availability of enrichment technology. The fact is that while most global demand is met by the U.S., two European consortiums, Japan, and Russia, 15 nations in total have at least some enrichment capacity.[3] This capacity roughly meets current demand. The long-term goal should be to limit possession of enrichment technology to the five permanent members (P-5) of the United Nations Security Council, which are each legal nuclear weapons states. That said, it must be recognized that it is a long-term goal and that the current reality is that non P-5 countries have enrichment capabilities. This goal should be pursued separately from 123 agreements, though future 123 agreements could include uranium supply provisions.

The proliferation concern is that this same technology can be used to enrich uranium to the high levels necessary to produce weapons-grade uranium. The problem with tying this technology broadly to the 123 process is that it may undermine attempts to establish the reputation of the U.S. as a reliable supplier of enriched uranium for commercial purposes to responsible consumer states. Ultimately, this could keep the U.S. from supplying fuel services to nations that would eliminate their requirement to enrich their own fuel.

Indeed, it is necessary that the United States prevent enrichment capabilities from spreading to nations that pose proliferation threats. Security concerns outweigh commercial interests. Indeed, the U.S. is under no obligation to sign 123 agreements with nations that pose proliferation threats, but treating all nations the same is nonproductive because they are not the same. Regardless of commercial interests, the U.S. should ensure that nations that do enrich are closely monitored by American and international authorities until enrichment states are convinced to use U.S. or other P-5-supplied fuel.

## More Analysis Needed

On the other hand, these and other provisions in H.R. 1280 could be *counterproductive*, by preventing U.S. companies from engaging in legitimate commercial nuclear commerce, and could even hamper nonproliferation efforts. These provisions may have some legitimate objectives but need to be analyzed more thoroughly to better understand intended consequences and potential unintended consequences. H.R. 1280:

**Ignores the Global Nature of the Commercial Nuclear Industry.** The United States dominated the global nuclear industry until the 1990s. Today, Japan, France, Russia, China, Korea, and others are all major commercial nuclear players. These nations, many individually, are capable of producing and exporting all of the necessary goods and services needed to build and maintain a commercial nuclear sector. Two results of this global nuclear supply chain are that no nuclear project is limited to contributions from a single country, and that there are many commercial nuclear suppliers.

H.R. 1280 ignores this fact. The bill stipulates that cooperating parties guarantee that "no nationals of a third country shall be permitted access to any reactor, related equipment, or sensitive materials transferred under the agreement for cooperation without prior consent of the United States." This is a completely unrealistic and onerous regulatory stipulation that no nation could ever uphold, and thus would, in all likelihood, prevent future 123 agreements.

Nuclear reactors are generally international construction projects. Regardless of design origin or geographic location, they will include international components and personnel. Almost without exception, nuclear projects will rely heavily on a global

2. Jack Spencer and Daniella Markheim, "Protectionism Won't Fuel a Nuclear Renaissance," Heritage Foundation *Backgrounder* No. 2221, December 16, 2008, at *http://www.heritage.org/research/reports/2008/12/protectionism-wont-fuel-a-nuclear-renaissance*.
3. Oak Ridge National Laboratory, "Profile of World Uranium Enrichment Programs—2009," ORNL/TM-2009/110, April 2009, at *http://www.fas.org/nuke/guide/enrich.pdf* (June 6, 2011).

supply chain. Forcing another country to get U.S. permission before allowing a foreign national access to an essentially international project is not feasible. This is especially true given the many options available to nations looking to build nuclear power plants. Faced with this choice, most would simply choose not to do business with the United States. Rather than preventing other countries from building nuclear power plants, H.R. 1280 will simply prevent the United States from engaging in international commercial nuclear trade.

**Takes an Overly Narrow View of Reprocessing.** A similarly problematic and related provision concerns reprocessing facilities. While peaceful nations have a vital interest in keeping reprocessing technology out of the hands of would-be proliferators, codifying a blanket denial of these technologies as a necessary part of all future 123 agreements is the wrong approach. H.R. 1280 states that nations currently not engaged in enrichment or reprocessing must permanently reject those activities as part of the cooperation agreement. There are potential problems with this language.

Reprocessing is the term used to describe a procedure by which used nuclear fuel is treated for the purposes of nuclear waste management or to retrieve valuable elements from within the fuel. In many cases, reprocessing can result in the retrieval of elements that can be recycled and used again as nuclear fuel. Indeed, many of the components of used nuclear fuel could have peaceful commercial applications even beyond power production.[4]

Critics argue that, since one of the retrievable elements—plutonium—can be used to build nuclear weapons, the process should be strictly controlled. This general contention is correct. But instead of blanket prohibitions, the focus should be on those processes that separate out weapons-useful materials during the fuel cycle process. And, like for enrichment technology, limiting reprocessing technologies that separate plutonium to P-5 countries should be the long-term U.S. goal. All related processes should be subject to adequate nonproliferation safeguards.

A broad, unspecific prohibition could deny peaceful nuclear nations access to potentially critical nuclear technologies. The prohibition does not recognize that there is no single way to reprocess used nuclear fuel, or that new processes could be developed in the future. The results of reprocessing depend entirely on the reactor type used, the type of fuel being reprocessed, and the processing technique used to treat the used fuel. A blanket prohibition makes no sense given all of these variables. It unnecessarily denies the cooperating country access to a potentially critical part of a comprehensive nuclear waste management strategy. This is even more so the case when one considers the probable introduction of new reactor and fuel technologies into the marketplace.[5]

## No Basis for Implementation

Some of H.R. 1280's provisions may well be needed, but they lack any clear basis for implementation and seem to be merely an attempt at hampering efforts by the Administration to efficiently negotiate new 123 agreements. Most of these provisions are part of the congressional review and reporting conditions.

**Additional Congressional Authorization Requirements Create Red Tape.** Many of the provisions in H.R. 1280 create additional congressional authorization requirements that unnecessarily complicate the 123 process. First, the legislation changes the congressional review process. Under current rules, Congress has a number of ways to approve or disapprove of a 123 agreement. Once an agreement is reached, Congress has 30 days to consult with the Administration, followed by a 60-day review period. Absent any congressional action, the agreement will come into effect at the end of that time frame. Should Congress disapprove of the agreement, it can pass a joint resolution of disapproval rejecting the agreement.

4. The Nuclear Green Revolution, "Kirk Sorensen Asks, 'Is Nuclear Waste Really Waste?'" video presentation, at *http://nucleargreen.blogspot.com/2010/12/kirk-sorensen-asks-is-nuclear-waste.html* (June 6, 2011).
5. Jack Spencer and Nicholas D. Loris, "A Big Future for Small Reactors," Heritage Foundation *Backgrounder* No. 2514, February 2, 2011, at *http://www.heritage.org/research/reports/2011/02/a-big-future-for-small-nuclear-reactors*.

The amended process would require a joint resolution of approval for new 123 agreements to come into effect unless the cooperating nation agrees to forgo any enrichment or reprocessing activities. This is unnecessary as the current process already gives Congress ample opportunity to influence the outcome. The Atomic Energy Act itself was approved by Congress, for instance. Therefore, congressional approval for new agreements that conform to the act's standards should be easier to attain then an agreement based on newly negotiated terms for unique foreign policy purposes. Nonetheless, Congress still can pass a resolution of disapproval under the current statute, should an aspect of a 123 agreement raise serious concerns.

This overly prescribed approach is not appropriate for the multifaceted global nuclear industry. Many nations seeking a limited nuclear capability will likely have little problem agreeing not to pursue reprocessing and enrichment capabilities. If that is the case, the U.S. can address those concerns individually with those cooperating nations. On the other hand, some nations that rely heavily on nuclear power, or that plan to, may view reprocessing and enrichment as critical parts of their nuclear industry. If so, they could simply reject the conditions demanded by the U.S. and seek cooperative agreements with other nations. The inflexible approach would also complicate attempts to renew or significantly amend current agreements. For example, the U.S. and South Korea are currently updating their 123 agreement. Subjecting South Korea to the same technology limitations as a new nuclear country makes little sense.

H.R. 1280 would also add a slew of requirements for the Administration to report to Congress on 123 negotiations. The fact is that the Atomic Energy Act already lays out congressional reporting requirements that keep the legislative branch fully informed of ongoing 123 negotiations.

Forcing a future Administration to adhere to these conditions as it is trying to negotiate a 123 agreement makes U.S. companies less competitive. Section 123 agreements are often negotiated after countries decide to move forward with commercial nuclear programs. At that point, many nations will already be seeking competitive bids to build their reactors. Holding U.S. companies hostage to an inefficient 123 process makes their bids far less attractive to potential customers.

**Sets Ineffective Standards on Export Controls and on International Agreements.** The proposed amendments of the Atomic Energy Act demand that cooperating parties adhere to an array of international agreements on the export of chemical, biological, nuclear, and advanced conventional weapons, and comply with similar United Nations Conventions and U.N. Security Council resolutions dealing with weapons exports. Most of these agreements have nothing to do with nuclear proliferation, however. It is important not to confuse legitimate nonproliferation agreements with other more controversial ones that are not germane to the underlying statute.

Many of these agreements infringe on U.S. sovereignty and provide little or no real nonproliferation impact. Nations that choose to pursue these capabilities will do so whether or not they are party to a treaty. History shows that treaties do not stop the illicit behavior of motivated states.[6] So to force a nation to sign a treaty under the assumption that it will prevent it from pursuing a specific capability merely creates the *perception* of limiting proliferation.

Further, many nations may have legitimate concerns about many of the treaties and conventions that the U.S. has signed on to. Pressuring them to sign a treaty that they feel threatens their national interests by withholding access to U.S. commercial nuclear products will not work when ample non-U.S. suppliers exist. The only thing such pressure will accomplish is to disengage the United States from those specific countries' commercial nuclear programs.

H.R. 1280 also requires that each cooperating party have an effective export control system in place "and is fully implementing an effective export control system, including fully implementing the provisions and guidelines of the United Nations

6. Baker Spring, "The Comprehensive Test Ban Treaty: In Arms Control's Worst Tradition," Heritage Foundation *Backgrounder*, October 7, 1999, at *http://www.heritage.org/Research/Reports/1999/10/The-Comprehensive-Test-Ban-Treaty*.

Security Council Resolution 1540."[7] Not defining what an acceptably "effective export control system" would be, leaves too much room for subjective interpretation that would make negotiating effective 123 agreements nearly impossible. While an effective export control regime is important and the United States should work with other nations to help ensure that nuclear-related items are not used for weapons purposes, clarity of language is critical. Further, rules and regulations already exist that would make it illegal to export nuclear-related items for weapons purposes.

## Unintended Consequences

U.S. nonproliferation policy has often been episodic and inconsistent in its implantation. New regulations, provisions, and stipulations seem to be added or modified without being part of any cohesive nonproliferation strategy. H.R. 1280 seems to be one more component in that tradition. The result is a set of new rules that could create a series of unintended consequences:

- **Disengages the U.S. on the nuclear energy issue.** Because so many commercial nuclear options exist in the global market, nations are not confined to cooperation with the United States to achieve their commercial nuclear objectives. The result of the amendment's restrictions could be that nations simply choose not to cooperate with the United States. Even in cases where 123 agreements are negotiated, many nations may choose to purchase reactors and services from non-U.S. suppliers given the greater flexibility of that option. The end result will be less business and influence for U.S. companies.
- **Prevents 123 agreements from being enacted.** Section 123 agreements are a major nonproliferation and commercial tool for the United States. Having them in place creates a strong legal framework to govern the export of U.S. commercial nuclear technology. If structured and maintained properly, they can influence the entire commercial nuclear program of cooperating nations. But offering 123 agreements that are not attractive to other nations will simply lead to fewer 123 agreements, hurting the U.S. in the long run.
- **Hinders nonproliferation efforts.** Fewer 123 agreements could hurt U.S. nonproliferation efforts because it could disengage the United States from the nuclear programs of other countries. By being engaged with nations as they build their commercial nuclear programs, the United States will be better positioned to have greater influence over those nations' general approach to nonproliferation. Further, it opens the door to non-U.S. suppliers with lower standards to determine how a cooperating nation handles nonproliferation issues.
- **Prevents implementation of U.S. regulatory and safety standards.** Some of the most important nuclear exports that the United States can offer are its regulatory and operational standards. The American nuclear industry is among the world's safest and most efficient. This is a direct result of its system of private operators working with both private and federal regulators. Whether from a commercial, nonproliferation, or safety standpoint, new and most existing nuclear nations could benefit from working with the United States. The best way to ensure that nations take on American regulatory standards is for U.S. suppliers to be fully engaged with foreign nuclear programs.
- **Places the U.S. at a disadvantage.** Though security concerns outweigh commercial interests, commercial concerns should not be ignored. One of the direct results of H.R. 1280 will be its impact on the U.S. commercial nuclear industry, which is attempting to rebuild after decades of reactor-construction stagnation. A key to that rebuilding effort will be to ensure access to the global nuclear market—and 123 agreements are fundamental to that access. According to industry data, 5,000 to 10,000 jobs are supported by every $1 billion in nuclear exports. Considering that the Department of Commerce estimates that

7. "H.R. 1280: To Amend the Atomic Energy Act of 1954 to Require Congressional Approval of Agreements for Peaceful Nuclear Cooperation with Foreign Countries, and for Other Purposes," 112th Congress, 1st Session, 2011, at *http://www.govtrack.us/congress/bill.xpd?bill=h112-1280* (June 7, 2011).

the global nuclear market over the next 10 years will be valued between $500 billion and $740 billion, potential job creation is significant. But to take advantage of this opportunity, the U.S. needs 123 agreements.

## Stop and Think Before Passing H.R. 1280

H.R. 1280 provides an overly restrictive approach to commercial nuclear exports, does not recognize the global nature of the 21st-century nuclear industry, and unnecessarily disadvantages U.S. companies. At the same time, it does attempt to address a growing concern over how to manage growth in the global commercial nuclear marketplace. Before moving forward with H.R. 1280, Congress needs to consider further what the bill's consequences will be and whether or not there are better ways to achieve its laudable objectives. Ultimately, the U.S., and the rest of the world, need to rethink how to govern international nuclear commerce, and now is the time to start that process. Unfortunately, H.R. 1280 is the wrong approach.

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